A NEW GENERATION SIMULATION EXPERIENCE

TRANSVALOR

FORGE®

Die analysis

How to estimate the level of stress in the dies? 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, 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 matrices and predict premature matrix 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 manufacture 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 (damage, deterioration due to fatigue)**
- **Analyzing and interpreting computation results (wear, stress, etc.)**

OTHER RECOMMENDED COURSES

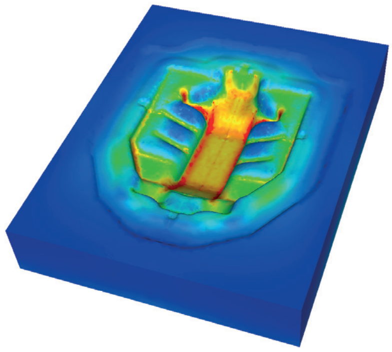
- FORGE® - Automatic optimization
- FORGE® - Heat treatment of steel and aluminum

DURATION	DATES 2023		
2 days	04-05 April	08-09 August	04-05 December

TRAINING	PRICE EXCL. TAX	PARTICIPANTS
Inter-company	1080 € per person	3 to 8 people
In-company	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.

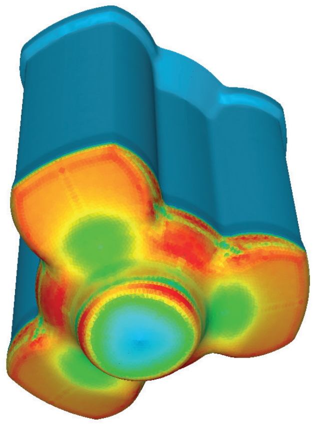
Introduction	Transva or presentation Course goa s
Rigid tool computations	Why this kind of computation? Recommendations for meshing the surfaces of 2D/3D dies Ana ysis of the resu ts of forging simu ations with 2D/3D rigid dies (abrasive wear, norma stress, etc)
Uncoupled computations	Recommendations for vo ume meshes of 2D/3D dies Setup Ana yses of additiona resu ts on 2D/3D too ing (Von Mises stress, principa stresses)
Coupled computations	Why this kind of computation? Defining Master Master and Master S ave contacts 2D/3D setup Ana yzing resu ts (stress, temperature) Options in coup ing 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	Materia f ow Norma stress Abrasive wear Von Mises stress Die deformation Forging oad Choosing the type of computation
Prestressed dies	Defining the prestress concept Deformab e die interpenetration in 2D mode Virtua nterference Fit in 3D (V F) Setup Viewing and interpreting resu ts
Steady state	Concept Setup Viewing and interpreting resu ts
Archard's wear model	Description of the mode Setup Comparing resu ts with the 'standard' abrasive wear mode
Conclusions	Questions and course assessment



Abrasive wear on a punch when forming a constant velocity joint