TRANSVALOR

TRAINING CATALOG 2026

4 NEW COURSES

NEW 2026

FORGE® — FOR HOT, WARM AND COLD METAL FORMING

COLDFORM® — FOR COLD METAL FORMING

SIMHEAT® — FOR METAL HEAT TREATMENT

THERCAST® — FOR ALL CASTING PROCESSES

DIGIMU® — FOR METAL ALLOYS MICROSTRUCTURAL EVOLUTION

REM3D® — FOR THE INJECTION AND MOLDING OF PLASTICS AND FOAM

Z-SET — FOR CALCULATION AND ANALYSIS OF NON-LINEAR STRUCTURES AND MATERIALS

Today more than ever, industrial players are faced with multiple and complex challenges: logistics, energy, access to and management of raw materials, ecology, but also attractiveness, motivation and continuous training of operational teams. These challenges require constant adaptation to ensure efficiency and competitiveness.

The tools and methods that support your performance must constantly evolve to adapt to growing needs: flexibility, process redesign, user skills. It is in this dynamic that Transvalor designs its offer, and in particular its professional training, an essential lever for maintaining expertise and anticipating changes.

We are convinced that investing in training is the best way to combat the obsolescence of skills. With its international roots and presence in many industrial sectors, Transvalor enriches its programs to meet your current and future needs. Our training courses are designed to support you in the industrial transformations underway, by offering you optimal control of our software solutions and their most recent functionalities.

With the Transvalor training offer, you will be fully equipped to exploit the potential of our high-performance tools, while identifying and seizing new opportunities for your business. Together, let's meet the challenges of tomorrow!

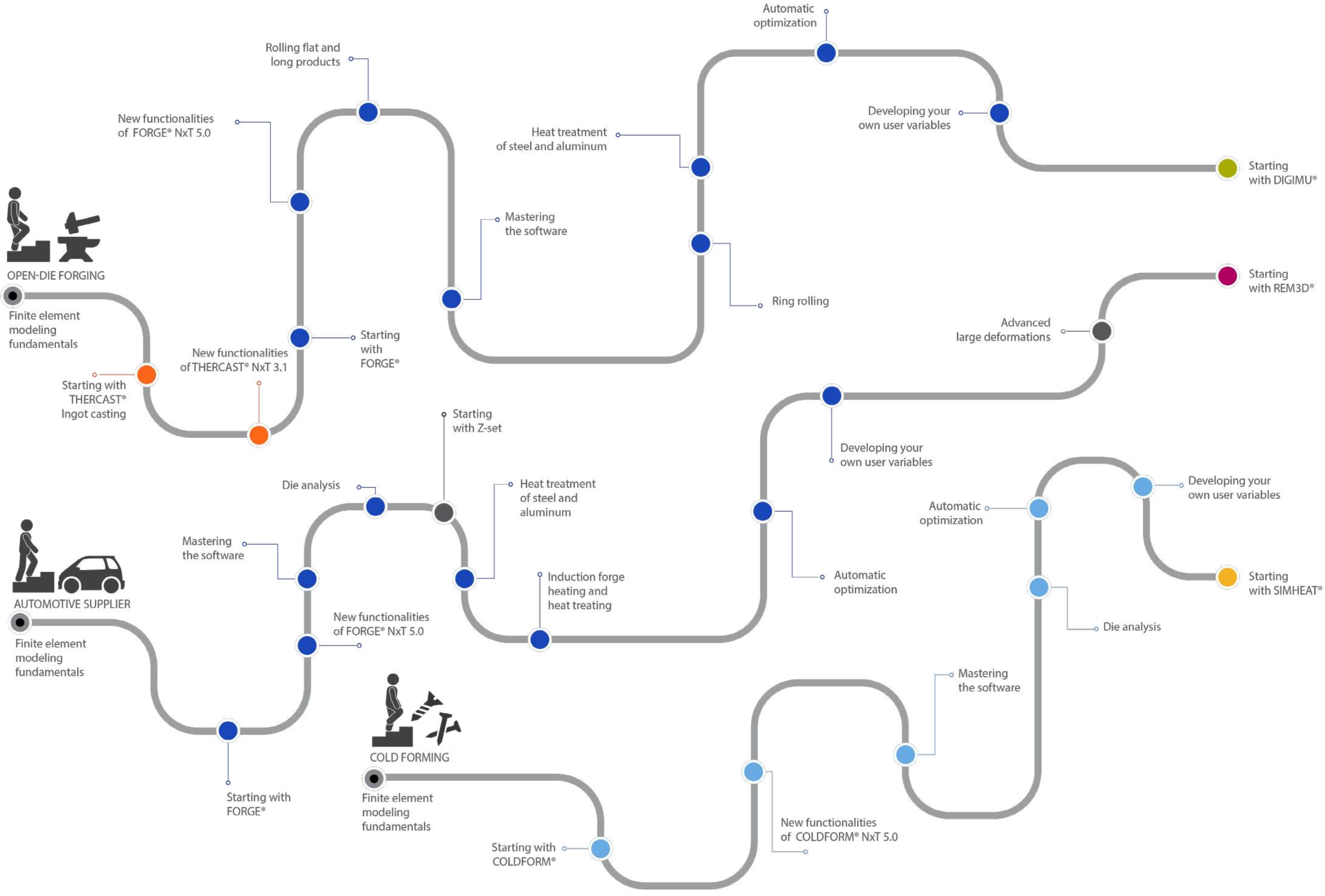
Laëtitia PEGIE,
Customer Services Director

WHY TAKE A TRANSVALOR TRAINING?

COURSES

SOFTWARE	COURSE TITLE	LEVEL	DURATION IN DAYS	PAGE
All software	Finite Element Modeling Fundamentals	Beginner	1	12
	Tailored Theme	Intermediate to Advanced	/	9
FORGE®	Starting with FORGE®	Beginner	2	14
	Starting with FORGE® Hot Metal Forming Essential	Beginner	2	16
	Starting with FORGE® Hot Metal Forming Premium	Beginner	2	18
	New Functionalities of FORGE® NxT 4.1	Intermediate	1	20
	Mastering the Software	Intermediate	2	22
	Die Analysis	Intermediate	2	24
	Ring Rolling	Intermediate	1.5	26
	Rolling Flat and Long Products	Intermediate	2	28
	Electrical Upsetting	Intermediate	1.5	30
	Using the Python API to Automate Data Processing and Analysis with FORGE®	Intermediate	2	32
	New Functionalities of FORGE® NxT 5.0 NEW	Intermediate	1	34
	Heat Treatment of Steel and Aluminum	Advanced	2	36
	Induction Forge Heating and Heat Treating	Advanced	2	38
	Automatic Optimization	Advanced	1.5	40
	Developing Your Own User Routines	Advanced	2	42
COLDFORM®	Starting with COLDFORM®	Beginner	2	44
	New Functionalities of COLDFORM® NxT 4.1	Intermediate	1	46
	Mastering the Software	Intermediate	1.5	48
	Die Analysis	Intermediate	1.5	50
	Using the Python API to Automate Data Processing and Analysis with COLDFORM®	Intermediate	2	52
	New Functionalities of COLDFORM® NxT 5.0 NEW	Intermediate	1	54
	Automatic Optimization	Advanced	1.5	56
SIMHEAT®	Starting with SIMHEAT®	Beginner	3	58
	Heat Treatments	Beginner	2	60
	Using the Python API to Automate Data Processing and Analysis with SIMHEAT®	Intermediate	2	62
	New Functionalities of SIMHEAT® NxT 5.0 NEW	Intermediate	1	64
	Automatic Optimization	Advanced	1.5	66
THERCAST®	Starting with THERCAST® Ingot Casting	Beginner	2	68
	Starting with THERCAST® Continuous Casting	Beginner	3	70
	Starting with THERCAST® Foundry Processes	Beginner	3	72
	New Functionalities of THERCAST® NxT 3.0	Intermediate	1	74
	Using the Python API to Automate Data Processing and Analysis with THERCAST®	Intermediate	2	76
	New Functionalities of THERCAST® NxT 3.1 NEW	Intermediate	1	78
	Mastering the Software	Advanced	2	80
	Automatic Optimization	Advanced	1.5	82
DIGIMU®	Starting with DIGIMU®	Beginner	1	84
	New Functionalities of DIGIMU® 5.0	Beginner	1	86
REM3D®	Starting with REM3D® Foaming Application	Beginner	2	88
	Discover REM3D® NxT 3.0	Beginner	1	90
Z-set	Starting with Z-set	Beginner	1	92
	Starting with Z-cracks	Beginner	1	94
	Z-mat Connection to External FE Solvers	Beginner	1	96
	Advanced Large Deformations	Advanced	2	98

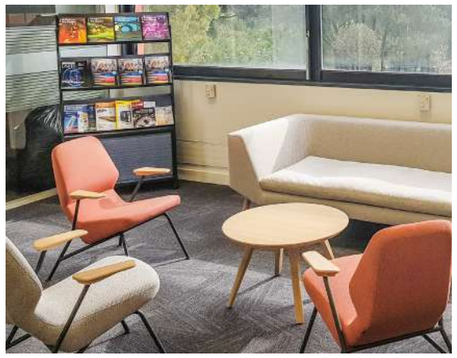
RECOMMENDED TRAINING JOURNEY



OUR TYPES OF TRAINING PROGRAMS

In-company courses: at your premises

- Held at your premises on a date at your convenience
- For one or more members of your company
- All trainings presented on page 4 and 5 can be booked
- Price indicated per training according to the level between 1400 €/day to 2150 €/day VAT excl.
- Possibility to work on your own geometries and examples. This preparatory work is charged 850 €
- A fixed price for travel will be charged
- Recommendation: Provide one computer per person, assure the software is properly installed.



Online courses

- Held via interactive video conferencing
- From one to three people
- Price indicated per hour of training between €140 and €225 VAT excl. depending on level and number of participants
- For any topic and level

Academic trainings

- For academic participants only
- Organized in Transvalor's premises at the dates proposed below
- To organize courses in your premises and be informed about the rates, contact us directly

TRAINING	DATES 2025	
Starting with FORGE®	March 3rd - 4th	September 22nd - 23rd
Starting with THERCAST®	May 20th - 21st	November 17th - 18th

www.transvalor.com > Our services > Training

For any information or request or to get a quote, please contact us at:
Email: sales@transvalor.com
Phone: +33 (0) 4 92 92 42 00

Transvalor is an approved Training Organization under French law, registered with the Prefecture of the Ile de France Region and the Department of Paris under number 11061363575. For the French market, Transvalor is certified with Qualiopi, in accordance with Decree No. 2019-565 of June 6, 2019, which attests to the quality of our training services. Our organization meets the criteria and requirements established by the Qualiopi framework to ensure the satisfaction of our trained clients and the conformity of our pedagogical practices.

TAILORED COURSES

Our tailored trainings answer your need for expertise in one or more specific areas.
Bespoke courses are tailored to the individual requirements of your business
For experienced participants (read our suggestions down below)
For a quote, please contact us at the following e-mail address: sales@transvalor.com.

Suggested themes:

FORGE®

- Intermediate: Anticipating forging defects
- Advanced: Open-die forging
- Advanced: Metallurgy and microstructure
- Advanced: Flow forming
- Advanced: Spot welding

COLDFORM®

- Intermediate: Metal fasteners
- Intermediate: Fine blanking
- Advanced: Sheet metal forming
- Advanced: Mechanical assembly processes

SIMHEAT®

- Beginner: New functionalities of SIMHEAT® NxT 4.1

THERCAST®

- Intermediate: THERCAST® - FORGE® coupling
- Advanced: Metallurgy and grain structure
- Advanced: Continuous casting machine

REM3D®

- Intermediate: Mastering the software

DIGIMU®

- Advanced: Characterization of a material file
- Expert: User routines

ADDED VALUE

Please don't hesitate to send us your geometric and process data ahead of time so that we can prepare custom case studies. These course sessions can therefore be run while working on your own production processes for maximum efficiency.

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

OUR TEAM AT YOUR DISPOSAL


Marcelo BUZOLIN


Valentine BOUTEILLE


Rémy BOUTERIGE


José RINCON


Caitline LASNE


Vito SCANNICCHIO


Khaled KHALIL


Pauline SCHUMMER


Sergio RODRIGUEZ


Weiwei REN


Guangpei JIAO


Roy CHOUDHURY


Satya KULKARNI


Nicole NARDO


Mohamed ABATOUR


Wajih JBARA


Jose ALVES


Julien BARLIER


Stéphane QUILICI


Frédéric COSTES

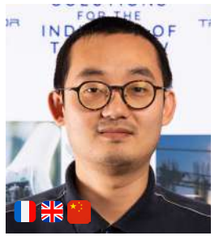

Pascal DE MICHELI


Olivier JAOUEN


Patrice LASNE


Stéphane MARIE


Marc MORENO


Shaojie ZHANG


Nikolay OSIPOV


Mohamed DIAEDDINE


John SWANSON


James FILIPS


Albert «Monty» OSTLIND


Oswaldo RAVANINI

> *Very, very good training. The instructor was welcoming, knowledgeable, and adapted the course to my questions and real-world issues. Two very enjoyable and highly informative days.*

Jean-Philippe EHRET
Forge Simulation Technicial, Stellantis
Training: FORGE® - Heat Treatment of Steel and Aluminium

> *The instructor explained everything very clearly, and the pace of the course, combined with practical exercises, made it easy to progress and learn.*

Maxime POULIQUEN
R&D Simulation Engineer, LISI Aerospace
Training: FORGE® - Using the Python API to Automate Setup and Analysis

> *Special thanks to the lecturer for the clarity and precision in the answers to the questions posed. I will be glad to our subsequent meetings.*

Vitalii ANDREIEV
Leading specialist of the R&D department, Interpipe
Training: THERCAST® - Mastering the software

> *The instructor was able to adapt the training to our requests, thank you.*

Norbert PERROUD
Industrialization Manager, Boellhoff
Training: FORGE®

> *The training and content of the course met our expectations, it was a good training.*

Nandu Sahebrao BACHHAV
Design and Development Engineer, Kirloskar Pneumatic
Training: THERCAST® - Starting with Foundry Casting

> *A very dynamic and pleasant instructor who was able to meet my expectations for this training. Thank you!*

Virginie FOEHRLE
Technologist, CETIM
Training: FORGE® - Mastering the software

Finite Element Modeling Fundamentals

Perfect your use of the finite element method and understand how it is applied to solving large deformation issues. This way you can improve the quality of your results with a better understanding of numerical aspects.

During this course, you will cover the essentials of finite element modeling and apply it to continuum mechanics. This day lets participants broaden their numerical knowledge ready for putting Transvalor software solutions to more intense use, especially FORGE® & COLDFORM®. You will study the fundamentals linked to mechanical and thermal solvers, meshing and remeshing as well as the differences between formulations (Lagrangian, Eulerian or ALE).

Through examples and during the simulation analysis workshops, participants will be able to understand the impact that numerical parameters have on the results obtained.

LEVEL

Beginner - Users wishing to expand their numerical knowledge in the field of finite element simulation and modeling.

PREREQUISITES

There are no prior requirements for this course.

GOALS

- **Knowing the basics of finite element in order to make better use of our products and take advantage from the simulation**
- **Understanding the fundamentals of the finite element method: applied to thermal and mechanical aspects**
- **Gaining a more in-depth knowledge of space and time discretization**
- **Mastering meshing and remeshing principles**
- **Learning how to determine material behavior**
- **Checking the impact of numerical parameters on the end result**

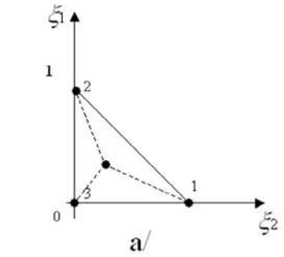
OTHER RECOMMENDED COURSES

- Starting with FORGE®
- FORGE® - Die analysis

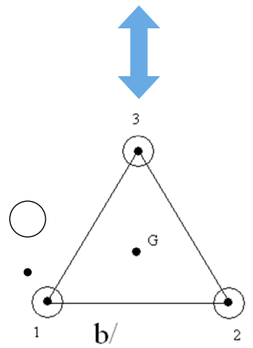
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

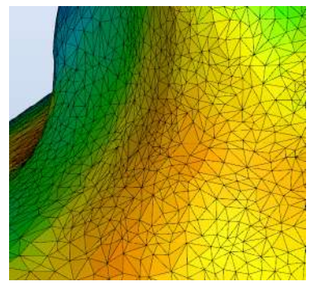
Introduction	• General presentation • Course goals
Numerical simulation	• Why numerical simulation is useful for forming materials • Real-life examples
Introduction to the finite element method	• Finite element method principle • Space and time discretization • Interpolation function • Boundary conditions
Domain discretization and formulation	• Mesh and element types • Mesh surface and density quality criteria • Lagrangian or Eulerian formulation • Remeshing • ALE method
Handling symmetries	• 2D axisymmetric or 2D deformation plane • 3D with symmetry • Impact of symmetries on computation time • Result analysis
Dealing with contact	• Definition and types • Contact distance calculation • Penalized contact • Deformable multibody contact
Mechanical and thermal problem resolution	• Non-linear behavior resolution • Mechanical and thermal formulation • Direct or iterative solver method • Time increment management • Geometry updating • Transfer of fields • Mechanical-Thermal-Metallurgical coupling • Diffusion equation resolution
Material behavior	• Behaviors: visco-plastic, elasto-plastic, plastic and elastic • Thermo-dependence and sensitivity to the deformation rate • Plasticity criteria and flow stress concept • Isotropy and anisotropy
Exercices	• Necessary data • Modeling stages • Applying post-processing to mechanics
Conclusions	• Questions and course assessment



A mini-element, 3 node triangle also called P1+/P1



Pressure degrees of freedom
Velocity degrees of freedom



Transvalor products tetrahedral mesh

Starting with FORGE®

Now is the time to discover FORGE® and its extensive possibilities. After this course, you'll be able to get the most out of the software!

This course will be your first approach to FORGE®. The first day lets you understand all of the data setup steps, the procedure for launching computations and how to analyze the main results. The second day will be devoted to more in-depth analysis of a full panel of results for a better interpretation of physical phenomena.

Key functions will be covered such as die stress analysis, fibering techniques, detecting folds as well as customizing the working environment.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Data setup for forging (punching/closed-die forging)**
- **Launching a single computation and/or a computation sequence**
- **Analyzing simulation results**
- **Identifying and interpreting forging defects (folds, cracks, etc.)**
- **Visualizing fibering and monitoring physical quantities (temperature, pressure, etc.) at any point on the part**
- **Predicting die wear and performing tooling analysis (stress, etc.)**
- **Customizing your working environment**

OTHER RECOMMENDED COURSES

- Finite element modeling fundamentals
- New functionalities of FORGE® NxT 5.0
- Mastering the software

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

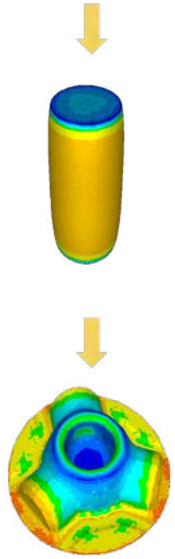
This course is also available for academic participants. More details on page 8.

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals • Review of finite element method
Data setup	• Presentation of the environment • Concepts: stores, processes, cases and stages • Importing geometries • Surface and volume meshes • Definition of kinematics • Rheology, friction, heat exchanges, materials database (FPD) • Object handling (creation, trimming) • Application to a tutorial
Launching computations	• Quick launch • Batch handler and chained simulations
Analyzing results	• Displaying results, the main scalars and vectors • Graphs, animations, VTFx export • Multi-window analysis • Handling animations and exporting results
Data setup for an industrial case	• Launching computation

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Analyzing results from an industrial case	• Interpreting results
Additional functions	• Marking grid and grain flow fibers • Predefined and post-processed sensors • Furnace-to-press initial cooling • Billet cutting, drilling and trimming • Import of tooling assembly
Die analysis	• Uncoupled and coupled approach
Working environment customization	• Creating specific models and data sets (materials, presses, friction, etc.)
Perspectives	• Introduction to advanced notions: induction, heat treatment
Conclusions	• Questions and course assessment



1st: initial cooling phase

2nd: upsetting

3rd: blocker

FORGE®

Starting with FORGE® Hot Metal Forming Essential

FORGE® Hot Metal Forming Essential is suitable for most standard hot forging processes and is specifically designed for closed die forging

The FORGE® Hot Metal Forming Essential module helps you to validate your forging processes, especially regarding the metal flow, the detection of major defects and the forging forces. On day 1, you will learn how to configure the simulation of a process, how to run calculations, and how to analyze its main results. Day 2 will cover additional features for the prediction of defects and the optimization of your manufacturing processes.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Configuration of the simulation of one of your hot forging processes**
- **Analysis of the simulation results**
- **Identification of forging defects (folds, cracks, etc.) and causes**
- **Display of grain flow and monitoring of physical values (temperature, pressure, etc.)**
- **Workspace customization**

OTHER RECOMMENDED TRAININGS

- New functionalities of FORGE® NxT 5.0
- Finite element modeling fundamentals

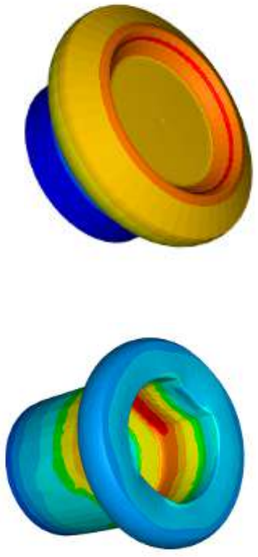
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals • Review of the finite element method
Data setup	• Working environment presentation • Concepts: stores, processes, cases and stages • Import of geometries • Meshing and remeshing procedures • Configuration of kinematics • Rheology, friction, heat transfer, materials database (FPD) • Concept of transition • Application to a tutorial
Computation	• Quick launch • Computation manager and chained simulations
Results analysis	• Display of results, main scalars (reduction, residual stresses, grain size) and vectors • Diagrams, animations, VTFx exports • Multi-window analysis • Handling animations and exporting results
Setup data of industrial case	• Starting the computation

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Analyzing results of an industrial case	• Results analysis
Additional features	• Marking grid and grain flow • Predefined and post-processed sensors • Shearing, blanking and flash trimming of workpiece • Import of tooling assembly
Die analysis	• Uncoupled simulation
Workspace customization	• Creating specific models and data sets (materials, presses, friction, etc.) • Custom keyboard shortcuts
Conclusions	• Questions and course assessment



Temperature evolution during the 3 phases of forging a ring

FORGE®

Starting with FORGE® Hot Metal Forming Premium

The time has come for you to discover FORGE®'s Hot Metal Forming Premium module and its range of possibilities. Thanks to this module, run and analyze your warm or hot forming simulations!

This training is a first approach to using FORGE®'s Hot Metal Forming Premium module. On the first day, you will learn how to configure the data step-by-step, how to launch computations and how to analyze the main results. On the second day, you will learn how to examine a wide range of results more thoroughly to better interpret the physical phenomena at hand.

Key features such as die analysis, grain flow tracking tools or fold detection will be covered.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Knowing how to configure forging simulations (punching / closed die forging)**
- **Analyzing simulation results**
- **Identifying and interpreting forging defects (folds, cracks, etc.)**
- **Viewing grain flow and monitoring physical values (temperature, pressure, etc.)**
- **Predicting die wear and performing die analysis (stress, etc.)**
- **Customizing your working environment**

OTHER RECOMMENDED COURSES

- Finite element modeling fundamentals
- New functionalities of FORGE® NxT 5.0
- Mastering the software

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

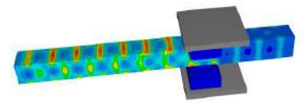
DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals • Review of the finite element method
Data setup	• Working environment presentation • Concepts: stores, processes, cases and stages • Import of geometries • Meshing and remeshing procedures • Configuration of kinematics • Rheology, friction, heat transfer, materials database (FPD) • Concept of transition • Application to a tutorial
Launching computations	• Quick launch • Computation manager and chained simulations
Analyzing results	• Display of results, main scalars and vectors • Diagrams, animations, VTFx exports • Multi-window analysis • Handling animations and exporting results
Data setup for an industrial case	• Starting the computation

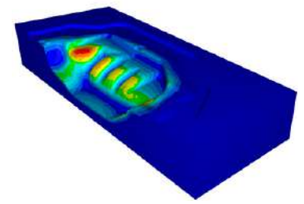
DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Analyzing results from an industrial case	• Interpreting results
Additional functions	• Marking grid and grain flow • Predefined and post-process sensors • Furnace-to-press initial cooling • Shearing, blanking and flash trimming of workpiece • Import of tooling assembly
Die analysis	• Uncoupled and coupled approach
Working environment customization	• Creating specific models and data sets (materials, presses, friction, etc.) • Custom Keyboard Shortcuts
Conclusions	• Questions and course assessment

Temperature evolution



Equivalent strain evolution



Temperature evolution on the lower tool during die analysis with couple approach

Press configuration

New Functionalities of FORGE® NxT 4.1

Do you want to enhance your workflow and make the most of the latest advancements in FORGE®? Learn how to leverage the new features in FORGE® NxT 4.1 and optimize your simulations like never before!

By the end of this course, you will be able to fully utilize the new tools and enhancements in FORGE® NxT 4.1, improving your data configuration and result analysis efficiency. This version introduces key improvements in project management, storage optimization, and analysis tools. The new Result Selector result categorization, while the Storage Manager helps you free up valuable space. Enhancements to the Python scripting environment and new tutorials will help you apply best practices in your simulations. Additionally, the Rotational Symmetry feature significantly reduces computation times, enabling faster and more accurate results.

LEVEL

Intermediate

PREREQUISITES

A first experience with FORGE® software is required.

GOALS

- **Mastering the new features in FORGE® NxT 4.1**
- **Quick review of the new features in FORGE® NxT 4.0 (optional)**
- **Taking advantage of the new features of the interface to configure data and analyze results faster**
- **Increasing the predictive quality of your simulations with more realistic data setups**
- **Gaining experience based on practical case studies**

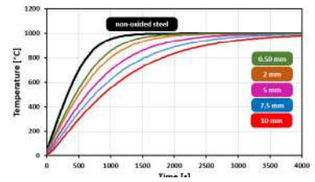
OTHER RECOMMENDED COURSES

- FORGE® - Mastering the software
- FORGE® - Heat treatment of steel and aluminum

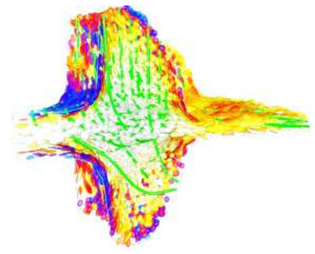
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€540 per training	3 to 8 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Interface	• New content in online help and documentation • Novelties of the Home page • New Tools • Cleaning up data with Storage Manager • Update the version of a project
New features	• Revolution Boundary condition • Cold Stationary Rolling • Meshing improvements • 2D CAD Tool
Result Analysis	• Define the mesh of Marking Grid • Result Selector Customization • New Visualization Options • Visualization of tensors and vectors • Custom legends
Automated Optimization	• Terms of individuals and generation • Definition of a minimized variable • Definition of a constraint • Definition of parameters and operations • Case study • Linked parameters
Material Data Tool	• Graphical User Interface • View and edit JMatPro files, point-to-point files, the FPDBase database, TTT files
Python API	• Introduction to the Python API to setup and analyze automatically your simulation • Python script recorder • TSVPyLab
Heat Treatment	• Model of scale thickness as a function of heating time in the furnace (prediction and damage, influence on friction and wear) • Model of tempered martensite • Materials - Two aluminum alloys - Several TTT files for bimaterial systems • Extended quenchants database • Induction - Thermomechanics in inductors - Export of Lorentz forces - Second-order time integration scheme - Mesh R-adaptation for induction • Self-radiation
Shearing process	• Data setup • Advantages of Phase Field approach
Installation	• New installation Launcher • License server in the Configuration Tools
Conclusions	• Questions and course assessment



Influence of scale thickness on time required to homogenize the temperature at the center of the billet



Visualization of a tensor and a marking grid (cylinders in green)

FORGE®

Mastering the Software

Increasing the scope of your knowledge of FORGE® and especially taking on board the latest functionalities, is what you are looking for!

After this course you will have developed in-depth expertise on the newly redesigned graphic interface, one that speeds up data setup and result analysis. This will bring you enhanced knowledge of the very latest solver functions. You will discover how the multiproject mode works, techniques related to sensors and marking grids as well as how to customize the data stores. Regarding computing, emphasis will be placed on features like 'bi-mesh' in open die forging, anisotropic remeshing and heat treatment processes.

LEVEL

Intermediate - Users looking for support when moving to the 'NxT' version and who are willing to learn its functionalities.

PREREQUISITES

A first experience with FORGE® software is required.

GOALS

- **Performing your data setup in line with the new 'workflow' set-out by the new graphic user interface**
- **Launching 'step by step' or 'entire process' computation**
- **Understanding and analyzing the results**
- **Customizing your working environment**

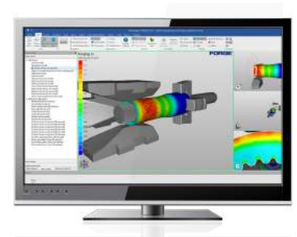
OTHER RECOMMENDED COURSES

- FORGE® - Automatic optimization
- FORGE® - Heat treatment of steel and aluminum
- FORGE® - Die analysis

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Data setup	• Process, case, stage and store concepts • Importing geometries, mesh quality, local and global surface repairs • Mesh parameters: advanced options, mirror, surface export • Object transformation: offset, flipping, gravity adjustment • Flow stress data: stress curves in tabulated format, importing JMatPro files • Local definition of friction or heat transfers • Advanced definition of press kinematics: press definition for rolling, floating die, stiffness • Checking data with 'Setup Status'
Launching computation	• Launching a stage or a complete case • Optimum number of cores for a simulation
Analyzing results	• Identification of usual forging defects: underfill, folds, cracks • Graphs: forces and stresses • Comparing projects using the multi-project view tool
Advanced functionalities	• Sensors: point tracking and defect identification with reverse engineering • Marking grids: monitoring the central area and the sheared surface
Customizing the environment	• Customize data stores and setup • Create your own process or setup stage • Familiarization with the store • Recording macros to automate setup



DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Numerical aspects	• Managing time increments • Remeshing and mesh adaptation techniques • Auto-adaptive anisotropic remeshing • Analytical and smoothed tools
Advanced functionalities	• Forming - Transition: forming in a multiple cavity mold - Implementation: reducer rolling, cross rolling, bending - Self-contact, gas and lubricant trapping - Multi-pass file (MPFx) - Bi-mesh technique • Metallurgy - Phase transformation - Recrystallization and grain size • User routines - General concept - Selecting preset variables
Conclusions	• Questions and course assessment

Die Analysis

How to extend the lifetime of your dies? How to assess temperature changes in your dies? If you want to learn more about die analysis, then this course is for you!

Tooling costs represent up to 15% of the total forging cost. Extending the service life of dies is an ongoing challenge for producing more parts using the same dies and lowering production costs. After this course, you will be able to assess wear, quantify the deformation affecting your dies and predict premature die failure. For hot forging, you will master the steady state approach and you will be able to determine the die temperature after a number of forging operations.
For cold forging, you will know how to model prestressed dies (assembled by interference fit) and optimize shrinkage. Based on industrial examples, this course allows you to improve dies design even prior to manufacturing them!

LEVEL

Intermediate - Users willing to enhance their knowledge of die analysis.

PREREQUISITES

A good grounding in the use of FORGE® is required.

GOALS

- **Simulating die mechanical and thermal behavior (failure, deterioration due to fatigue)**
- **Analyzing and interpreting computation results (wear, stress, etc.)**

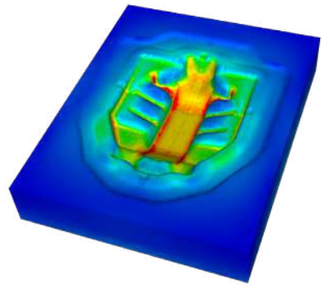
OTHER RECOMMENDED COURSES

- FORGE® - Automatic optimization
- FORGE® - Heat treatment of steel and aluminum

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

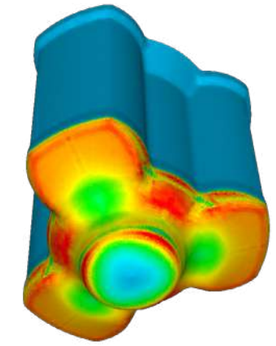
Introduction	• Presentation of Transvalor • Course goals
Rigid tool computations	• Why this kind of computation? • Recommendations for meshing the surfaces of 2D/3D dies • Analysis of the results of forging simulations with 2D/3D rigid dies (abrasive wear, normal stress, etc.)
Uncoupled computations	• Recommendations for volume meshes of 2D/3D dies • Setup • Analyses of additional results on 2D/3D tooling (Von Mises stress, principal stresses)
Coupled computations	• Why this kind of computation? • Defining Master-Master and Master-Slave contacts • 2D/3D setup • Analyzing results (stress, temperature) • Options in coupling computations



Maximum effective stress observed in the fillet radii

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Uncoupled and coupled computations comparisons	• Material flow • Normal stress • Abrasive wear • Von Mises stress • Die deformation • Forging load • Choosing the type of computation
Prestressed dies	• Defining the prestress concept • Deformable die interpenetration in 2D mode • Virtual Interference Fit in 3D (VIF) • Setup • Viewing and interpreting results
Steady state	• Concept • Setup • Viewing and interpreting results
Archard's wear model	• Description of the model • Setup • Comparing results with the 'standard' abrasive wear model
Conclusions	• Questions and course assessment



Abrasive wear on a punch when forming a constant velocity joint

FORGE®

Ring Rolling

Do you want to precisely model ring rolling processes? This FORGE® training is made for you!

Ring rolling is used to produce rings for the aerospace industry (engine components) and the energy industry (wind turbine parts). It is also used by the automotive industry to manufacture bearings, most often at ambient temperature. This two-day course will teach you how to effectively and precisely simulate this process. You will discover how to perform data setup for radial, vertical and radial-axial rolling, from creating the ring to configuring the process while taking account of the rolling process kinematics.

You will also discover sensor and marking functions.

LEVEL

Intermediate - Users willing to enhance their knowledge in ring rolling simulation

PREREQUISITES

A good basic knowledge of FORGE® use is required.
Have completed the 'Starting with FORGE®' training or equivalent course.

GOALS

- **Data setup for ring rolling, radial and radial-axial cases**
- **Using the actual kinematics of the process for circular, radial and radial-axial rolling data setup**
- **Analyze the main results (shape, strain, defects, stresses, etc.)**

OTHER RECOMMENDED COURSES

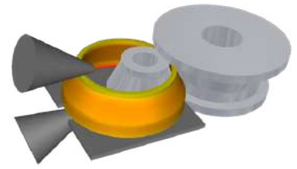
- FORGE® - Automatic optimization
- FORGE® - Heat treatment of steel and aluminum
- FORGE® - Die analysis

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Data setup - generic radial ring rolling	• Creating a ring or importing its geometry directly into FORGE® • Creating 3D tool geometry • Generating structured ring meshing with an ALE meshing method (Arbitrary Lagrangian Eulerian) • Generating meshing for a non-axisymmetric ring • Reviewing remeshing parameters • Material file • Positioning tools and table • Configuring process parameters
Data setup - generic vertical ring rolling	• Determining gravity axis • Defining centering rollers • Configuring simulation parameters
Functions	• Sensors • Marking grid
Result analysis	• Predicting ring shape • Checking the correct filling for shaped rings • Predicting defects (i.e. fish tail) • Temperature distribution and required reheat • Microstructure evolution (grain size, etc.) • Assessing torques and maximum forces on dies

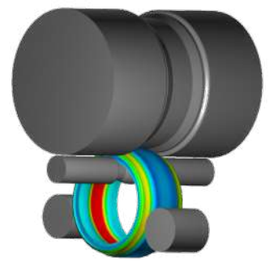
Ring rolling with temperature evolution



Radial-axial circular rolling

DAY 2 > 8.30 a.m. to 12.00 p.m.

Radial-axial ring rolling	• Schematic view of elements to be entered • Configuration of standard rolling mill: ring enlargement speed according to its outer diameter. • Configuration of standard rolling mill: mandrel speed according to the outer diameter of the ring. • Configuration of upper roller advanced control
Standard control: Ring enlargement speed according to its outer diameter	• Data setup • Starting computation • Result analysis: piloting curves
Conclusions	• Questions and course assessment



Vertical circular rolling

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

FORGE®

Rolling Flat and Long Products

If you want to precisely model rolling processes of long and flat products, then this is the course for you!

Rolling is used for the production of long products (profiles or tubes) or flat products (plates or sheets) formed from various materials (steel, aluminum or titanium alloy). With FORGE®, it is possible to simulate these two types of manufacturing processes as well as tube rolling used in the nuclear or oil industry. There are two types of approaches. The 'incremental' approach makes it possible to check the conformity of the rolled profiles, detect defects of the centering or torsion type at the entry of the bars and determine the volume of drop-offs. The 'stationary iterative' approach used for hot rolling makes it possible to quickly simulate the rolling mill and evaluate inter-cage tensions. During this training, you will discover how to set up data for simulations of rolling in the incremental approach as well as in the stationary iterative approach.

You will also know how to identify defects of the centering type. You will thus be able to effectively and accurately simulate the rolling processes.

LEVEL

Intermediate – Users willing to reinforce their skills in simulating hot rolling of long and flat products.

PREREQUISITES

Good basic knowledge of FORGE® use is required.

Have completed the 'Starting with FORGE®' training or its equivalent.

GOALS

- **Data setup for rolling cases with an incremental approach**
- **Analyzing and interpreting computation results (deformation, change in temperature, etc.)**
- **Identifying defects of the centering or torsion type at the entry of the bars**
- **Understanding the stationary approach implemented in FORGE®**
- **Validating the characteristics of the rolling mill, for example the required number of roll stands, the initial inlet speed, the reduction rate per pass, the temperature and the rotational speed of the cylinders, the friction conditions, etc.**

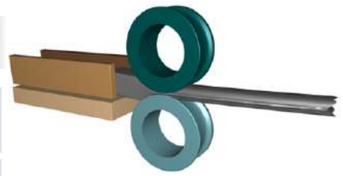
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

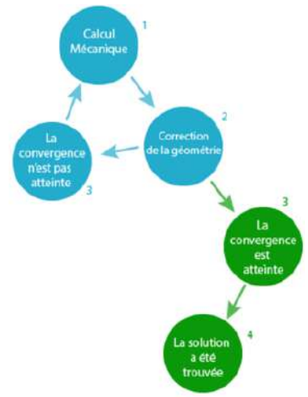
Introduction	• Presentation of Transvalor • Course goals
Data setup incremental rolling	• Creating or importing geometry directly into FORGE® • Importing geometries • Generating a mesh: definition of Bi-meshing • Reviewing remeshing parameters • Material file • Positioning the tools • Configuring the kinematics • Defining the axis of gravity
Functions	• Sensors • Marking grids
Report analysis	• Deformation and temperature change • Shape of the product at each instant of the process • Forces and torques exerted on the rolling cages • Defects of the centering or torsion type at the entry of the bars • Volume of drop offs
Computation of the regime established by the stationary iterative method	• Principle of the method • Data setup - Initial geometry - Extrusion option - Direction of rolling - Manually defining lengths - Manually selecting the initial plane - Meshing of the geometry - Definition of the kinematics of the rollers - Direction of flow of the material - Storage frequency (iterations) - Number of iterations in the computation • Analysis of the results on the final computation increments - Temperature, equivalent stress - Inter-cage tensions

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

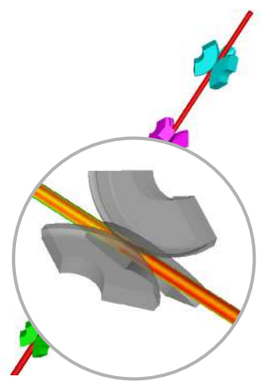
Data setup of several cases	• Sequenced computation • Computation with separated roll stands • Computation with cooling between passes • Sequenced computation with meshing interface groups
Comparisons of incremental & stationary iterative approach	• Analysis of the product in progress and after deformation • Computation time • Limitations
Customer's process	• Data setup • Starting computation • Report analysis
Conclusions	• Questions and course assessment



Rolling process with an incremental approach



Rolling process with an incremental approach



Rolling process with a stationary iterative approach

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

FORGE®

Electrical Upsetting

Do you want to optimize your electrical upsetting process and configure your production machine correctly? This training is made for you!

At the end of this training, you will be able to configure an electrical upsetting simulation and analyze the results specific to this process. After a review of the fundamental theory, you will study the key points of data configuration: meshing parameters in the areas of interest, definition of current input and output. The course will then focus on the analysis of the result fields relevant to electrical upsetting.

The second day will be devoted to the simulation of your process. This training will give you the knowledge needed to optimize and configure your processes correctly and obtain the perfect preform.

LEVEL

Intermediate - Users willing to apprehend the capabilities of FORGE® in electrical upsetting and be able to configure simulations and analyze results.

PREREQUISITES

A good basic knowledge of FORGE® software is required.
Have completed the 'Starting with FORGE®' training or equivalent course.

GOALS

- **Mastering the graphical user interface**
- **Understanding the physical phenomena involved in electrical upsetting**
- **Configuring an electrical upsetting simulation: mesh, current**
- **Understanding and predicting with accuracy:**
  - **Thermal data: heating, temperature evolution, etc.**
  - **Electrical data: current density, electrical potential, Joule heat power, etc.**
- **Kinematics data: anvil motion, direction, height, velocity, etc.**
- **Shape obtained during preforming**
- **Continuity of the marking grid obtained after the final forging operation**

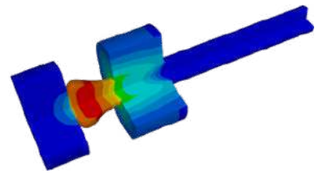
OTHER RECOMMENDED COURSES

- FORGE® - Automatic optimization
- FORGE® - Heat treatment of steel and aluminum

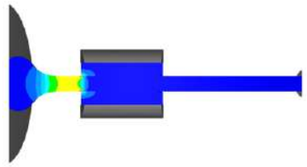
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Modeling	• Law of charge conservation • Heat equation • Properties: resistivity, conductivity • Coupling with metallurgical aspects
Setup data of industrial case	• Import of geometries • Parameters of material data - Mechanical properties - Electrical properties - TTT data • Meshing of different objects - Adaptation of the mesh in areas of electrical contact and high deformation - Remeshing criterion • Kinematics parameters of the rolls • Boundary conditions - Input and output current - Electrical contact • Global parameters of simulation - Friction, heat or electrical transfer - Storage - Time step
Features	• Marking grids • Sensors
Results analysis	• Temperature evolution • Study of stress and strain fields • Analysis of current distribution • Current density



Evolution of the temperature during the electro-upsetting process



Current density mapping

DAY 2 > 8.30 a.m. to 12.00 p.m.

Customer case	• Setup • Starting the computation • Results analysis
Conclusions	• Questions and course assessment

FORGE®

Using the Python API to Automate Data Processing and Analysis with FORGE®

Would you like to increase your productivity? Get to know the tools available for automating data preparation and result analysis.

The time you spend creating simulation projects and analyzing calculation results is often significant. The Python API can help you to reduce the time you spend on these repetitive tasks.

Python scripts will enable you to create projects, run calculations, and analyze results with maximum automation. Specifically, you'll be able to create your own custom processes, manage your objects, import and generate meshes, define all types of parameters, automatically generate calculation variants, display only the results you need in the optimal configuration, export your results, and much more. This new feature offers numerous advantages: time savings, automation, project security, and interconnection with your other digital tools.

Whether you wish to automate all or part of your operations, define static or dynamic data, or even call a third-party application from FORGE®, everything is possible and imaginable. This training is made for you!

LEVEL

Intermediate

PREREQUISITES

- **Have some experience with TRANSVALOR software. You should be familiar with using the NxT interface.**
- **Have basic experience in coding with the Python language.**

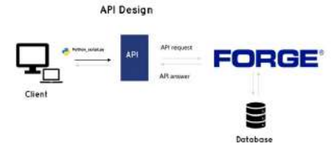
GOALS

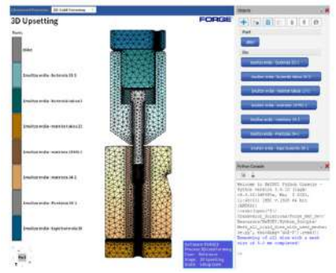
- **Discover what the Python API can offer you in terms of automation.**
- **Take advantage of the new interface features to speed up data preparation and result analysis.**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8:30 a.m. to 12:00 p.m. & 1:30 p.m. to 5:00 p.m.

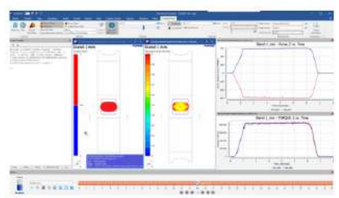
Introduction	• Presentation of Transvalor • Training objectives
Why this API?	• Context • Previous tools made available • Prerequisites • Current limitations • Perspectives
Structure of Scripts	• How the Python console works • Vocabulary (concepts of classes, functions, and arguments) • Links between various objects, simulations, attributes, properties
Data Preparation Scripts	• Understanding existing scripts • Working on a complete data preparation script • Coding your own data preparation script
Analysis Scripts	• Understanding existing scripts • How to adapt them to your needs? • Coding your own result analysis script
Documentation	• Explanation of the documentation available to code your own data preparation and analysis scripts • Python Help





DAY 2 > 8:30 a.m. to 12:00 p.m. & 1:30 p.m. to 5:00 p.m.

Hands-on Practice on Data Preparation Automation	• Definition of the problem and the steps to automate • Creation of the automation script
Hands-on Practice on Result Analysis	• Description of the analysis steps • Creation of the automation scripts
Perspectives	• What possibilities are there for going further and fully automating data preparation and analysis? • Variable parameters, custom interfaces, command-line execution
Conclusion	• Various questions and training evaluation



FORGE®

NEW

Available only Q4 2026

New Functionalities of FORGE® NxT 5.0

Do you want to further increase your productivity? Learn how to use the new features in FORGE® NxT 5.0. Training available Q4-2026

The training on FORGE® NxT 5.0 will guide participants through the major enhancements of this release, including new remeshing capabilities, improved thermal and thermochemical treatments, optimization tools, advanced analysis options, and various process-related improvements. The goal is to ensure users can efficiently leverage all updates introduced in this new version.

LEVEL

Intermediate

PREREQUISITES

A first experience with FORGE® software is required.

GOALS

- **Mastering the new features in FORGE® NxT 5.0**
- **Taking advantage of the Multi Pass file creator to speed up your setup time in Open Die forging**
- **Gaining experience based on practical case studies**

OTHER RECOMMENDED COURSES

- FORGE® - Mastering the software
- FORGE® - Heat treatment of steel and aluminum

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.30 p.m.

Introduction	• Presentation of Transvalor • Course goals
Induction	• Automatic isotropic and anisotropic remeshing • Steady-state capabilities • Double-frequency handling
Furnace Heating with Radiation	• Integration of furnace components • Kinematic considerations • Enhanced radiation modeling
Open Die and Incremental Processes	• Visualization of manipulators • Dedicated kinematic option • MPFx interface improvements
Automatic Measurement Tools	• Introduction of automated measurement functionality
Surface Treatments	• Updated material data • Simplified configuration workflow
Mesh Optimization & Topology Healing	• Surface Mesh Optimizer • Smooth operations for topology repair
Fatigue Analysis & Material Files	• Python-based fatigue analysis • New material files for multiple applications
API Enhancements	• API improvements • Forging routes • Shape comparison tools • PID controllers • Laser and depth sensor support
Conclusion	• Questions and course assessment

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

FORGE®

Heat Treatment of Steel and Aluminum

How to anticipate mechanical and metallurgical properties after heat treatment? How to predict final hardness and residual stresses? Simulate a complete sequence? It's time to start learning!

This course covers the key points in heat treatments applied to forged steels and aluminum alloys. After this course, participants will know how to perform martensitic quenching, carburizing, austenitization, precipitation hardening of aluminum, how to work from TTT or CCT diagrams and especially, how to fully analyze all of the computation results (phase, hardness, stress transformation, etc.). This way you will be able to predict the final properties of the parts and their metallurgy, as part of an overall computation comprising forging and the related heat treatment.

LEVEL

Advanced - Users seeking to reinforce their expertise in simulating the heat treatments typically used for forging processes.

PREREQUISITES

A knowledge of material science or metallurgy is required.
A good grounding in the use of FORGE® is required.
Have completed the 'Starting with FORGE®' or equivalent course.

GOALS

- **Defining process conditions so as to achieve the best mechanical properties: increasing superficial hardness, temperature resistance, ductility and mechanical resistance and residual stress**
- **Being able to predict changes in the microstructure during heating or cooling**
- **Observing the influence of carbon diffusion over the surface hardness variation**
- **Determining the ideal treatment conditions to reduce cycle times**

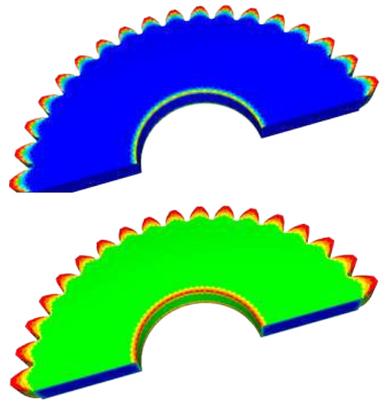
OTHER RECOMMENDED COURSES

- FORGE® - Induction forge heating and heat treating

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

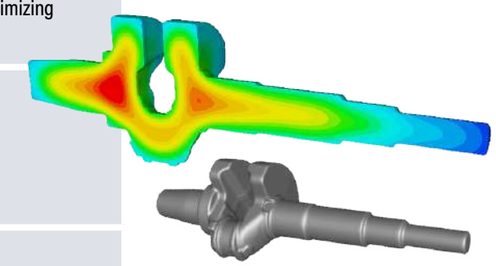
Introduction	• Presentation of Transvalor • Course goals
General	• Fe-Fe3C diagram • Reminders on TTT and CCT diagrams
Modeling quenching	• Producing an approximation of the CCT diagram from the TTT diagram • Exercise: generating the TTT and CCT diagrams with FORGE® • Coupled multi-physical model • Determining the heat transfer coefficient thanks to the optimization module • Exercise: modeling quenching in various baths (Houghton oils, polymer solutions)
Heat treatment modeling for aluminum alloys	• Tempering modeling by Quench Factor Analysis model • Precipitation hardening of aluminum alloys (age hardening) by Shercliff-Ashby model



Martensite and hardness during carburizing of a gear

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Austenitization	• Generating a material file made of perlite and ferrite • Defining the heating cycle • Analyzing the results: phase transformation, austenite content, optimizing the heating cycle
Carburizing	• Generating the anisotropic mesh • Defining the carbon content • Generating the TTT diagram based on the carbon content • Result analysis: carbon content, phase transformation, hardness
Tempering	• Model used to compute hardness evolution • Exercise: modeling tempering after quenching • Analyzing results: residual stresses, hardness, etc.
Other	• Using JMatPro® material datasheets
Conclusions	• Questions and course assessment



Temperature evolution during oil quenching

FORGE®

Induction Forge Heating and Heat Treating

What is the best design for an inductor? What frequency should I apply? What is the impact on part metallurgy? You need to master your induction heating to control cross section temperature profiles and to optimize the power used by the generators?

After some theoretical refreshers, you will study how to implement simulated induction heating with a static billet or one that moves through the inductor. You will be able to analyze the influence of the inductor's design, of the presence of concentrators and test the impact of the various generator parameters. Then you will go on to look at heating for heat treatment placing the emphasis on metallurgical aspects, predicting the area that is thermally affected and the use of static or mobile inductors. In this way, you will understand the thermal and electromagnetic phenomena for optimizing heating conditions.

LEVEL

Advanced - Users willing to improve their expertise in simulating induction heating applied to forging or heat treatment.

PREREQUISITES

A knowledge of material science or induction technology.
A good grounding in the use of FORGE® is required.
Have completed the 'Starting with FORGE®' training or equivalent course.

GOALS

- **Understanding the theoretical models implemented for the induction process: Maxwell's equations, thermal solver and coupling algorithm**
- **Knowing how to define and modify the various process parameters that may influence heating efficiency (intensity and frequency of the incoming current)**
- **Mastering the mesh immersion technique to generate the overall mesh (air+billet+inductor)**
- **Simulating induction heating prior to forging or heat treatment**
- **Determining the heat penetration depth and assessing the size of the heat affected area**
- **Avoiding defects linked to non-uniform temperature profiles and improving the quality of the manufactured part**
- **Optimizing generator parameters to reduce energy costs and increase productivity**

OTHER RECOMMENDED COURSES

- FORGE® - Automatic optimization

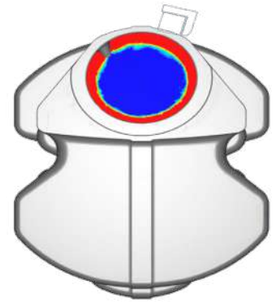
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

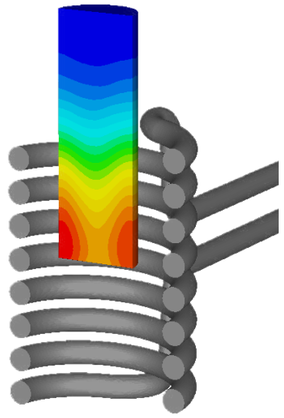
Introduction	• Presentation of Transvalor • Course goals
Modeling	• Maxwell's equations • Thermal equations • Couplingthermal and electrical equations equations • Properties: electrical resistivity, magnetic permeability, skin thickness, etc. • Coupling with metallurgy
Induction heating (Tutorial case)	• Electromagnetic computation - Defining of the input and output current - Definition of the mesh for the 'Room mesh' environment - Creation of the global mesh - Mesh suited to the skin thickness - Checking the quality of the global mesh • Thermal computation - Defining the billet - Parameters of the simulation: storage, heating time, coupling with electromagnetic computation • Starting computation - Chaining computations by activating the In Loop option - Chained induction and forming simulation • Analyzing results - Evolution of temperature, magnetic fields, magnetic potential, induced current - Display a field in an isovolume

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

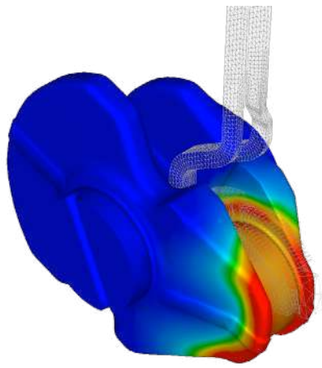
Symetry	• How to model symmetry • Boundary conditions of Maxwell's equations
Induction with movement of the part or the inductor	• Continuous or step-by-step motion • Application: a multiple of billets moving inside the inductor
Induction treatments	• Kinematics applied to the inductor and/or the concentrators • Exercise: induction heating followed by quenching or a hardening process • Analysis of the heat affected area • Change in phase and improvement of the mechanical properties (surface hardness, etc.)
New functions	• Self-induction • Various types of control: constant (RMS) or variable potential, constant (RMS) or variable current, use of electrical circuits linking potential and current on inductor (generators, RLC circuits, etc.). • Stationary induction fields • Multi-inductors with the same frequency
Conclusions	• Questions and course assessment



Austenite during induction



Temperature of the billet during induction heating



Courtesy of Stellantis & EFD Induction

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

FORGE®

Automatic Optimization

You need to optimize your process? Discover the solutions for identifying an ideal billet for complete and flawless filling or a tooling design that minimizes stress. No more long and boring trial plans. Choose automatic optimization!

FORGE® automatic optimization is an extremely effective tool. Thanks to its genetic algorithm, you can automatically vary an entire range of process parameters (billet dimensions, tool shapes, billet positioning, etc.). This way you will be able to identify the best conditions for optimally forming your part. In addition, you will study parameter identification techniques using reverse engineering as well as couplings with CAD environments for designing blockers and tooling.

LEVEL

Advanced - Users willing to master automatic optimization principles so as to achieve reliable and efficient use.

PREREQUISITES

A good grounding in the use of FORGE® is required.

A perfect knowledge of the process is essential to determine what you want to optimize and how.

You need to understand chaining and transitions.

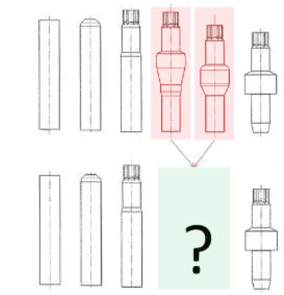
GOALS

- **Understanding optimization concepts and terms: genetic algorithm (individuals and generations), minimizable, constraint and parametered action**
- **Optimizing industrial processes**
- **Reducing billet volume and finished part faults**
- **Identifying parameters by reverse engineering**
- **Coupling optimization with CAD (PTC Creo Parametric, SolidWorks and Catia)**

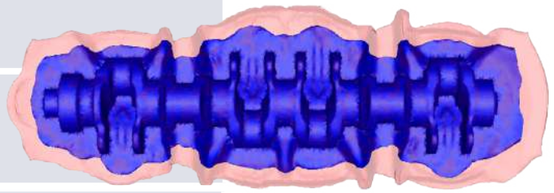
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Reminders on chaining	• Chaining • Transitions • 2D & 3D chaining
General concepts	• Automatic optimization • Individuals and generation • Definition of a minimizable • Definition of a constraint • Definition of parametered actions
Optimizing billet volume	• Setup • Analyzing optimization results
Optimizing a 3D rolled blocker	• Setup • Launching computation • Analyzing optimization results
Determining a friction coefficient	• Defining the simulation • Setup • Interpreting the results
Determining rheology by reverse analysis	• Defining the simulation • Setup • Interpreting the results



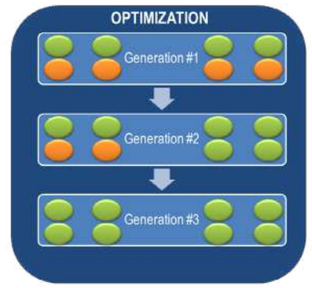
Optimization of a forging sequence



Original design (in red) vs Optimized design (in blue)

DAY 2 > 8.30 a.m. to 12.00 p.m.

Determining a heat transfer coefficient	• Defining the case • Setup • Interpreting the results
Coupling optimization with CAD	• Coupling concept • Example of use with PTC Creo Parametric • Example of use with SolidWorks
Innovation	• Optimization with discrete values • Optimization with Design Of Experiment
Conclusions	• Questions and course assessment



Genetic algorithm

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

FORGE®

Developing Your Own User Routines

How to introduce your own rheological models, friction laws, damage criteria? This is the purpose of user routines.

FORGE® software offers the possibility to access to a certain number of Fortran routines that the user can modify as desired. This functionality allows engineers to enhance their models thanks to the implementation of new models and user variables. The second day will be devoted to coding your own user routines. You will also generate your user solver.

LEVEL

Advanced - Users willing to integrate their own Fortran routines in FORGE® solvers.

PREREQUISITES

Substantial experience with FORGE® is required as well as basic programming skills.

GOALS

- **Understanding of the various user routine categories**
- **Compiling and creating dynamic libraries**
- **Implementing rheological law, friction law, damage criteria models**
- **Calculation of additional variables that are not mentioned among the results calculated by the standard solver**

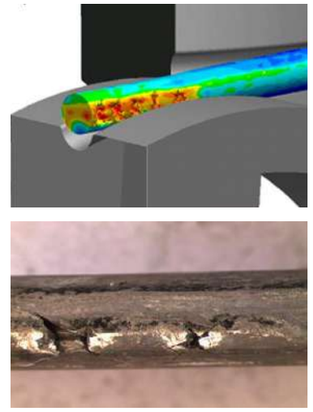
OTHER RECOMMENDED COURSES

- FORGE® - Automatic optimization
- FORGE® - New functionalities of FORGE® NxT 5.0

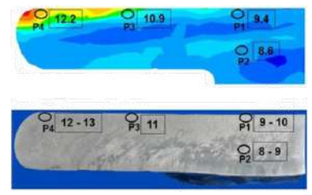
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
General	• Concept & origins • DLL dynamic library concept • MS Visual Studio compilers • Directory structure • Saving a user solver
User routines	• General concepts: - State variables - Dynamic variables - Reserved names • Differents law types: - LOIF laws: calculation of user variables in free surface or in contact with tools - LOIV laws: calculation of user variables in object-specific volume - Subtypes: Util, Evol, Meca, Intg, Rheo, Sig0 et Gsiz • Application with coding exercises in Fortran 90 - Wear model computation on dies (LoiF_Util) - Implementation of custom damage criteria (LoiV_Util) - Calculation of stress tensor in cylindrical coordinate system (LoiV_Meca) - Calculation of strain tensor (LoiV_Intg) - Calculation of mean cooling rate (Loiv_Intg) - Implementation of model for friction evolution (Loif_Evol) - Implementation of model for heat transfer evolution (Loif_Evol) - Programming of model for material behavior (Zener-Hollomon, Johnson-Cook…) • Concrete cases exploitation - Data setup and practical case launch - Results analysis • Going further - User functions - Special preprogrammed functions



Damage criterion Lemaitre
Courtesy of UGITECH



Grain size distribution with Tecnalia's consent

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Client user routine	• Application • Coding and adding user routine • Compiling and creating solver • Launching calculation and viewing results
Conclusions	• Questions and course assessment

COLDFORM®

Starting with COLDFORM®

A simulation solution dedicated to cold forming processes. With COLDFORM®, be ready to simulate your cold forming processes and get the most out of the software!

This course will be your first approach to COLDFORM® software. The first day lets you understand all of the data setup steps, the procedure for launching computations and how to analyze the main results. The second day will be dedicated to a more in-depth analysis of notions such as forming defect detection, dimensional checks (spring-back) and residual stresses.

To better interpret physical phenomena, key functions will also be covered such as Die stress analysis (with or without interference fit), grain flow fibers and point tracking techniques.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Data setup for a cold forming case study using a multi-station process**
- **Launching a single computation and/or a computation sequence**
- **Analyzing simulation results**
- **Identifying and interpreting forming defects (folds, cracks, etc.)**
- **Measuring spring-back and quantifying residual stresses**
- **Viewing grain flow and monitoring physical quantities (temperature, pressure, etc.) at any point on the part**
- **Predicting stress states in tooling or in pre-stressed assemblies**
- **Customizing your working environment**

OTHER RECOMMENDED COURSES

- Finite element modeling fundamentals
- New functionalities of COLDFORM® NxT 5.0

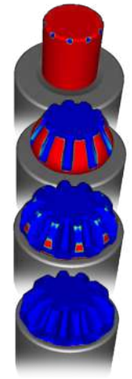
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

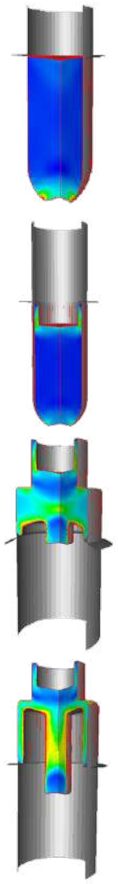
Introduction	• Presentation of Transvalor • Course goals
Data setup	• Presentation of the environment: concepts of stores, processes, cases, stages • Importing geometries • Surface and volume meshes • Definition of the kinematics • Review of rheology, friction and heat transfer • Materials database (FPD) / creating a cold forming file with YS, UTS and Elongation at break • Working on objects (creation, trimming, 2D/3D transfer) • Setting up a tutorial (a screw): cold forming in 2D and 3D modes
Launching computations	• Start, stop, information • Simulation chaining
Analyzing results	• Displaying results, the main scalars and vectors, spring-back • Curve lines, animations, VTFx export
Customer's process	• Setup • Starting a computation

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Analyzing results from a customer case	• Interpreting results
Functions	• Marking grid and grain flow • Pre defined and post processes sensors • Assembly import
Die analysis	• Uncoupled and coupled approach
Advanced notions	• Environment customization: models, materials, presses, friction, etc.
Conclusions	• Questions and course assessment



Cold forming a bevel gear with contact



Cold forming a valve cage on an automatic transfer press

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

COLDFORM®

New Functionalities of COLDFORM® NxT 4.1

Do you want to enhance your workflow and make the most of the latest advancements in COLDFORM®? Learn how to leverage the new features in COLDFORM® NxT 4.1 and optimize your simulations like never before!

By the end of this course, you will be able to fully utilize the new tools and enhancements in COLDFORM® NxT 4.1, improving your data configuration and result analysis efficiency. This version introduces key improvements in project management, storage optimization, and analysis tools. The new Result Selector result categorization, while the Storage Manager helps you free up valuable space. Enhancements to the Python scripting environment and new tutorials will help you apply best practices in your simulations. Additionally, the Rotational Symmetry feature significantly reduces computation times, enabling faster and more accurate results.

LEVEL

Intermediate

PREREQUISITES

A first experience with COLDFORM® software is required.

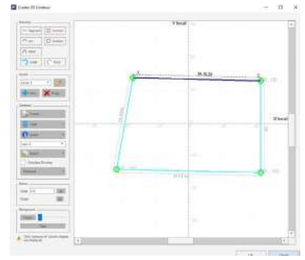
GOALS

- **Mastering the new features in COLDFORM® NxT 4.1**
- **Quick review of the new features in COLDFORM® NxT 4.0 (optional)**
- **Taking advantage of the new features of the interface to configure data and analyze results faster**
- **Increasing the predictive quality of simulation with more realistic data setups**
- **Gaining experience based on practical case studies**

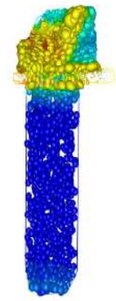
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€540 per training	3 to 8 people

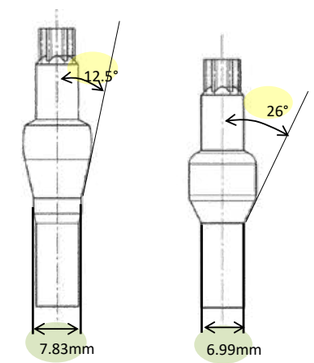
DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Interface	• New content in online help and documentation • Novelties of the Home page • New Tools • Cleaning up data with Storage Manager • Update the version of a project
New features	• Cold Stationary Rolling • Meshing improvements • 2D CAD Tool
Result Analysis	• Define the mesh of Marking Grid • Result Selector Customization • New Visualization Options • Visualization of tensors and vectors • Custom legends
Automated Optimization	• Terms of individuals and generation • Definition of a minimized variable • Definition of a constraint • Definition of parameters and operations • Study case • Linked parameters
Material Data Tool	• Graphical User Interface • View and edit JMatPro files, point-to-point files, the FPDBase database, TTT files • 70 New Material files for Cold Forming • Material Data Export from JMatPro for Nitriding and Carbonitriding
Python API	• Introduction to the Python API to setup and analyze automatically your simulation • Python recorder • User interaction • Real time Output Display
Shearing process	• Data setup • Advantages of Phase Field approach
Installation	• New installation Launcher • License server in the Configuration Tools
Conclusions	• Questions and course assessment

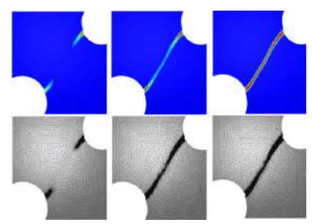


2D CAD





Optimization of tool geometry



Simulation of crack initiation and propagation

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

COLDFORM®

Mastering the Software

Enhance your knowledge with COLDFORM® and master the latest software features!

Thanks to this training, you will develop expertise on the newly redesigned graphic interface, which speeds up data setup and result analysis, and you will have a better knowledge of the latest solver features.
You will discover how to use the multi-project mode, customized 'data stores' and advanced sensor and marking techniques.

After this training, you will also know how to identify defects in order to better analyze and understand the results.

LEVEL

Intermediate - Users looking for support when moving to the NxT version and willing to learn all of its functions.

PREREQUISITES

A first experience with COLDFORM® software is required.

GOALS

- **Performing your data setup according to the 'workflow' set out by the new graphic interface**
- **Launching 'step by step' or 'full process' computation**
- **Understanding and analyzing the results**
- **Customizing your working environment**

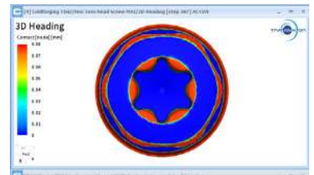
OTHER RECOMMENDED COURSES

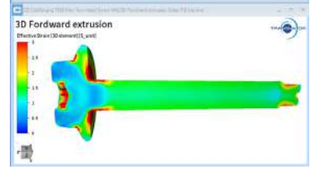
- COLDFORM® - Die analysis

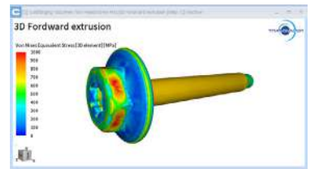
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2250 per training	1 to 3 people

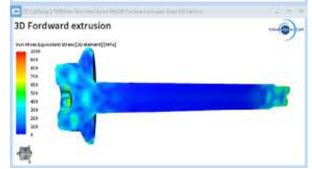
DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Data setup	• Process, case, stage and store concepts • Importing geometries, meshing quality, local and global surface repair • Meshing parameters: advanced options, mirror, surface export • Object transformation: offset, flipping, gravity adjustment • Global switch from 2D to 3D • Rheological data: cold rheology generator, stress curves in tabulated format, anisotropic behavior • Defining friction or local heat transfer • Data verification with 'data setup status'
Launching computations	• Launching stages or a full simulation • Optimum number of cores for a simulation • Computation manager • Computation report
Result analysis	• Identifying common defects: underfilling, folds, cracks • Graphs: energy and forces • Comparing projects with multi-windows viewing tool • Animation of one or more process stages • Customizing working environment
Advanced functions	• Predefined and post-processed sensors • Marking grid: tracking central area and sheared surface • Identification of piping effect by under-skin marking • Identification of the flash by reverse engineering
Customizing environment	• Customizing the store manager and the data setup • Creating your data setup case or stage • Recording macros for automating data setup • One-click sharing









Multi-window analysis

DAY 2 > 8.30 a.m. to 12.00 p.m.

Numerical aspects	• Managing time steps • Remeshing techniques and meshing adaptation • Analytical and smoothed die
Advanced functions	Forging • Transition: forging in a multiple cavity matrix • Self-contact, gas and lubricant trapping User routines • General concept • Selection of predefined variables
Conclusions	• Questions and course assessment

Forging sequence
Courtesy of Miguel Altuna Institute

COLDFORM®

Die Analysis

To develop your cold forming processes, you need to be able to address issues relating to dies. How to extend the lifetime of your dies? How to estimate the level of stress and assess wear? How to size a pre-stressed interference fit assembly? If you want to learn more about cold forming die analysis, then this course is for you!

To reduce the cost of parts and speed up production cycles, there is growing interest in Die analysis in the cold forming field. After this course, participants will know how to setup, analyze and interpret their computations on the dies. A number of computation modes will be covered (rigid, uncoupled, coupled) and the advantages of each method will be detailed. On the second day, the emphasis will be on implementing computation with pre-stressed dies and on the 'Virtual Interference Fit' technique that is specific to 3D simulations. The proposed exercises allow precisely understanding the computation results (equivalent stress, main stress, abrasive wear, contact time, etc.).
In this way, you will have a full panel of recommendations to quickly and reliably interpret issues relating to dies.

LEVEL

Intermediate - Users willing to enhance their knowledge of die analysis applied to cold forming.

PREREQUISITES

A good grounding in the use of COLDFORM® is required.
Have completed the 'Starting with COLDFORM®' training or equivalent course.

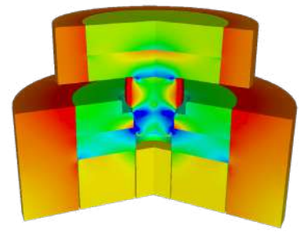
GOALS

- **Importing assembly files in CAD format (*.stl, *.step, etc.)**
- **Working with prestressed dies and assessing interference fit**
- **Simulating die mechanical and heat behavior (damage, fatigue)**
- **Analyzing and interpreting results (wear, stress, etc.)**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2250 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

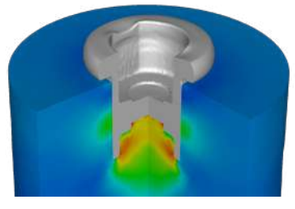
Introduction	• Presentation of Transvalor • Course goals
Rigid tool computations	• Why this kind of computation? • Recommendations for surface meshes in 2D/3D dies • Results available from the simulation for forming rigid 2D/3D dies (abrasive wear, normal stress, etc.)
Uncoupled computations	• Recommendations for volume meshes in 2D/3D dies • Setup • Analyses of additional results on 2D/3D tooling (Von Mises stress and principal stress)
Coupled computations	• Why this kind of computation? • Defining Master-Master and Master-Slave contacts • 2D/3D setup • Analyzing results (stress, temperature) • The various options in coupled computations
Comparisons between uncoupled and coupled computations	• Material flow • Normal stress • Abrasive wear • Von Mises stress • Die deformation • Forming load • Choosing the type of computation



Hoop stress in an assembly of prestressed dies

DAY 2 > 8.30 a.m. to 12.00 p.m.

Prestressed dies	• Defining the prestress concept • Deformable die interpenetration in 2D mode • Virtual prestress in 3D mode (VIF) • Setup • Viewing and interpreting results
Conclusions	• Questions and course assessment



Cold forming a fastener made of stainless steel - Equivalent stress distribution

COLDFORM®

Using the Python API to Automate Data Processing and Analysis with COLDFORM®

Would you like to increase your productivity? Get to know the tools available for automating data preparation and result analysis.

The time you spend creating your simulation projects and analyzing the results of your calculations is generally substantial. The Python API can help you to reduce the time you spend on these repetitive tasks.

Python scripts will allow you to create projects, run calculations, and analyze results with maximum automation. Specifically, you will be able to create your own custom process, manage your objects, import and generate meshes, define all types of parameters, automatically generate calculation variants, display only the results you need in the optimal configuration, export your results, and much more. This new feature offers numerous benefits: time savings, automation, project security, and interconnection with your other digital tools.

Whether you want to automate all or part of your operations, define constant or dynamic data, or even call a third-party application from COLDFORM®, everything is possible and imaginable. This training is made for you!

LEVEL

Intermediate

PREREQUISITES

Have some experience with TRANSVALOR software. You should be familiar with using the NxT interface.
Have basic experience in coding with the Python language.

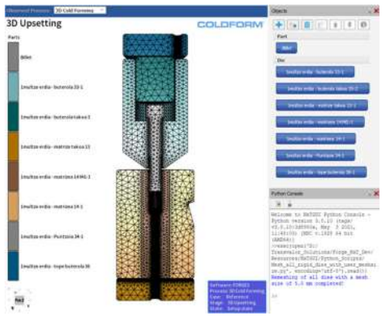
GOALS

Discover what the Python API can offer you in terms of automation.
Take advantage of the new interface features to speed up data preparation and result analysis.

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8:30 a.m. to 12:00 p.m.& 1:30 p.m. to 5:00 p.m.

Introduction	• Presentation of Transvalor • Training objectives
Why this API?	• Context • Previous tools made available • Prerequisites • Current limitations • Perspectives
Structure of Scripts	• How the Python console works • Vocabulary (concepts of classes, functions, and arguments) • Links between various objects, simulations, attributes, properties
Data Preparation Scripts	• Understanding existing scripts • Working on a complete data preparation script • Coding your own data preparation script
Analysis Scripts	• Understanding existing scripts • How to adapt them to your needs? • Coding your own result analysis script
Documentation	• Explanation of the documentation available to code your own data preparation and analysis scripts • Python Help



DAY 2 > 8:30 a.m. to 12:00 p.m. & 1:30 p.m. to 5:00 p.m.

Hands-on Practice on Data Preparation Automation	• Definition of the problem and the steps to automate • Creation of the automation script
Hands-on Practice on Result Analysis	• Description of the analysis steps • Creation of the automation scripts
Perspectives	• What possibilities are there for going further and fully automating data preparation and analysis? • Variable parameters, custom interfaces, command-line execution
Conclusion	• Various questions and training evaluation

COLDFORM®

New Functionalities of COLDFORM® NxT 5.0

NEW

Available only Q4 2026

Do you want to further increase your productivity? Learn how to use the new features in COLDFORM® NxT 5.0. Training available Q4-2026

The training on COLDFORM® NxT 5.0 will guide participants through the major enhancements of this release, including new remeshing capabilities, improved thermal and thermochemical treatments, optimization tools, advanced analysis options, and various process-related improvements. The goal is to ensure users can efficiently leverage all updates introduced in this new version.

LEVEL

Intermediate

PREREQUISITES

A first experience with COLDFORM® software is required.

GOALS

- **Mastering the new features in COLDFORM® NxT 5.0**
- **Gaining experience based on practical case studies**

OTHER RECOMMENDED COURSES

- COLDFORM® - Mastering the software

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.30 p.m.

Introduction	• Presentation of Transvalor • Course goals
Automatic Measurement Tools	• Introduction of automated measurement functionality
Surface Treatments	• Updated material data • Simplified configuration workflow
Mesh Optimization & Topology Healing	• Surface Mesh Optimizer • Smooth operations for topology repair
Fatigue Analysis & Material Files	• Python-based fatigue analysis • New material files for multiple applications
API Enhancements	• API improvements • Forging routes • Shape comparison tools • PID controllers • Laser and depth sensor support
Conclusion	• Questions and course assessment

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

COLDFORM®

Automatic Optimization

You need to optimize your process? Discover the solutions for identifying an ideal billet for complete and flawless filling or a tooling design that minimizes stress. No more long and boring trial plans. Choose automatic optimization!

COLDFORM® automatic optimization is an extremely effective tool. Thanks to its genetic algorithm, you can automatically vary an entire range of process parameters (billet dimensions, tool shapes, billet positioning, etc.). This way you will be able to identify the best conditions for optimally forming your part. In addition, you will study parameter identification techniques using reverse engineering as well as couplings with CAD environments for designing blockers and tooling.

LEVEL

Advanced

PREREQUISITES

A good grounding in the use of COLDFORM® is required. A perfect knowledge of the process is essential to determine what you want to optimize and how. You need to understand chaining and transitions.

GOALS

- **Understanding optimization concepts and terms: genetic algorithm (individuals and generations), minimizable, constraint and parametered action**
- **Optimizing industrial processes**
- **Reducing billet volume and finished part defects**
- **Identifying parameters by reverse engineering**
- **Coupling optimization with CAD (PTC Creo Parametric, SolidWorks and Catia)**

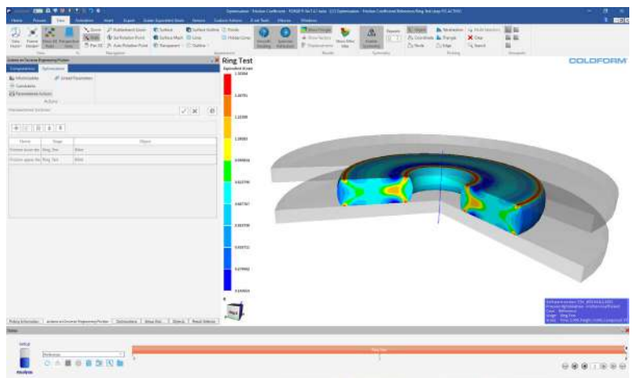
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.30 p.m.

Introduction	• Presentation of Transvalor • Course goals
Reminders on chaining	• Chaining concept • Transitions • 2D & 3D chaining
General concepts	• Automatic optimization concepts • Individuals and generation • Definition of a minimizable • Definition of a constraint • Definition of parametered actions
Optimizing billet volume	• Setup • Analyzing optimization results
Optimizing a forging load	• Setup • Launching computation • Analyzing optimization results
Determining a friction coefficient	• Defining the simulation • Setup • Interpreting the results
Determining rheology by reverse analysis	• Defining the simulation • Setup • Interpreting the results

DAY 2 > 8.30 a.m. to 12.00 p.m.

Coupling optimization with CAD	• Coupling concept • Example of use with PTC Creo Parametric • Example of use with SolidWorks
Innovation	• Optimization with discrete values • Optimization with Design Of Experiment
Conclusions	• Questions and course assessment



TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

SIMHEAT®

Starting with SIMHEAT®

The time has come to discover the latest software in the Transvalor suite devoted to heat treatment processes: SIMHEAT® and the extent of its possibilities. After this course, you'll be able to get the most out of the product!

This training is your first approach to the SIMHEAT® software. The first day gives you an understanding of all of the data setup steps, how to create material files and TTT diagrams, the procedure for launching computations and how to analyze the main results. Day two will be devoted to a more thorough analysis of a complete panel of results for better interpretation of the physical phenomena. Key functions will be covered such as treatments for aluminum and heat treatments via induction as well as surface treatments. Customizing your working environment will then be covered.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Discovering the interface**
- **Data set up of a heat treatment simulation of a forged, cold formed or cast part**
- **Launching a single computation and/or a computation sequence**
- **Analyzing simulation results**
- **Defining the process conditions in order to obtain the best mechanical properties**
- **Be able to predict the microstructure changes during heating or cooling**
- **Creating your own TTT diagram using SIMHEAT®**
- **Observing the influence of the diffusion of carbon on the changes in surface hardness**
- **Determining the ideal treatment conditions in order to reduce cycle times**
- **Customizing your working environment**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	3 days	€4200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

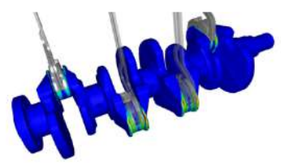
Introduction	• Presentation of Transvalor • Course goals • Review of the finite element method
Data setup	• Presentation of the environment • Concepts: stores, processes, cases and stages • Importing geometries • Handling objects (creation, trimming) • Surface and volume meshes • Definition of kinematics (if required by the process) • Rheology and thermal exchanges • Material database • Application to a tutorial • Working environment presentation • Starting computation
Launching computations	• Quick launch • Batch handler and chained simulations
General	• Fe-Fe3C diagram • Review of TTT and TRC diagrams
Modeling quenching	• Approximating the TRC diagram using the TTT diagram • Exercise: generating TTT and TRC diagrams with FORGE® • Multi-physical coupled model • Exercise: model quenching in different baths (Houghton oils, polymer solutions) • Exercise: quenching via sprays
Result analysis	• Displaying results, the main scalars and vectors • Graphs, animations, VTFx exports • Multi-window analysis • Management of animations and exporting results

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Austenitizing	• Generation of material composed of perlite and ferrite • Definition of the heating cycle • Report analysis: phase transformation, austenite content, optimizing the heating cycle
Carburizing	• Generating anisotropic mesh • Defining the carbon content • TTT diagram according to the carbon content • Result analysis: carbon content, phase transformation, hardness
Tempering	• Model used to determine hardness • Exercise: modeling of tempering after quenching • Result analysis: residual stresses, hardness, etc.
Optimization	• Basic optimization principle • Determining exchange coefficient thanks to reverse engineering
Working environment customization	• Creating specific models and specific data sets (materials, heat exchanges, etc.)
Conclusions	• Questions and course assessment

DAY 3 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Modelling	• Maxwell's equations • Definition of the heating cycle • Coupling between thermal and electromagnetic aspects • Properties: electric resistance, magnetic permeability, skin thickness, etc • Coupling with metallurgy
Induction heating (Tutorial case)	ELECTROMAGNETIC COMPUTATION • Defining of the input and output current • Definition of the mesh for the 'Room mesh' environment • Creation of the global mesh • Mesh suited to the skin thickness • Checking the quality of the global mesh THERMAL COMPUTATION • Defining the billet • Parameters of the simulation: storage, heating time, coupling with electromagnetic computation STARTING COMPUTATION • Chained computation by setting the 'In Loop' tab • Chained induction and forming simulation ANALYZING RESULTS • Evolution of temperature, magnetic fields, magnetic potential, induced current • Display a field in an isovolume
Symmetry	• How to model symmetry • Boundary conditions of Maxwell's equations
Induction with movement by the part or the inductor	• Continuous or step by step motion • Application: a multiple of billets moving inside the inductor
Conclusion	• Questions and course assessment



Induction heating of a crankshaft

Surface heat treatment (carburizing, quenching, tempering)

Hardening via aluminum precipitation (artificial aging)

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

Heat Treatments

What is the best design for an inductor? What frequency should I apply? What is the impact on part metallurgy? Master the simulation of your heat treatment processes with SIMHEAT®!

After some theoretical refreshers, you will study how to implement simulated induction heating with a static billet or one that moves through the inductor. You will be able to analyze the influence of the inductor's design, of the presence of concentrators and test the impact of the various generator parameters. Then you will go on to look at heating for heat treatment placing the emphasis on metallurgical aspects, predicting the area that is thermally affected and the use of static or mobile inductors. In this way, you will understand the thermal and electromagnetic phenomena for optimizing heating conditions.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Discovering the interface**
- **Data set up of a heat treatment simulation of a forged, cold formed or cast part**
- **Launching a single computation and/or a computation sequence**
- **Analyzing simulation results**
- **Defining the process conditions in order to obtain the best mechanical properties**
- **Be able to predict the microstructure changes during heating or cooling**
- **Creating your own TTT diagram using SIMHEAT®**
- **Observing the influence of the diffusion of carbon on the changes in surface hardness**
- **Determining the ideal treatment conditions in order to reduce cycle times**
- **Customizing your working environment**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.30 p.m.

Introduction	• Presentation of Transvalor • Course goals
General	• Fe-Fe3C diagram • Review of TTT and TRC diagrams
Modeling quenching	• Approximating the TRC diagram using the TTT diagram • Exercise: generating TTT and TRC diagrams with SIMHEAT® • Multi-physical coupled model • Exercise: model quenching in different baths (Houghton oils, polymer solutions) • Exercise: quenching via sprays
Result analysis	• Displaying results, the main scalars and vectors • Graphs, animations, VTFx exports • Multi-window analysis • Management of animations and exporting results

DAY 2 > 8.30 a.m. to 12.00 p.m & 2.00 p.m. to 5.30 p.m.

Austenitizing	• Generation of material composed of perlite and ferrite • Definition of the heating cycle • Report analysis: phase transformation, austenite content, optimizing the heating cycle
Carburizing	• Generating anisotropic meshing • Defining the carbon content • TTT diagram according to the carbon content • Result analysis: carbon content, phase transformation, hardness
Tempering	• Model used to determine hardness • Exercise: modeling of tempering after quenching • Result analysis: residual stresses, hardness, etc.
Optimization	• Basic optimization principle • Determining exchange coefficient thanks to reverse engineering
Working environment customization	• Creating specific models and specific data sets (materials, heat exchanges, etc.)
Conclusion	• Questions and course assessment

SIMHEAT®

Using the Python API to Automate Data Processing and Analysis with SIMHEAT®

Would you like to increase your productivity? Get to know the tools available for automating data preparation and result analysis.

The time you spend creating your simulation projects and analyzing the results of your calculations is generally considerable. The Python API can help you to reduce the time you spend on these repetitive tasks.

Python scripts will allow you to create projects, run calculations, and analyze results with maximum automation. Specifically, you will be able to create your own custom process, manage your objects, import and generate meshes, define all types of parameters, automatically generate calculation variants, display only the results you need in the optimal configuration, export your results, and much more. This new feature offers many advantages: time savings, automation, project security, and interconnection with your other digital tools.

Whether you want to automate all or part of your operations, define constant or dynamic data, or even call a third-party application from SIMHEAT®FORGE®, everything is possible and imaginable. This training is designed for you!

LEVEL

Intermediate

PREREQUISITES

Have some experience with TRANSVALOR software. You should be familiar with using the NxT interface.
Have basic experience in coding with the Python language.

GOALS

Discover what the Python API can offer you in terms of automation.
Take advantage of the new interface features to speed up data preparation and result analysis.

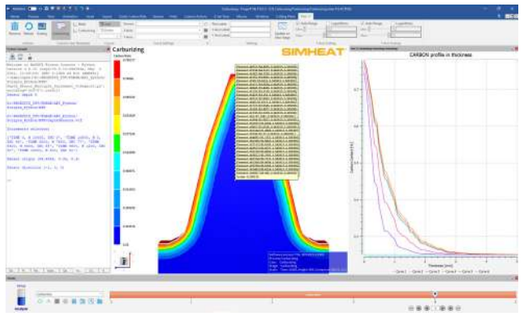
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Training objectives
Why this API?	• Context • Previous tools made available • Prerequisites • Current limitations • Perspectives
Structure of Scripts	• How the Python console works • Vocabulary (concepts of classes, functions, and arguments) • Links between various objects, simulations, attributes, properties
Data Preparation Scripts	• Understanding existing scripts • Working on a complete data preparation script • Coding your own data preparation script
Analysis Scripts	• Understanding existing scripts • How to adapt them to your needs? • Coding your own result analysis script
Documentation	• Explanation of the documentation available to code your own data preparation and analysis scripts • Python Help

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Hands-on Practice on Data Preparation Automation	• Definition of the problem and the steps to automate • Creation of the automation script
Hands-on Practice on Result Analysis	• Description of the analysis steps • Creation of the automation scripts
Perspectives	• What possibilities are there for going further and fully automating data preparation and analysis? • Variable parameters, custom interfaces, command-line execution
Conclusion	• Various questions and training evaluation



TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

SIMHEAT®

NEW

New Functionalities of SIMHEAT® NxT 5.0

Available only Q4 2026

Do you want to further increase your productivity? Learn how to use the new features in SIMHEAT® NxT 5.0. Training available Q4-2026

The training on SIMHEAT® NxT 5.0 will guide participants through the major enhancements of this release, including new remeshing capabilities, improved thermal and thermochemical treatments, optimization tools, advanced analysis options, and various process-related improvements. The goal is to ensure users can efficiently leverage all updates introduced in this new version.

LEVEL

Intermediate

PREREQUISITES

A first experience with SIMHEAT® is required

GOALS

- **Mastering the new features in SIMHEAT® NxT 5.0**
- **Gaining experience based on practical case studies**

OTHER RECOMMENDED COURSES

- SIMHEAT® - Mastering the software

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.30 p.m.

Introduction	• Presentation of Transvalor • Course goals
Furnace Heating with Radiation	• Integration of furnace components • Kinematic considerations • Enhanced radiation modeling
Automatic Measurement Tools	• Introduction of automated measurement functionality
Surface Treatments	• Updated material data • Simplified configuration workflow
Mesh Optimization & Topology Healing	• Surface Mesh Optimizer • Smooth operations for topology repair
API Enhancements	• API improvements • Shape comparison tools • PID controllers • Laser and depth sensor support
Conclusion	• Questions and course assessment

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

Automatic Optimization

You need to optimize your process? Discover the solutions for identifying an ideal billet for complete and flawless filling or a tooling design that minimizes stress. No more long and boring trial plans. Choose automatic optimization!

SIMHEAT® automatic optimization is an extremely effective tool. Thanks to its genetic algorithm, you can automatically vary an entire range of process parameters (billet dimensions, tool shapes, billet positioning, etc.). This way you will be able to identify the best conditions for optimally treat your part. In addition, you will study techniques that allow you to reverse engineer certain physical parameters of your process.

LEVEL

Advanced

PREREQUISITES

A good grounding in the use of SIMHEAT® is required. A perfect knowledge of the process is essential to determine what you want to optimize and how. You need to understand chaining and transitions.

GOALS

- **Understanding optimization concepts and terms: genetic algorithm (individuals and generations), minimizable, constraint and parametered action**
- **Optimizing industrial processes**
- **Identifying parameters by reverse engineering**

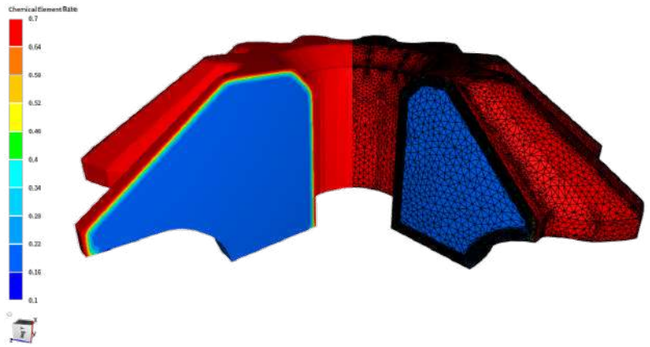
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.30 p.m.

Introduction	• Presentation of Transvalor • Course goals
General concepts	• Automatic optimization • Individuals and generation • Definition of a minimizable • Definition of a constraint • Definition of configured actions
Determining rheology by reverse engineering	• Defining the simulation • Setup • Interpreting the results

DAY 2 > 8.30 a.m. to 12.00 p.m

Determining a heat transfer coefficent	• Defining the case • Setup • Interpreting the results
Innovation	• Optimization with discrete values • Optimization with Design Of Experiment
Conclusions	• Questions and course assessment



THERCAST®

Starting with THERCAST® Ingot Casting

For all ingot casting areas, discover all of the possibilities offered by THERCAST®.

This course will be your first approach to THERCAST® software. The first day lets you understand all of the data setup steps, the procedure for launching computations and how to analyze the main results. The second day will be devoted to a more in-depth analysis of new concepts such as hot tearing and the impact of heat exchanges (influence of air gaps). A number of key functions will also be covered such as point tracking, using TTT diagrams, predicting segregation, handling knock-out and lastly, customizing the working environment.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

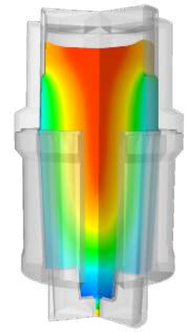
GOALS

- **Data setup for ingot casting**
- **Launching a single computation and/or a computation sequence**
- **Analyzing simulation results**
- **Studying the entire process (filling from the trumpet, cooling and strip out)**
- **Allowing for exothermic powders and refractory materials**
- **Identifying and interpreting casting defects (shrinkage, porosity, cracks, etc.)**
- **Studying variations in physical quantities (temperature, pressure, etc.) at any point on the part and the molds**
- **Predicting stress states and mold deformation**
- **Customizing your working environment**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Graphic environment	• Presentation of working environment • Project concept with case and stage management
Material file manager tool	• Managing the unit system • Displaying physical properties
Tutorial - Ingot casting	• Importing geometries • Surface and volume meshing • Defining domains (metal, molds) • Managing simulation control parameters • Type of computation • Reviewing heat and friction exchanges models • Reviewing defect prediction criteria
Launching computation	• Quick launch • Procedure for restarting computations
Advanced options for analyzing results	• Displaying scalar results: temperature, liquid fraction, material front, strain, etc. • Display options: iso-volumes, cutting planes, graphs, scales, smoothed or continuous display, etc. • Identification of sensitive areas: shrinkage, porosity, etc. • Combined analyses: multi-cases, multi-windows options • Animations, VTFx export function
Industrial process	• Data setup and starting computation



Temperature distribution during solidification

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Analysis of industrial results	• Interpreting results • Influence of exchanges and/or mold shape on results • Optimizing process data to minimize casting defects • Handling the strip out
Additional functions	• Pre- and post-processed sensors • Hot tearing criteria • Remeshing
Working environment customization	• Creating specific models and data sets (materials, heat exchanges, friction, etc.)
Conclusions	• Questions and course assessment

Particle monitoring during ingot filling

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

THERCAST®

Starting with THERCAST® Continuous Casting

With THERCAST®, simulate how the metal evolves in a casting installation from the mold to exiting secondary cooling!

Taking place over three days, this course will be your first approach to THERCAST® software for continuous casting applications.

The first day lets you understand all of the data setup phases with special attention devoted to building the casting machine. The second day will highlight the different kinds of computations as well as how to analyze the main results.

Lastly, a number of key functions will be covered like identifying internal defects, predicting segregation, using TTT diagrams, point tracking and customizing the working environment.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Data setup for continuous casting**
- **Launching a single computation and/or a computation sequence**
- **Analyzing simulation results**
- **Using the continuous casting machine definition interface**
- **Studying the entire process (primary and secondary cooling)**
- **Identifying and interpreting casting faults (bulging, cracks, etc.)**
- **Studying variations in physical values (temperature, pressure, etc.) at any point in the cast product (slab, bloom)**
- **Customizing your working environment**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	3 days	€4200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

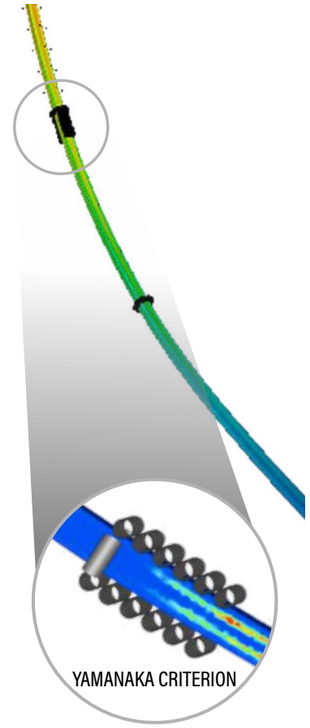
Introduction	• Presentation of Transvalor • Course goals
Graphic environment	• Working environment presentation • Project concept with case and stage management • Full description of the backstage • Principle of automatic chaining & transitions
Tutorial case - continuous casting	• Geometry import • Surface and volume meshing • Remeshing • Managing simulation control parameters • Reviewing heat and friction exchanges between ranges • Reviewing fault prediction criteria
Launching computations	• Quick launch • Procedure for restarting computations

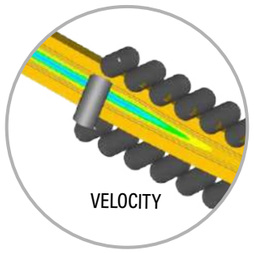
DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Material file manager tool	• Managing the unit system • Displaying physical properties
Result analysis	• Displaying scalar results: temperature, liquid fraction, material front, etc. • Display options: iso-volumes, cutting planes, curves, scales, smoothed or continuous representations, etc. • Identification of sensitive areas (shrinkage, porosity, etc.) • Combined analyses: multi-cases, multi-windows options • Exploitation of results: animations, VTFx exports
Industrial case	• Data setup and launching computation

DAY 3 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Construction of the Continuous Casting Machine	• Definition of the type of cast product, its dimensions, and its positioning. • Definition of straight and/or curved zones, with thermal conditions averaged by zone • Definition of the rollers (positioning / thermal conditions). • Definition of the sprays (positioning / thermal conditions / jet type).
Industrial case result analysis	• Influence of exchanges and/or mold shape on results • Optimizing process data to minimize defects
Additional functions	• Pre- and post-process sensors • Hot tearing criteria
Advanced notions	• Customizing environment: materials, heat exchange, friction, etc.
Conclusions	• Questions and course assessment





TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

THERCAST®

Starting with THERCAST® Foundry Processes

THERCAST® provides valuable support in creating the best design for your castings regardless of your technologies.

THERCAST® has a template dedicated to sand casting, shell casting, low-pressure casting, high-pressure casting, etc.
THERCAST® allows you to simulate your foundry processes in a predictive way. On the first day of this training course, you will learn how to configure and launch a project according to the given foundry technique. We will cover how to analyze result in order to study the full process, physical variations and defects. On the second day, advanced functions such as self-radiation and heat cycling will be presented.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

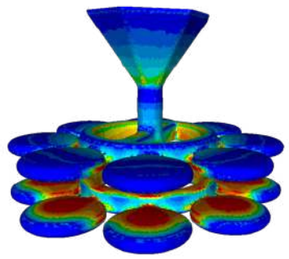
GOALS

- **Data setup for continuous casting**
- **Launching computation and/or a computation sequence**
- **Analyzing simulation results**
- **Studying the full process (filling, cooling)**
- **Studying the variations of physical quantities (temperature, liquid fraction, etc.)**
- **Identifying and interpreting casting defects (shrinkage, porosity, etc.)**
- **Customizing your working environment**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	3 days	€4200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

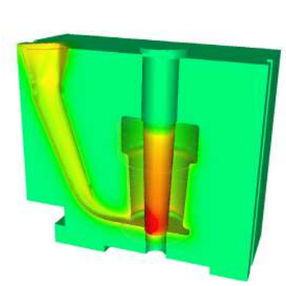
Introduction	• Presentation of Transvalor • Course goals
Graphic environment	• Presentation of working environment • Project concept with case and stage management • Full description of the backstage
Material file manager tool	• Managing the unit system • Displaying physical properties
Tutorial Foundry casting in rigid or virtual mold	• Defining objects (Metal, Pin, Mold) • Meshing: quality, generation • Defining mold and ground exchanges • Defining pin kinematics • Defining the computation type • Defining calculated criteria • Defining initial filling • Defining filling properties • Defining simulation parameters
Launching computations	• Quick launch



Self-radiation during casting

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

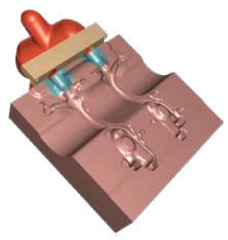
Advanced options for analyzing results	• Displaying scalar results: temperature, liquid fraction, etc. • Display options: iso-volumes, cutting planes, graphs • Identification of sensitive areas (shrinkage, porosity, etc.) • Combined analyses: multi-cases, multi-windows options • Exploitation of results: animations, VTFx exports
Industrial case	• Data setup, starting computation and results analysis



Casting of a foundry part

DAY 3 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Functions	• Pre- and post-process sensors • Heat cycling with pressure casting application • Complex movements of objects with pressure casting and tilted casting application • Self-radiation between different domains
Application: 'Lost wax molding'	• Creation of a solid shell with generation of an extra thickness from the initial surface • Defining of a surface and/or volume shell
Conclusions	• Questions and course assessment



Tilted casting

THERCAST®

New Functionalities of THERCAST® NxT 3.0

Are you already familiar with the new THERCAST® NxT environment and do you want to improve your knowledge of the software? Discover the new features in NxT 3.0 and learn the best practices right now to make the best out of the software!

At the end of this training, you will have full knowledge of the functionalities in NxT 3.0. First you will discover the new features in the graphical interface. You will then practice with different tutorials illustrating your sector of activity.

THERCAST® NxT 3.0 improves your experience through user interface customization, faster and easier navigation, and new shortcuts.

LEVEL

Intermediate

PREREQUISITES

A first experience with THERCAST® software is required.

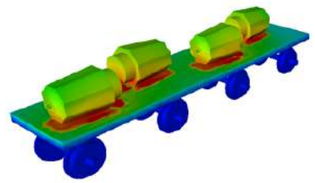
GOALS

- **Mastering the new features in THERCAST®**
- **Taking advantage of these features according to your sector of activity**
- **Improving the quality of cast parts thanks to even more predictive results**
- **Taking advantage of the electromagnetic stirring (EMS) calculation**

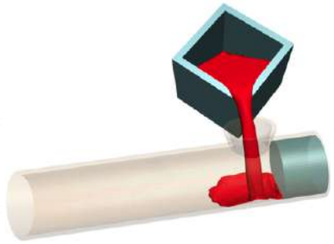
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

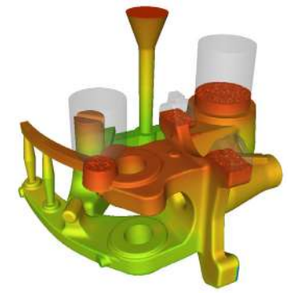
Introduction	• Presentation of Transvalor • Course goals
New features in the interface	• Meshing improvements • Custom legends • Results grouped by categories • Customizable display • Simplified templates • Plot for each object
New features	• Advanced input numerical options • Bubbles calculation • Surface tension - Viscosity - Marangoni Effect - Permeability Model of Darcy • Capability to empty initial filling • Multi-Material Filling • Enrichment types for Macrosegregation
Python API	• Introduction to the Python API to setup and analyze automatically your simulation • Python recorder • User interaction • Real time Output Display
Lost Foam	• Define cavity material • Replacement of foam by metal • Visualization of Foam and Metal results
Electromagnetic Stirring	ELECTROMAGNETIC COMPUTATION • Defining of the input and output current • Definition of the mesh for the 'Room mesh' environment • Creation of the global mesh • Mesh suited to the skin thickness • Check the quality of the global mesh THERMAL COMPUTATION • Defining the billet • Parameters of the simulation: storage, heating time, coupling with electromagnetic computation STARTING COMPUTATION • Chained computation by setting the 'In Loop' tab • Chained induction and casting simulation ANALYZING RESULTS • Evolution of temperature, magnetic fields, magnetic potential, induced current
Optimization	• Explanation of core concepts (individuals, generations, minimizables, constraints, parametered actions) • Case study
Conclusion	• Questions and course assessment



Self-radiation is considered



Filling via casting bucket



Temperature during the filling

THERCAST®

Using the Python API to Automate Data Processing and Analysis with THERCAST®

Would you like to increase your productivity? Get to know the tools available to you to automatically perform data preparation steps and analyze your results.

The time you spend creating simulation projects and analyzing the results of your calculations is usually significant. The operations you carry out are often repetitive and can sometimes be very time-consuming. Python scripts will enable you to create projects, run calculations, and analyze results with maximum automation. Specifically, you can create your custom process, manage your objects, import and generate meshes, define all types of parameters, automatically generate calculation variants, display only the results you need in the optimal configuration, export your results, and much more. This new feature offers numerous benefits: time-saving, automation, project security, and interconnection with your other digital tools.

Whether you want to automate all or part of your operations, define constant or dynamic data, or even call a third-party application from THERCAST®, everything is possible and imaginable. This training is designed for you!

LEVEL

Intermediate

PREREQUISITES

Have some experience with TRANSVALOR software. You should be familiar with using the NxT interface.
Have basic experience in coding with the Python language.

GOALS

- **Discover what the Python API can offer in terms of automation.**
- **Make the most of the new features of the interface to speed up data preparation and result analysis.**

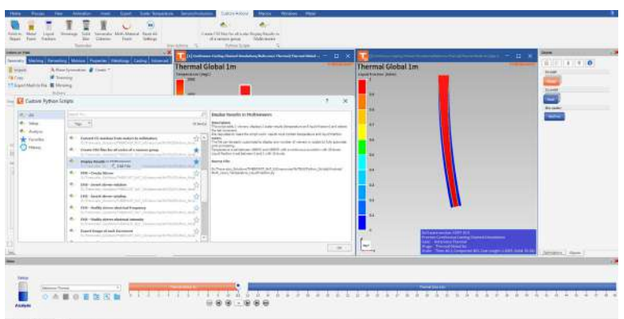
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

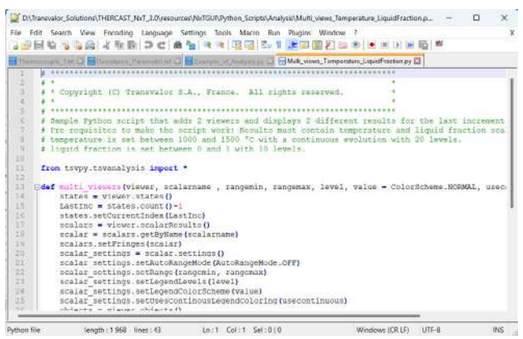
DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Training objectives
Why this API ?	• Context • Previous tools made available • Prerequisites • Current limitations • Perspectives
Script Structure	• Operation of the Python console • Vocabulary (concepts of classes, functions, and arguments) • Relationships between various objects, simulations, attributes, properties
Data Preparation Scripts	• Understanding existing scripts • Working on a complete data preparation script for a step • Coding your own data preparation script
Analysis Scripts	• Understanding existing scripts • How to adapt them to your needs? • Coding your own result analysis script
Documentation	• Explanation of the documentation available for coding your own data preparation and analysis scripts • Python Help

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Practical session on automating data preparation	• Defining the problem and steps to automate • Developing the automation script
Practical session on result analysis	• Description of the analysis steps • Developing the automation scripts
Perspectives	• What possibilities for going further and fully automating data preparation and analysis? • Variable parameters, custom interfaces, command-line execution
Conclusion	• Questions and course assessment





TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

THERCAST®

NEW

New Functionalities of THERCAST® NxT 3.1

Are you already familiar with the new THERCAST® NxT environment and do you want to improve your knowledge of the software? Discover the new features in NxT 3.1 and learn the best practices right now to make the best out of the software!

At the end of this training, you will have full knowledge of the functionalities in NxT 3.1.
First, you will explore the new interface features and the latest modelling capabilities introduced in this version. You will then work through examples showcasing the enhanced process tools, solver improvements, and advanced physical models. THERCAST® NxT 3.1 improves your experience through user interface customization, faster and easier navigation, and new shortcuts.

LEVEL

Intermediate

PREREQUISITES

A first experience with THERCAST® software is required

GOALS

- **Master all the new features of THERCAST® NxT 3.1**
- **Take full advantage of these features according to your area of activity**
- **Improve the quality of cast parts thanks to increasingly predictive results**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
New Interface Features	• Multi-property assignment • Refactoring of calculation options • Refactoring of the material data tool • Syntax • Depth graph • Storage manager • Busy loop
New Features	• Permeability • Air bubbles • Gas bubble generator • Controlled flow rate • Storage of the CAFE method
Process Innovations	• Continuous casting machine generator - Refactoring and numerous improvements - Selection of a roller or spray directly from the interface - Copy multiple rollers and sprays across several metallurgical lengths • High-pressure casting • Lost-foam casting
Segregation Models	• Columnar-to-equiaxed transition
Solver Improvements	• Stabilization of thermomechanical calculations • ALE
Conclusions	• Questions and course assessment

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

Mastering the Software

After this training you will have a deeper understanding of THERCAST®, and you will also be able to comfortably build advanced models that gives meaningful results.

This training is for those that want to use THERCAST® at its full potential. We take our time to explain how THERCAST® works in detail, not only the fundamental theory, but also the thought process to build advanced models and how to interpret the results.

LEVEL

Advanced

PREREQUISITES

A first experience with THERCAST® software is required

GOALS

- **Overview of main multi-physics equations and algorithms**
- **Performing your data setup in line with the recommended workflow**
- **Analyze and compare case studies with different configurations**
- **Understanding and analyzing the results**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2800 per training	1 to 3 people

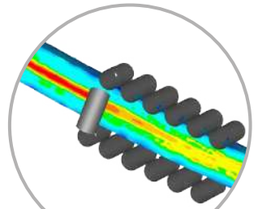
DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

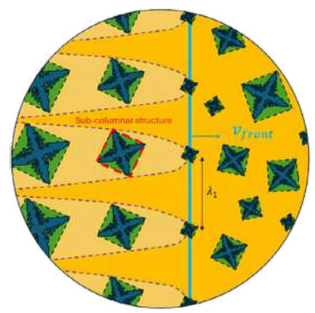
Introduction	· Presentation of Transvalor · Course goals
Multi-physics (Theory)	· Thermal · Thermo-Mechanical · Macrosegregation · Boundary Conditions · Liquid, Solid and Solidifications constitutive equations · Turbulent Model
Material Data Tool	· Reading the data · Minimum input required · Macrosegregation - Microstructure and Microsegregation - Heterogeneous liquid flow · Import data from a JMatPro file
Macrosegregation Case Study	· Presentation of case study · Analysis of results - Enrichment influence - Visualization of scalars - Synchronized multi-window

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Meshing	· Mesh Repair · Breaking Elongated Elements Technique · Void Meshing · Mesh adaptation - Algorithm - Visual Examples - Tips and Tricks
Advanced Setup data options	· Inlet · Filter · Surface Tension · Porous Mold · Chained Simulations
Advanced Calculation Models	· Radiation · CAFE Method
Advanced results analysis options	· Sensors, Inclusions, Samples and Bubbles · Storage and Timestep · Synchronized multi-window animation · Improved readability · Custom actions
Conclusion	· Questions and course assessment

Grain structure





Columnar-to-equiaxed Transition

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

THERCAST®

Automatic Optimization

You need to optimize your process? Discover the solutions for identifying an ideal billet for complete and flawless filling or a tooling design that minimizes stress. No more long and boring trial plans. Choose automatic optimization!

THERCAST® automatic optimization is an extremely effective tool. Thanks to its genetic algorithm, you can automatically vary an entire range of process parameters (billet dimensions, tool shapes, billet positioning, etc.). This way you will be able to identify the best conditions for optimally forming your part. In addition, you will study parameter identification techniques.

LEVEL

Advanced

PREREQUISITES

A good grounding in the use of THERCAST® is required. A perfect knowledge of the process is essential to determine what you want to optimize and how. You need to know the chaining and transitions concepts.

GOALS

- **Understanding optimization concepts and terms: genetic algorithm (individuals and generations), minimizable, constraint and parametered action**
- **Optimizing industrial processes**

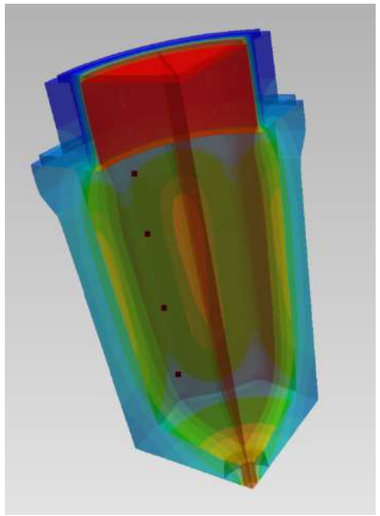
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1.5 days	€2400 per training	1 to 3 people

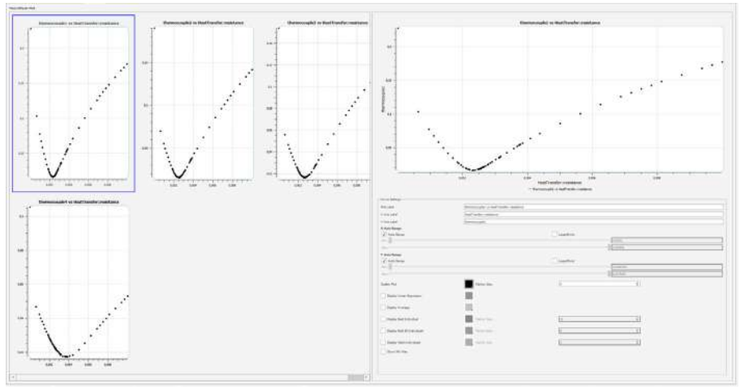
DAY 1 > 8.30 a.m. to 12.00 p.m. & 2.00 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
General concepts	• Automatic optimization concept • Individuals and generation notions • Definition of a minimizable • Definition of a constraint • Definition of configured actions
Permeability identification of a filer	• Setup definition • Definition of minimizable, constraint and parametered action • Defining number of generations and individuals • Launching computation in parallel mode • Analysis of an Individual • Classifying the best individuals • Creating a new case from an optimal individual

DAY 2 > 8.30 a.m. to 12.00 p.m.

Identification of Heat transfer Coefficient	• Setup definition • Definition of minimizable, constraint and parametered action • Defining number of generations and individuals • Launching computation in parallel mode • Analyzing the Cost Function curve • Observing the influence of parameters
Conclusions	• Questions and course assessment





TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

DIGIMU®

Starting with DIGIMU®

Discover and learn how to use DIGIMU®, your simulation solution for microstructural changes.

This training teaches you how to use our DIGIMU® software to simulate microstructural changes during metal forming processes at the mesoscopic scale, via representative elementary volumes (REVs).

You will work on various grain growth and dynamic recrystallization models.
At the end of this day, you will also know how to analyze the results of these computations.

LEVEL

Beginner

PREREQUISITES

A good knowledge of microstructure and recrystallization is required.

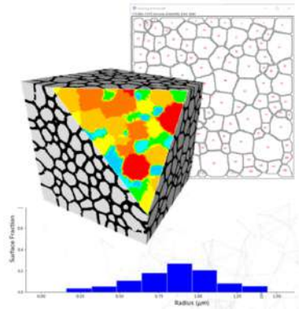
GOALS

- **Mastering the graphical user interface**
- **Modeling grain growth by capillarity at the grain scale (several millimeters) via 2D and 3D Representative Volume Elements (RVE).**
- **Modeling grain growth with or without second phase particles**
- **Importing grain distribution from experimental data**
- **Recover the thermomechanical path from a FORGE® simulation**
- **Predicting microstructural changes occurring during thermomechanical processes and heat treatments of metal alloys**
- **Modeling dynamic and post-dynamic recrystallization**
- **Analyzing simulation results**

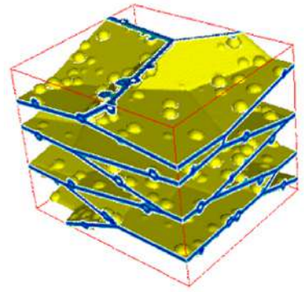
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	· Presentation of Transvalor · Course goals
Setup data of tutorial case: grain growth	· Project concept · Simulation parameters · Process temperature and time · Storage frequency · Storage of grain size distribution data · Polycrystal generation tool · Micrograph · Material file · AAA remeshing: Automated Adaptive Anisotropic
Computation	· Quick launch, stop, restart computation
Result analysis	· Displaying results: grain boundary evolution, equivalent grain sizes, grain coordination (number of neighbors) · Grain size step distribution · Graphs: grain size evolution, number of grains · Animations, export
Additional tutorials	· Grain boundary pinning phenomenon (Smith Zener Pinning) · Dynamic recrystallization - post-dynamic recrystallization · Dynamic recrystallization - 4-pass post-dynamic recrystallization · SRX static recrystallization: nucleation and grain growth of£recrystallized grains in a deformed matrix
Features	· Import of a thermomechanical path from FORGE® · Chaining simulations
Industrial process result analysis	· Interpreting results: grain boundaries, distance to grain boundary, dislocation density, energy, equivalent grain diameter · Grain size distribution (histograms, cutting planes) · User routines: a quick overview of user routines in DIGIMU® 4.0.
Material file identification	· Quick overview of the parameter identification procedure
Conclusions	· Questions and course assessment



3D and 2D polycrystal modeling



Grain boundary evolution and nucleation during forging

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

New Functionalities of DIGIMU® 5.0

This course is for you if you're already familiar with DIGIMU® and want to learn more about its new features.

You will learn about heterogeneous hardening, nuclei size distribution, heterogeneous grain boundaries and continuous dynamic recrystallization, precipitate evolution, and solute drag.

We will then demonstrate how these aspects significantly improve materials and processes currently used. These notions also open doors to simulating new materials and processes.

LEVEL

Beginner

PREREQUISITES

A good knowledge of microstructure and recrystallization is required.

GOALS

- **Mastering the graphical user interface**
- **Mastering the basis of DIGIMU®**
- **Discovering all features developped in DIGIMU® V5.0**
- **Modeling grain growth with or without second phase particles**
- **Predicting microstructural changes occurring during thermomechanical processes and heat**

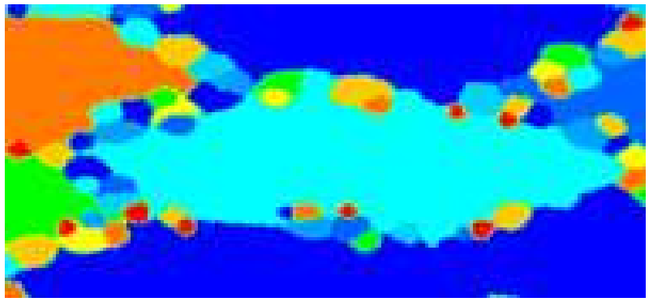
treatments of metal alloys

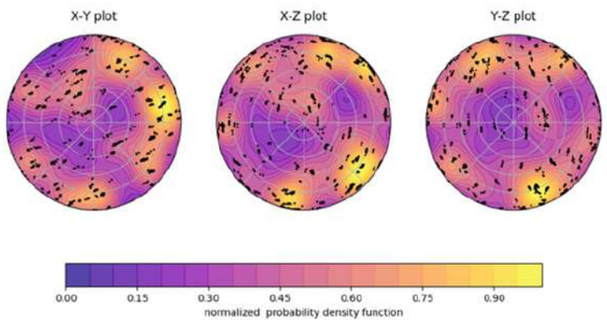
- **Modeling dynamic and post-dynamic recrystallization**
- **Analyzing simulation result**
- **Using new comprehensive graphical outputs**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	· General presentation · Course goals
Reminder of DIGIMU® V4.0 features	· Grain growth, with or without particles. · Dynamic recrystalization - Post dynamic recrystalization
Evolution of precipitates population	· New features in polycrystal generation tool · Explanation of the models
Heterogeneous grain boundary energies	· Explanation of the models · Exercises
Continuous recrystalization	· Model · Exercise · New graphical analysis tools
Conclusion	· Questions and course assessment





REM3D®

Starting with REM3D® - Foaming Application

Try the REM3D® experience and make your own rheology simulations to better manage your injection processes!

This course will help you start using REM3D for polyurethane foam injection processes. Using examples based on industrial applications, you will learn about different aspects related to the injection and expansion of foams. We will cover all the necessary steps for a successful simulation: setup, launching a computation and analysis of results. On the second day, you can review essential chemical concepts related to foaming and discover how to use key features, such as sensors and isovolumes. You will also take a more in-depth look at simulations of industrial processes, which will demonstrate how varying process conditions can have an impact on the optimization of mold and cycle times.

LEVEL

Beginner

PREREQUISITES

There is no prior requirement for this course.

GOALS

- **Data setup for a foam injection simulation**
- **Launching a computation on one or more cores**
- **Analyzing simulation results**
- **Identifying and interpreting injection-expansion defects (underfilling, etc.)**
- **Monitoring physical quantities (temperature, pressure, etc.) at any point on the part**
- **Testing the influence of process parameters (mass injected, flow rate, temperature, etc.)**
- **Characterizing polyurethane foams**

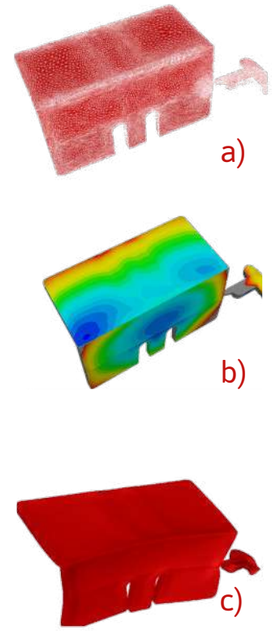
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€2600 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

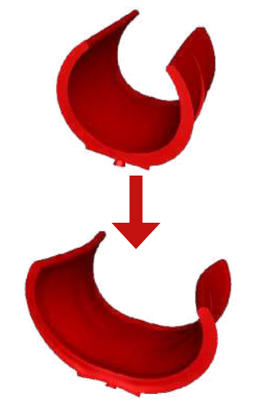
Introduction	• Presentation of Transvalor • Review of finite element method • Goals of the simulation
Data setup	• Presentation of the working environment • Concepts: stores, processes, cases, stages • Importing geometries • Surface and density meshes • Definition of process parameters: flow rate, injection point, flow rate and temperature) • Defining the material: temperature, rheology • Defining the mold: temperature, properties • Defining planes of symmetry • Defining of eulerian or langrangian sensors: tracking points and saving results • Managing simulation parameters: - Time step, storage time - Stop criteria: max time, max temperature, etc.
Modeling of polyurethane foam	• Chemical principles behind the reaction • Modeling of injection and expansion phases • Experimental characterization methods
Tutorial	• Data setup for a mini fridge tutorial • Computation quick launch • First steps in analysis
Results Analysis	• Displaying results: temperature, material front, solidified thickness, etc. • Graphs, animations, VTFx exports
Industrial application	• Data setup and launching computation

DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Result analysis of industrial application	• Interpreting results: density, temperature, etc. • Graphical analysis: mass injected, flow rate, vent airflow, etc.
Influence of process parameters	• Foam distribution • Regulation of cooling • Vent placement • Mold balancing and tilting
Advances concepts	• Automatic Anistotropic Adaptative (AAA) remeshing
Conclusions	• Questions and course assessment



Observation after computing part deformation:
a) Adaptive automatic remeshing
b) Projected deformation
c) Deformation amplified x10



Amplified deformation x10

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

REM3D®

Discover REM3D® NxT 3.0

The new unified graphical interface for data input, launch and analysis is now available with REM3D®. This training is the right time to learn about it and see all the benefits.

You regularly use REM3D® with its three parts: GLPre for setup, the launcher to start your calculations and GLView Inova to analyze the results of your calculations.
Transvalor now offers a unified graphical interface. This training will allow you to obtain the benefits of this unique interface. Using the same commands, you will be able to put in data and analyze the results. You will also be able to switch from setup to analysis without having to change the interface. The verification actions of the data sets are simplified, the comparison of the cases is facilitated etc.
Register for this training and let us show you all the advantages of this unique interface.

LEVEL

Intermediate

PREREQUISITES

You already know the old graphical interface GLPre, Launcher and INOVA. You need to have taken the 'Starting with REM3D®' course.

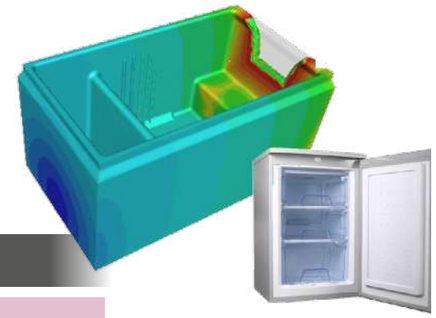
GOALS

- **Becoming familiar with the NxT interface**
- **Understanding how the graphical interface works**
- **Configuring a simulation**
- **Launching a computation with one or more cores**
- **Analyzing simulation results**
- **Customizing your work environment**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• General presentation • Course goals • Review of the finite element method
Data setup	• Presentation of the environment • Concepts: stores, processes, cases and stages • Importing geometries • Surface and volume meshes • Process parameters definition: injection, 'blocking', cooling • Material definition: temperature, rheology • Managing general simulation parameters • Mold definition: temperature, properties • Stop criteria : maximal time, maximal temperature • Time step management • Storage parameters: time, filling • Application to a tutorial
Launching computations	• Quick launch • Computation manager and chained simulations
Analyzing results	• Displaying results, the main scalars and vectors • Graphs, animations, VTFx export • Multi-window analysis • Handling animations and exporting results
Working environment customization	• Creating specific models and data sets (material, process, etc.)
Conclusions	• Questions and course assessment



Appliance application

Automotive application

Displaying the expansion phase

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

Z-SET

Starting with Z-set

This training is an introduction to structural analysis with Z-set, software for the calculation and analysis of non-linear structures and materials.

This introductory course gives a quick and comprehensive introduction to the applications of Z-set software. It is recommended to engineers who are willing to use Z-set as a finite element solver for the simulation of general non-linear thermomechanical problems.
This one-day training provides basic knowledge about the workflow and setup steps to perform nonlinear structural analyses with Z-set.
Questions about the Zebulon FE solver will be answered.

LEVEL

Beginner

PREREQUISITES

A good basic knowledge of Finite Element Analysis is required.

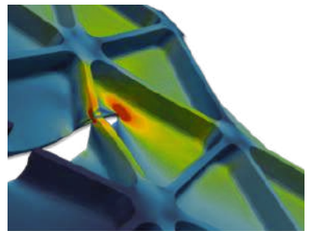
GOALS

- **Understanding of Z-set's simulation workflow**
- **Data setup for non-linear structural analysis**
- **Launching computations**
- **Visualization, interpretation and analysis of results**
- **Performing simple post-processing analyses**

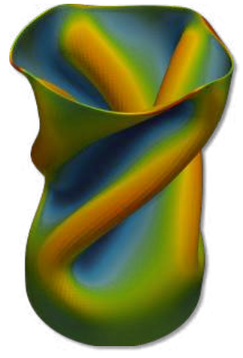
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Simulation workflow and setup	• Quick review of software installation (Linux, Windows), environment variables • Presentation of Z-set's distribution (documentation, tests base) • Presentation of software modules and specific input files (mesh, material file, main simulation input file, post-processing input file) • Running commands, keywords (-m, -pp) • Mesh generation with Z-master, mesh import • Detailed presentation of Zebulon input file • Prescribing boundary conditions • Rheology, material card, material data • Output controls • Application to tutorials (2D, 3D, linear, nonlinear)
Computation	• Quick launch, multicore execution • Computation restart procedure
Results analysis	• Results files • Results visualization: displacements, reactions, Von Mises, material variables • Basic data extraction (nodal values, visualization on element sets) • Visualization of curves, animations • Results postprocessing (simple example)
Conclusions	• Questions and course assessment



Simulation of fatigue crack growth in an Isogrid Panel (collaboration with AIRBUS and Constellium)



Plastic torsional buckling of a thin-walled tube

TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

Starting with Z-cracks

Do you want to learn how to analyze fatigue cracks? Would you like to accurately predict crack paths and propagation kinetics? Discover how to use Z-cracks, the module for 3D fracture mechanics simulation.

This one-day training course is intended for engineers and researchers who already have relevant experience in fracture mechanics.
The goal of this training is to demonstrate the capabilities of the Z-cracks module to perform static crack analysis and crack propagation simulations.

LEVEL

Beginner

PREREQUISITES

A good basic knowledge of fracture mechanics is required.

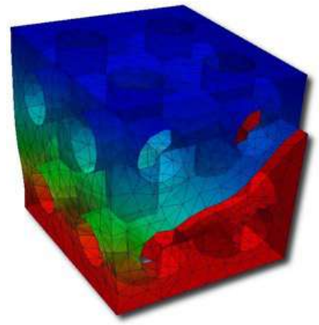
GOALS

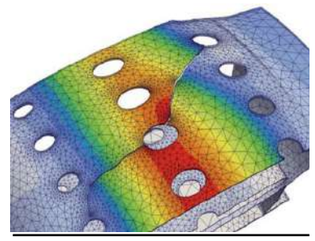
- **Understanding of Z-cracks' principles and simulation workflow**
- **Setup of static crack and crack propagation simulations**
- **Launching computations**
- **Visualization, interpretation and analysis of results**
- **Introduction to advanced user capabilities**

TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Simulation work-flow and setup	• Quick review of software installation (Linux, Windows), environment variables, connection to external FE solvers • Presentation of Z-set distribution (documentation, tests base) • Running scripts • Presentation of Z-cracks' GUI and main principles • Getting started: importing models • Crack definition and insertion, remeshing principles and strategies • Stress intensity factors: setup of SIF analysis • Propagation analysis: setup and propagation laws • Z-cracks' scripts presentation • Application to tutorials
Computation	• Launching simulations, multicore execution • Computation restart procedure
Results analysis	• Results files • Results visualization, curves visualization • Results merging and animations
Advanced capabilities	• Advanced options • Non-linear material models • Contact between cracks lips • User propagation laws • Complex loading histories • Scripts for automated simulations
Conclusions	• Questions and course assessment





Numerical simulation of a cracked combustion chamber under thermomechanical fatigue loading

Z-mat Connection to External Finite Element Solvers

Z-mat includes several pieces of software which constitute an efficient set of tools for advanced material-oriented FE analysis. In this course, you will learn advanced Z-mat's material models used within major Finite Elements solvers.

This one-day training session provides basic knowledge about the use of Z-mat and major external FE solvers like Abaqus, Ansys and Samcef, and a large base of constitutive plasticity and viscoplasticity models.
Participants will discover the technical aspects, available tools and options of the Z-mat's interface.

In addition, the results interfaces that enable the use of Z-master and Z-post modules for visualization and data post-processing will be presented.

LEVEL

Beginner

PREREQUISITES

A good basic knowledge of User Material Modeling is required.

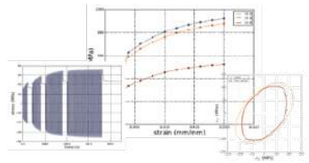
GOALS

- **Understanding of User Material subroutine principles**
- **Setup of simulations with linear and non-linear material models**
- **Launching computations**
- **Visualization, interpretation and analysis of results**

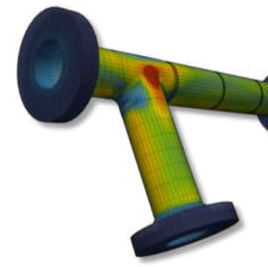
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	1 day	€1400 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	• Presentation of Transvalor • Course goals
Simulation workflow & setup	• Quick review of software installation (Linux, Windows), environment variables, connection to external FE solvers • Presentation of Z-set's distribution (documentation, tests base) • Getting started: native material model vs user material model • Examples of basic Z-mat's material models • Z-sim: material model driver • Internal variables, storage, Zpreload utility, 2D/3D cases • Setup with Z-mat or external FE solvers • Analysis of tutorials
Computation	• Simulation launching scripts • Multicore execution
Results analysis	• Results files • Understanding of stored fields • Results visualization with native viewers and Z-master
Advanced capabilities	• Advanced controls and options (integrators, modifiers, debug) • Multi-material models • Structural elements, plane-stress analysis • Cluster submission • Connection to Z-post (simple post-processing example)
Conclusions	• Questions and course assessment



Constitutive laws



Tube connections under thermomechanical fatigue (collaboration with EDF)

Z-SET

Advanced Large Deformations

This training allows participants to deepen their knowledge of the nonlinear mechanics of materials, using the finite element method for large deformations, with the Z-set software and its Z-mat material library.

This course introduces the formulations commonly used to model behavior laws under large deformations. It highlights the theoretical distinctions between these approaches and their application to structural calculations. This training is intended for engineers who wish to perform structural calculations beyond the scope of small deformations, particularly for large rotations and deformations.

LEVEL

Advanced

PREREQUISITES

Knowledge of the fundamental principles of continuous medium modeling in small deformations.
Understanding of tensor calculations.
Familiarity with finite element modeling.
Basic knowledge of scientific programming.

GOALS

- **Mastering the formulations for large deformations widely used in finite element codes**
- **Setting up data preparation for large deformation calculations (choice of finiteelement formulation and behavior law).**
- **Comparing and interpreting results obtained with different large deformation formulations.**
- **Identifying a behavior law under large deformations, considering both material and geometric nonlinearities.**
- **Implementing a behavior law under large deformations with Z-set (implicit/explicit**
- **integration of the behavior law, consistent tangent operator).**

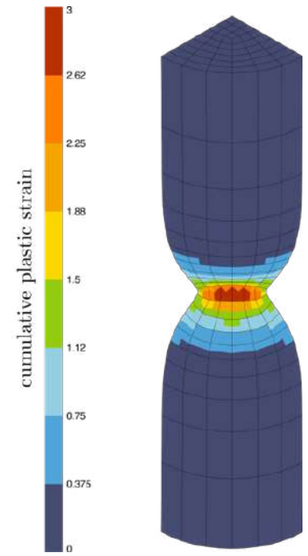
TRAINING	DURATION	PRICE EXCL. TAX	PARTICIPANTS
In-company	2 days	€3200 per training	1 to 3 people

DAY 1 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Introduction	· Transvalor presentation · Course goals
Presentation of the Z-mat material behavior law library	· The generic interface for behavior laws · Basic building blocks for constructing a behavior law (elasticity, plasticity criteria, flow laws, ...)
Elastoplasticity in Z-set (gen_evp)	· Recap: small deformations. · Extension to large deformations: hypo-elastoplasticity · The concept of "modifiers" in Z-set · Hypoelastic models (behavior law, deformation rate decomposition, ...) · Extension to large deformations: hyper-elastoplasticity · Hyperelastic models, multiplicative decomposition. · Case study: Anisotropic plasticity (crystalline, ...).
Finite element formulations and tangent operators	· Updated_lagrangian/total_lagrangian · Lagrangian_pk1
Integration of behavior laws	· Explicit integration of behavior laws. · Implicit integration of behavior laws.
Interfaces with external codes	· Abaqus · Ansys

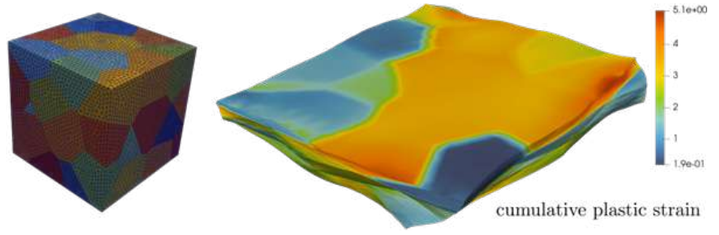
DAY 2 > 8.30 a.m. to 12.00 p.m. & 1.30 p.m. to 5.00 p.m.

Implementation of behaviors laws in Z-set	· Linux / Windows compilation environment, reminders and prerequisites · Introduction to Zebfront · Impelment an elastoplastic law for small deformations
Exercises	· Operators required for tensor calculations · Implement a hyporelastoplastic law (for large deformations) · Implement an hyperelastoplastic law (for large deformations)
Conclusion	· Questions and course assesment



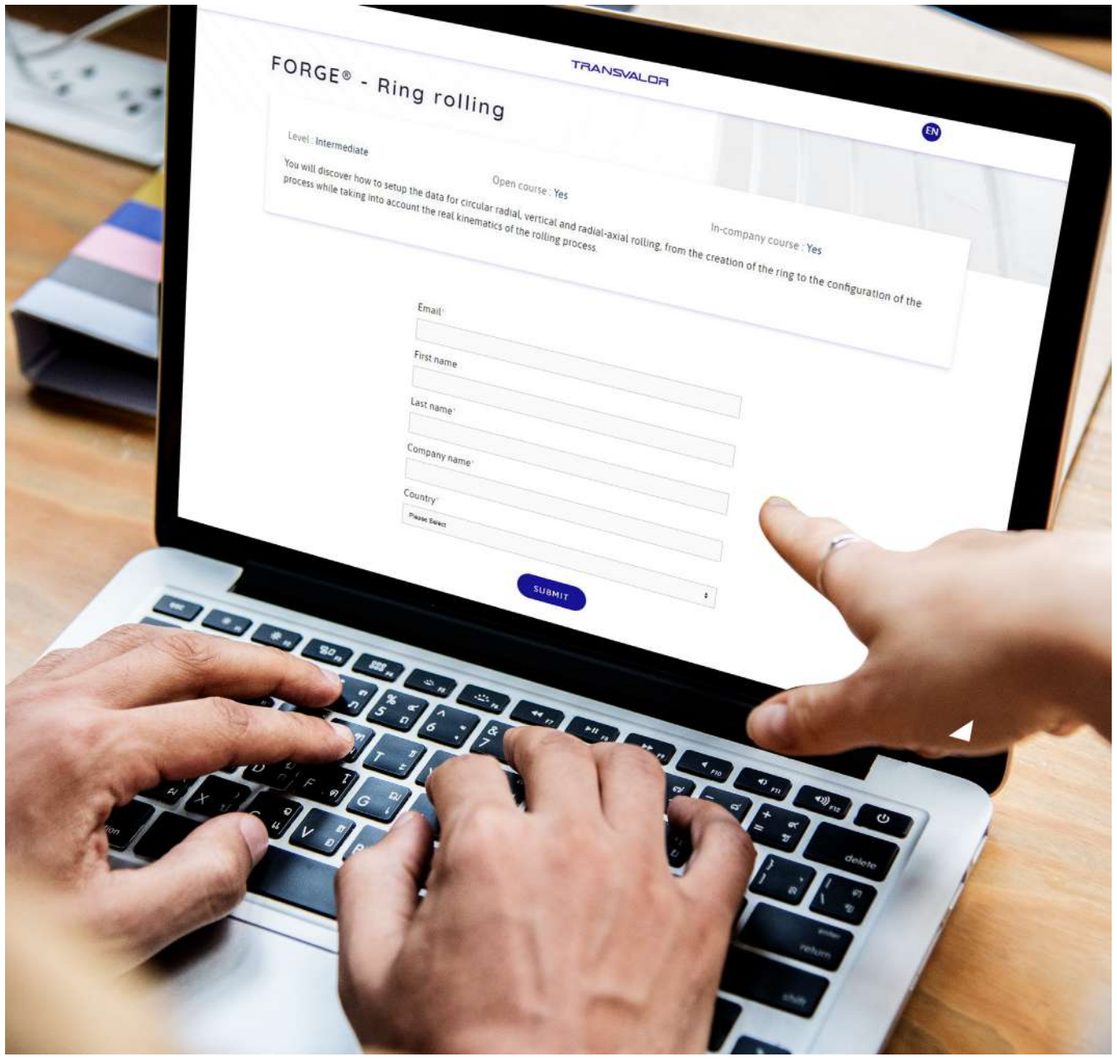
Calculation of tensile stress on a cylindrical specimen and the formation of necking.

Compression of an elastoplastic polycrystal under large deformations.



TRANSVALOR A NEW GENERATION SIMULATION EXPERIENCE

REGISTRATION



To register directly for one of our courses, please visit our website.

www.transvalor.com > Our services > Trainings

For any further information or to get a quote, please contact us at:
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Phone: +33 (0)4 92 92 42 00

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2 Stars B&B Hotel
Price range €
5 min drive from Transvalor

MOXY SOPHIA ANTIPOLIS*
Hotel Marriott Group
Price range €€
2 min drive from Transvalor

MERCURE ANTIBES SOPHIA ANTIPOLIS
4 Stars Hotel
Price range €€
5 min drive from Transvalor

BEACHCOMBER FRENCH RIVIERA
4 Stars Resort & Spa Hotel
Price range €€€
5 min drive from Transvalor

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GENERAL CONDITIONS

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DEFINITIONS
In-company courses: organized in the customer's premises for one or several employees of the company.
Online courses: organized in videoconference for one to three employees.

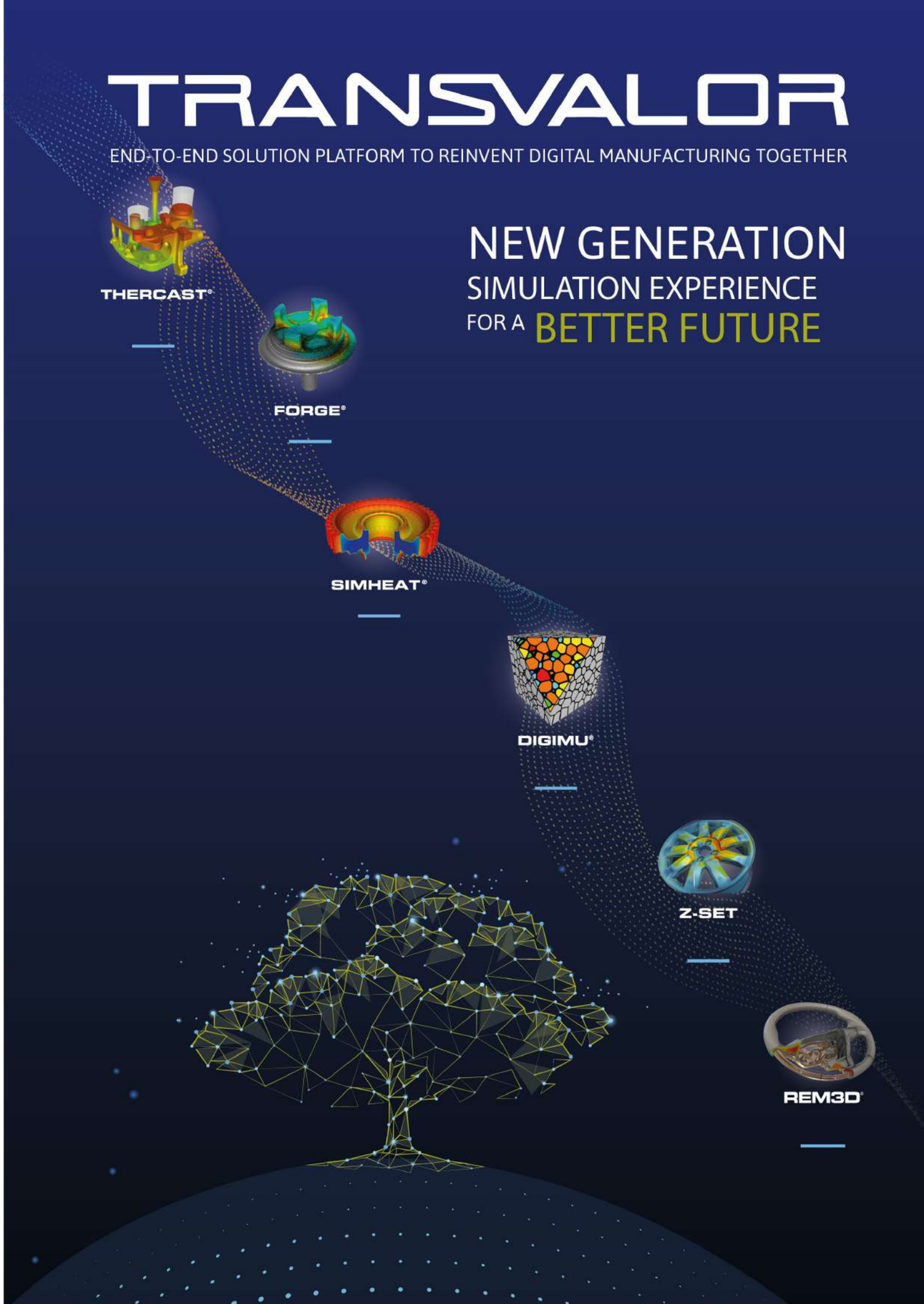
CONTRACTUALLY BINDING DOCUMENTS
Transvalor will send you two copies of the course agreement (for French companies), as required by law. Customers are required to return, as soon as possible, a signed copy of the contract with the company stamp, to Transvalor. A presence certificate is sent to the customer's Training Department at the end of the course.

CANCELLATION CONDITIONS
Cancellation by the customer:
Requests to cancel registration must be sent in writing to Transvalor S.A. – 950 avenue de Roumanille - CS 40237 Biot - 06410 - Sophia Antipolis cedex - France, or by e-mail to sales@transvalor.com. Any request to cancel a course that is not made in writing will be considered null and void. No cancellation fees will be charged for any cancellation more than four weeks before the start of a course. If not, Transvalor will charge the customer a cancellation fee of 100% of the course amount. Should a staff member not be able to attend a course, the customer is allowed to replace this staff member with another with a similar profile.

PRICE
For all courses, the prices stated in the Course Catalog are stated excluding taxes, valid until, December 31, 2026.

TERMS OF PAYMENT
If a training body is to pay for the course, it is up to the customer to secure financing from this body. If the financing is not secured before the customer attends the relevant course, then the customer must pay the amounts owed to Transvalor and will make their own arrangements to secure a refund from the training body.

COMPETENT COURT
Should any dispute arise and if no agreed settlement is possible, the sole competent jurisdiction is that of the Court of Cannes, France.



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