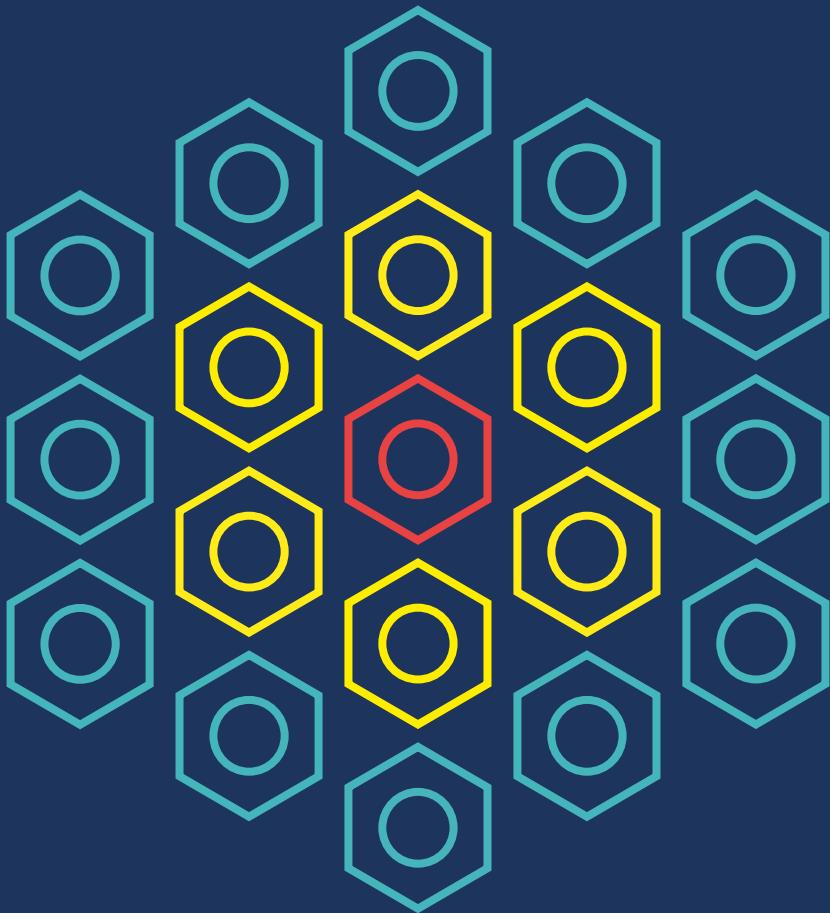


CUSTOMER WORKSHOP PROGRAM



Main courses

OUR KNOWLEDGE IS A DYNAMIC FACTOR.

"Anyone who stops learning is old, whether at twenty or eighty.
Anyone who keeps learning stays young.
The greatest thing in life is to keep your mind young."

H. Ford

We believe that Customers are our great asset and we want to build
a strong relationship supporting them.

We want to be a valuable resource and not just a supplier.

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PRODUCTS PORTFOLIO	P. 18
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JOINT & TIGHTENING.....	P. 30
AGRATI TECH SUPPORT	P. 36



WHAT IS IT?

Agrati University for Customers is a training Program focused on fasteners and special parts produced in Agrati Group facilities.

The Program structure consists of a set of modular courses, divided into main categories.

Customer is free to:

- 1) Follow the full training program
- 2) Select a personal training path, in order to maximize the effectiveness for his needs
- 3) Define its participating team

The Program can start with the basics of fasteners terminology, up to the advanced fastener design guidelines.

All contents are presented in a smart format that encourages interaction and discussion within the group.

HOW IT WORKS

SELECTED TEAM OF ATTENDANTS (~ 5)

Ideal location is one of the Agrati plants (also possible in customer plants).

Full interactivity between both teams.

DIVERSIFIED TEAM OF ATTENDANTS (~ 20)

Location: Customer Plant, but we can organize easily e-learning

Good interactivity between both teams.

Topics path can be detailed in a accurate and friendly way.

LARGE TEAM OF ATTENDANTS (> 20)

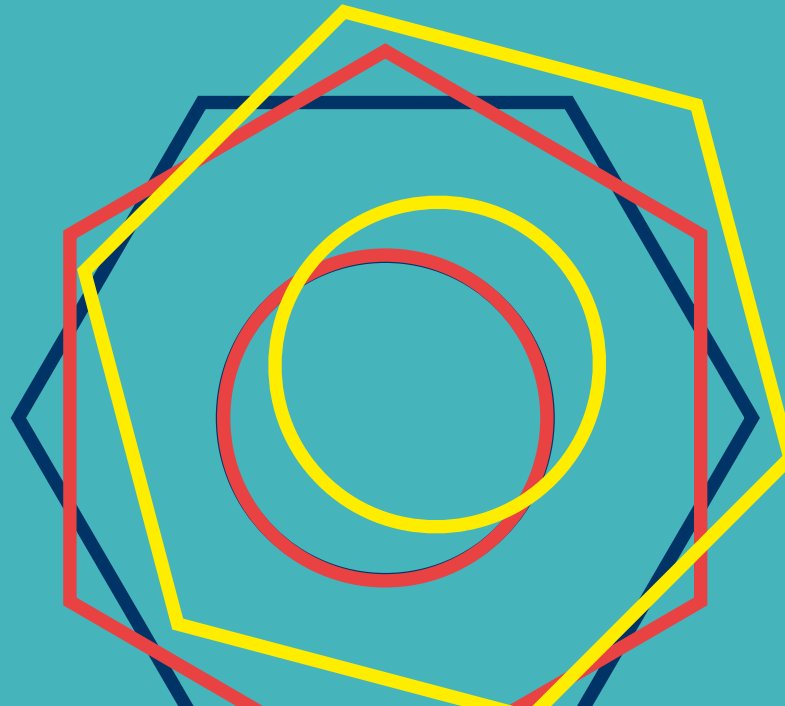
Ideal location is a wide room equipped with video and audio support. Questions&Answers in dedicated timeframes.

Courses are made showing presentations, pictures and videos.

Exposition of samples and manufacturing steps can be organized at Customers' plants.

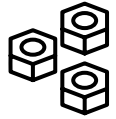
If the Workshop is held in one of Agrati plants, you can visit the production lines.

Special testing demonstrations can be organized in Agrati Tech Centers.





MANUFACTURING



Forging



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 1-2 hours
Real Classroom: 2-3 hours



Product Development Engineers
Application Engineers

General explanation of:

- Raw material preparation
- Cold forging
- Hot forging
- Forging steps
- Forging limits

Rolling



Designers
Fasteners Engineering
Purchasing Department
Quality Department



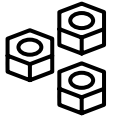
Virtual Classroom: 30min / 1 hour
Real Classroom: 1-2 hours



Product Development Engineers
Application Engineers

General explanation of:

- Realization of thread
- Washer assembly
- Other features obtained by rolling operation



Heat Treatments



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 30min / 1 hour
Real Classroom: 1-2 hours



Agrati Tech Center Engineers
Application Engineers

General explanation of:

- Quenching and tempering
- Process controls
- Product controls

Coating



Designers
Fasteners Engineering
Purchasing Department
Quality Department



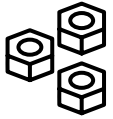
Virtual Classroom: 30min / 1 hour
Real Classroom: 1-2 hours



Agrati Tech Center Engineers
Application Engineers

General explanation of:

- Coating types
- Coefficient of friction
- Corrosion resistance



Secondary Operations



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 30min / 1 hour
Real Classroom: 1-2 hours



Product Development Engineers
Application Engineers

General explanation of:

- Tapping
- Turning
- Milling
- Other secondary operations related to fasteners

Pre-applied patches



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 30min / 1 hour
Real Classroom: 1-2 hours



Agrati Tech Center Engineers
Application Engineers

General explanation of:

- Mechanical locking
- Adhesives
- Sealants
- Thread protection
- Anti-seize function
- Temporary retention



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**PRODUCTS
PORTFOLIO**



Bolts



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 1 hour
Real Classroom: 2-3 hours



Application Engineers

General Explanation of:

- Drive
- Head/Flange
- Shank
- Thread
- Pilot Poing
- Assmbled components

Nuts



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 1 hour
Real Classroom: 2-3 hours



Product Manager Nuts
Application Engineers

General Explanation of:

- Drive
- Bearing Surface
- Assembled Components
- Cage nuts
- Prevailing torque properties



Self-tapping screws



Designers
Fasteners Engineering
Purchasing Department
Quality Department



Virtual Classroom: 1 hour
Real Classroom: 2-3 hours



Product Manager Self-tapping screws
Application Engineers

General explanation of:

- Approach & Guidelines
- Thread profiles
- Tightening curves

Advance Form Parts



Designers
Fasteners Engineering
Purchasing Department
Quality Department

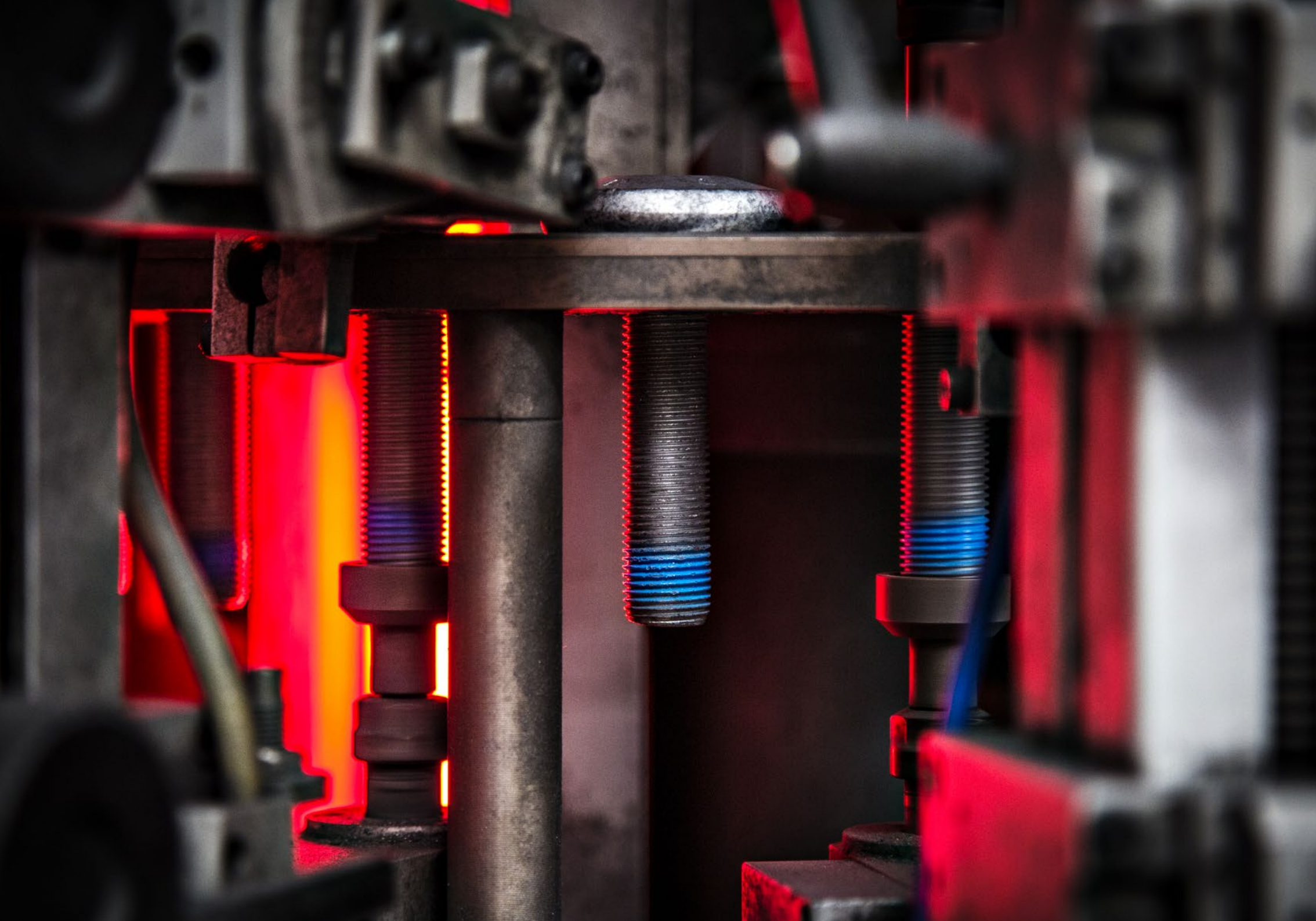


Virtual Classroom: 1 hour
Real Classroom: 2 hours



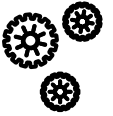
Product Manager AFP
Application Engineers

- General Overview
- Advance Form Parts Map
- Technology conversion / combination
- AFP Portfolio





DRAWING



How to create a fastener drawing



Designers
Fasteners Engineering
Purchasing Department
Quality Department



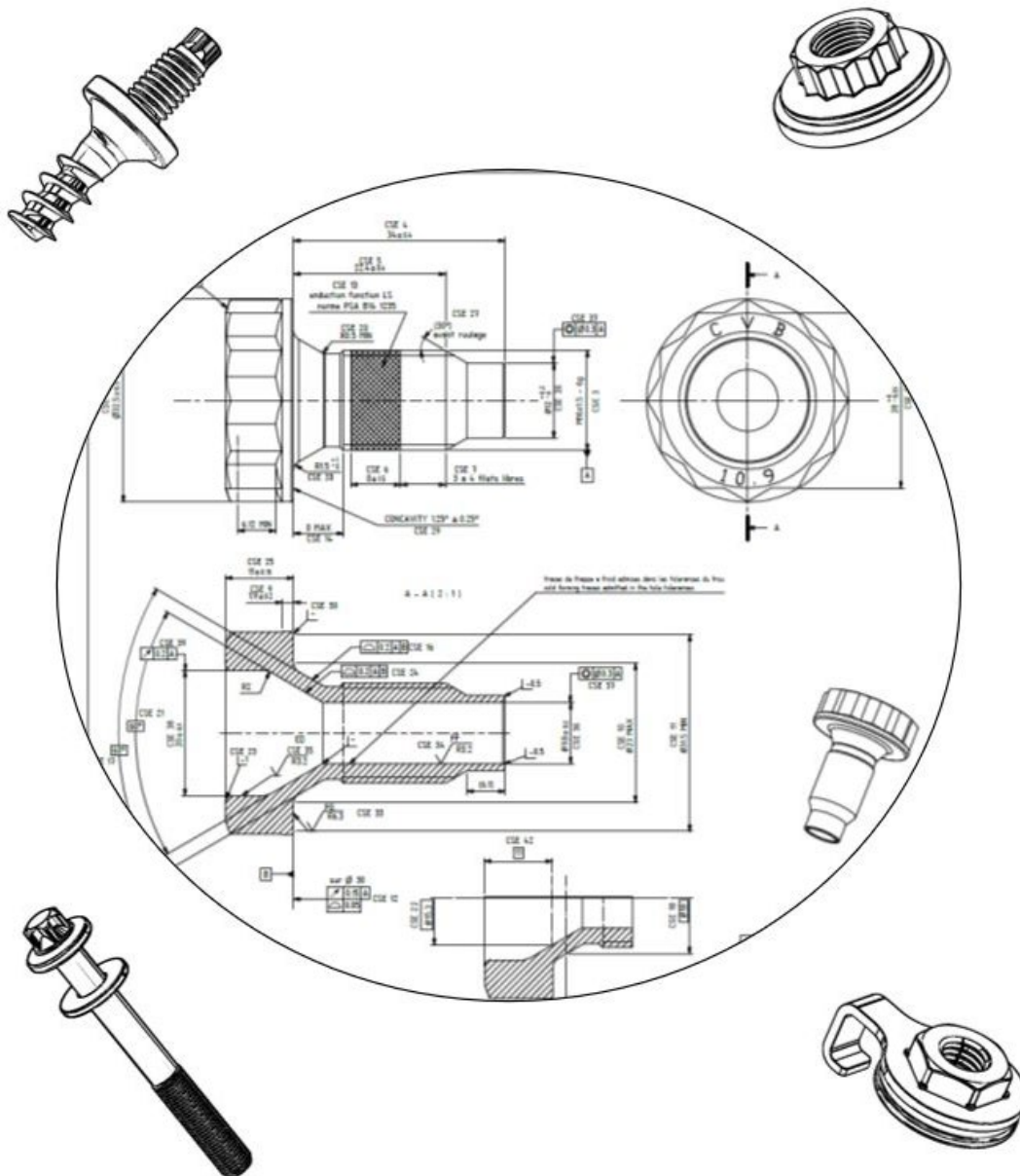
Virtual Classroom: 1 hour
Real Classroom: 2-3 hours



Application Engineers

General explanation of:

- Drive
- Head/Flange
- Shank
- Thread
- Pilot Point
- Assembled components



A large, stylized white number '4' is centered on a solid red background. The number is composed of thick, blocky strokes. In the bottom right corner, the text 'JOINT AND TIGHTENING' is written in a bold, white, sans-serif font, arranged in two lines.

**JOINT AND
TIGHTENING**



Joint Overview



Designers
Fasteners Engineering



Virtual Classroom: 1-2 hours
Real Classroom: 2-3 hours



Agrati Tech Center Engineers
Application Engineers

General explanation of:

- Basics of Threaded Fasteners
- Joints behaviour

Tightening Strategy



Designers
Fasteners Engineering



Virtual Classroom: 1-2 hours
Real Classroom: 2-3 hours



Agrati Tech Center Engineers
Application Engineers

General explanation of:

- Joint accuracy
- Elastic/Plastic domain
- Tightening strategies and control





**AGRATI TECH
SUPPORT**

Technical Support Capabilities



Designers
Fasteners Engineering
Quality Department



Virtual Classroom: 1 hour
Real Classroom: 2 hours



Application Engineers

General explanation of:

- Co-Engineering
- Weight saving strategies
- Cost saving strategies
- Fasteners optimization
- Assembly line walks

Equipment and testing capabilities



Designers
Fasteners Engineering
Quality Department



Virtual Classroom: 1 hour
Real Classroom: 2 hours



Agrati Tech Center Engineers

General explanation of:

- Laboratory equipment
- Testing of fasteners characteristics
- Testing of fasteners performances

Co-Design



Designers
Fasteners Engineering



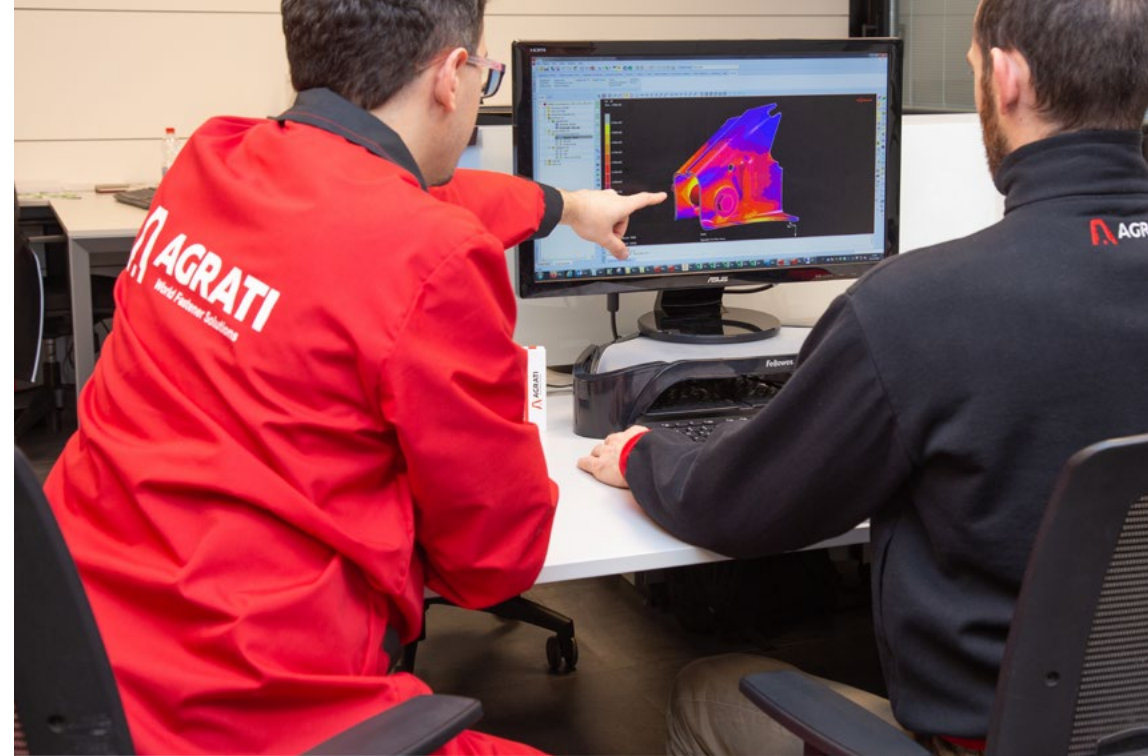
Virtual Classroom: 1 hour
Real Classroom: 2 hours



Co-Design Development Engineer
Agrati Tech Center Engineers

General explanation of:

- Joint calculation
- Fastener design
- Prototyping
- Joint Validation





agrati.com