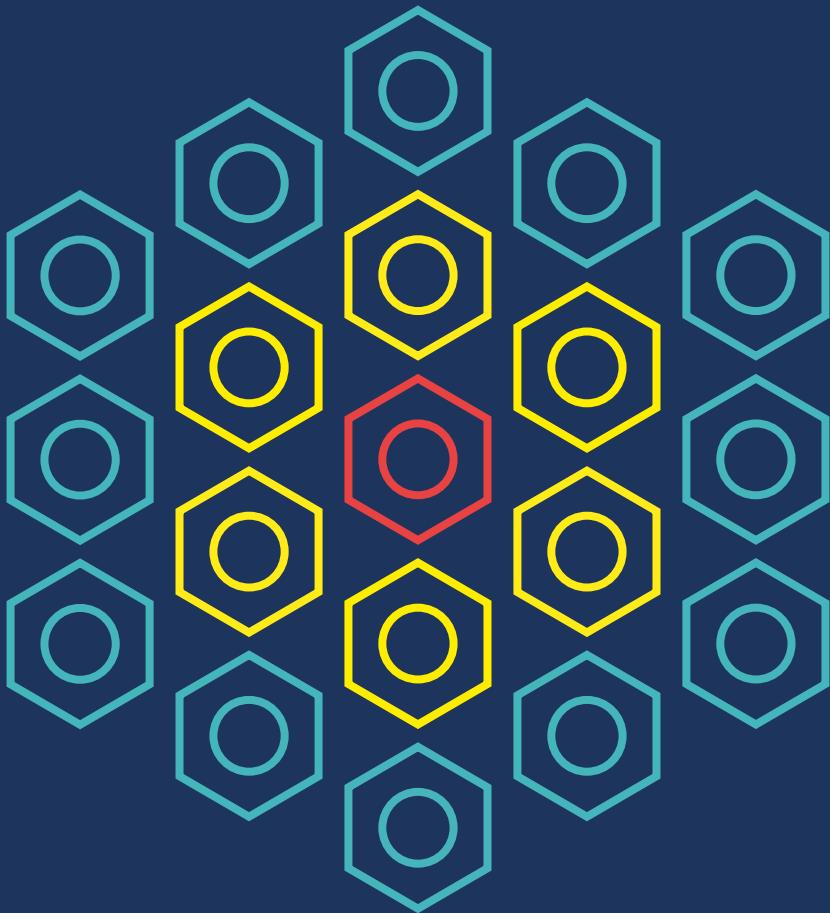


## CUSTOMER WORKSHOP PROGRAM



# 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.

---

MANUFACTURING .....	P. 8
PRODUCTS PORTFOLIO .....	P. 18
DRAWING .....	P. 26
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)**

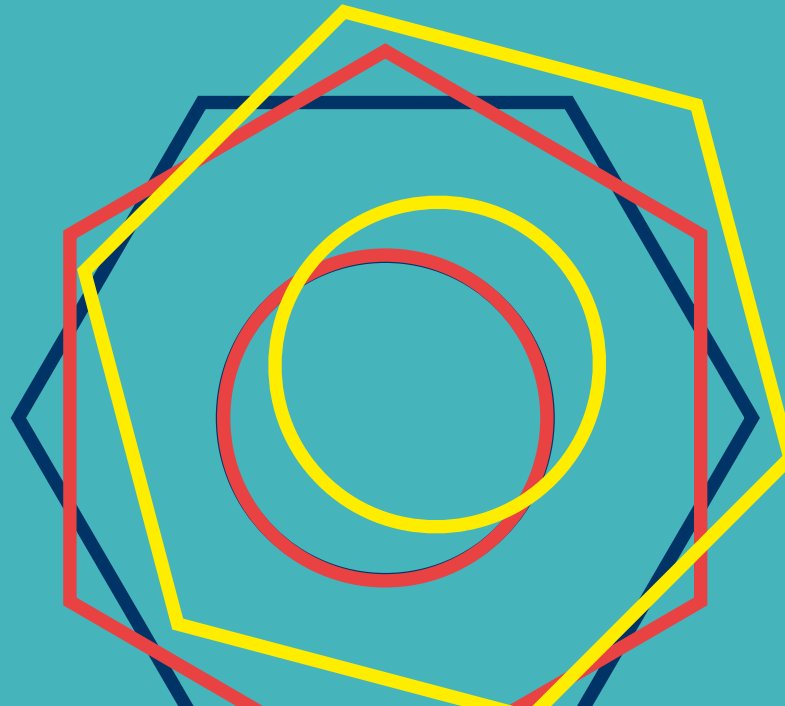
Ideal location is a wide room equipped with video and audio support. Questions&Answers in dedicated timeframes.

Courses are made showing presentations, pictures and videos.

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

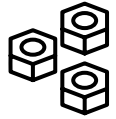
If the Workshop is held in one of Agrati plants, you can visit the production lines.

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



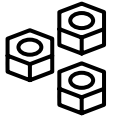
Virtual Classroom: 30min / 1 hour  
Real Classroom: 1-2 hours



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

---

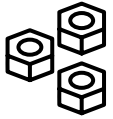


Agrati Tech Center Engineers  
Application Engineers

---

### 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







A large, stylized number '2' in white, set against a teal background. The '2' is composed of two main parts: a top curve and a bottom curve, both with rounded ends. The top curve is a solid white shape, while the bottom curve is a teal shape that fits into the negative space of the top curve, creating a continuous, flowing design.

**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

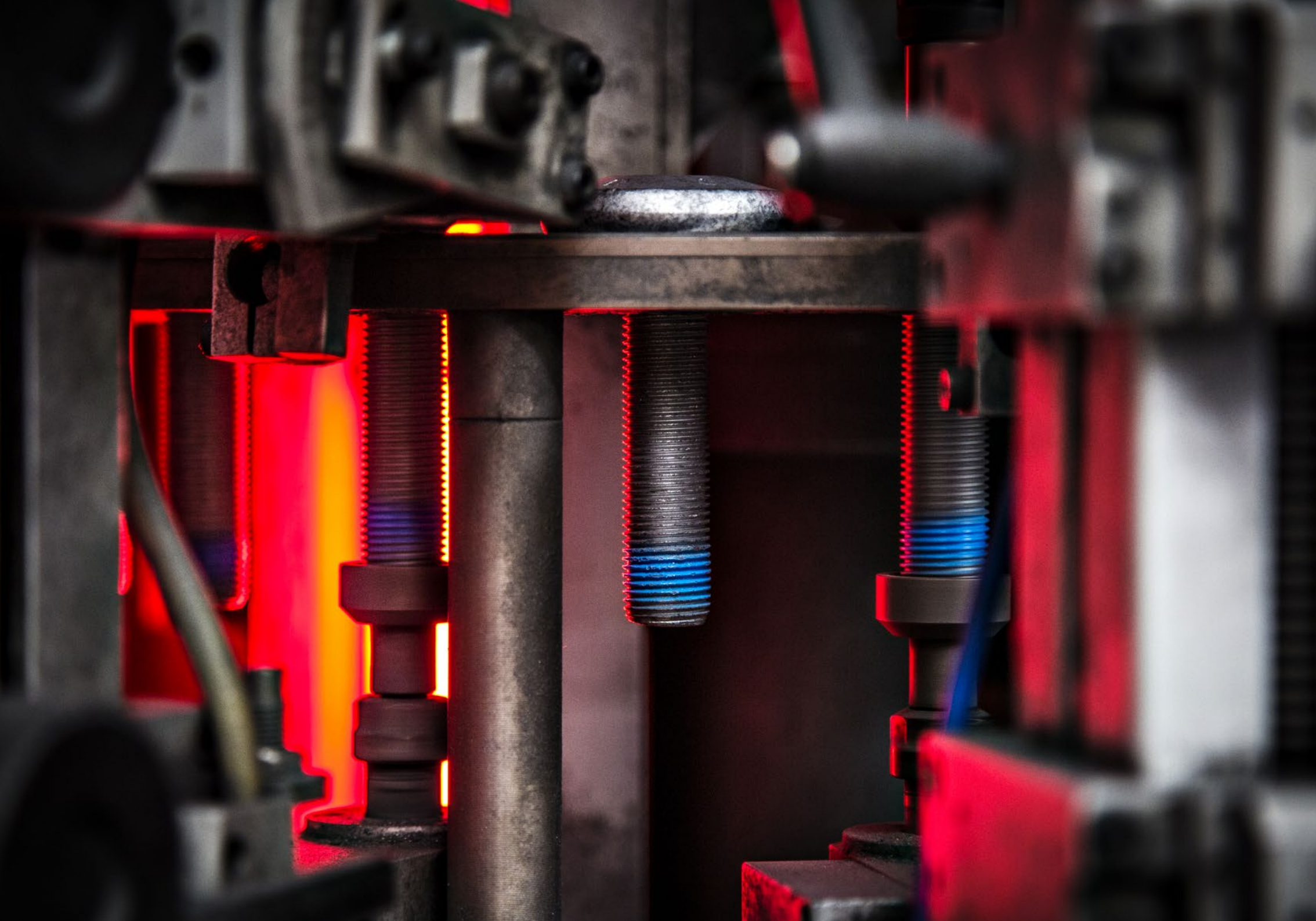
---



Product Manager AFP  
Application Engineers

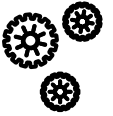
---

- 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



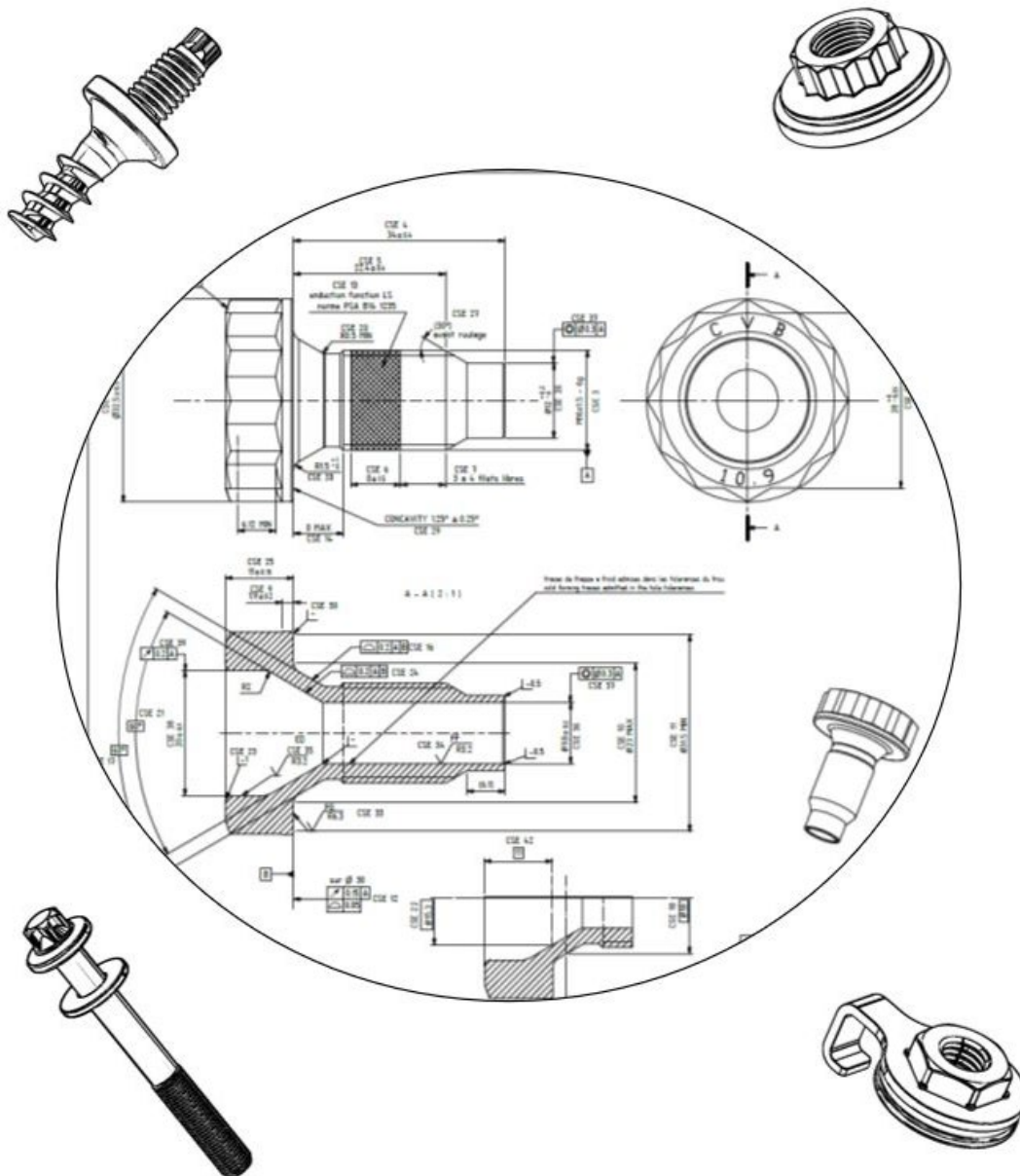
Virtual Classroom: 1 hour  
Real Classroom: 2-3 hours



Application Engineers

### General explanation of:

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



**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



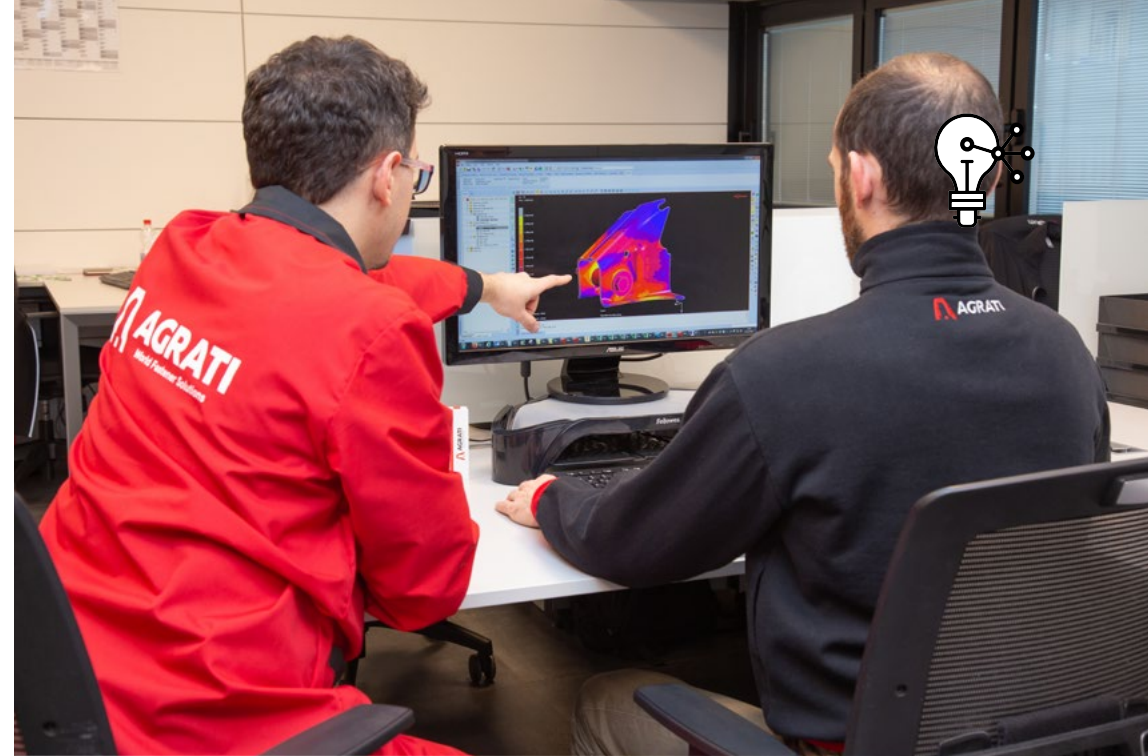
Virtual Classroom: 1 hour  
Real Classroom: 2 hours



Co-Design Development Engineer  
Agrati Tech Center Engineers

### General explanation of:

- Joint calculation
- Fastener design
- Prototyping
- Joint Validation







[agrati.com](http://agrati.com)