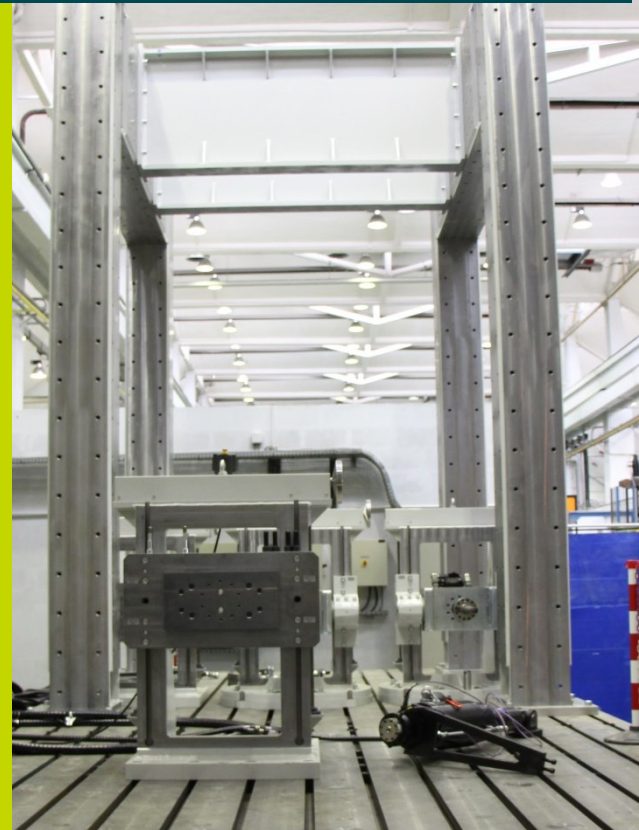
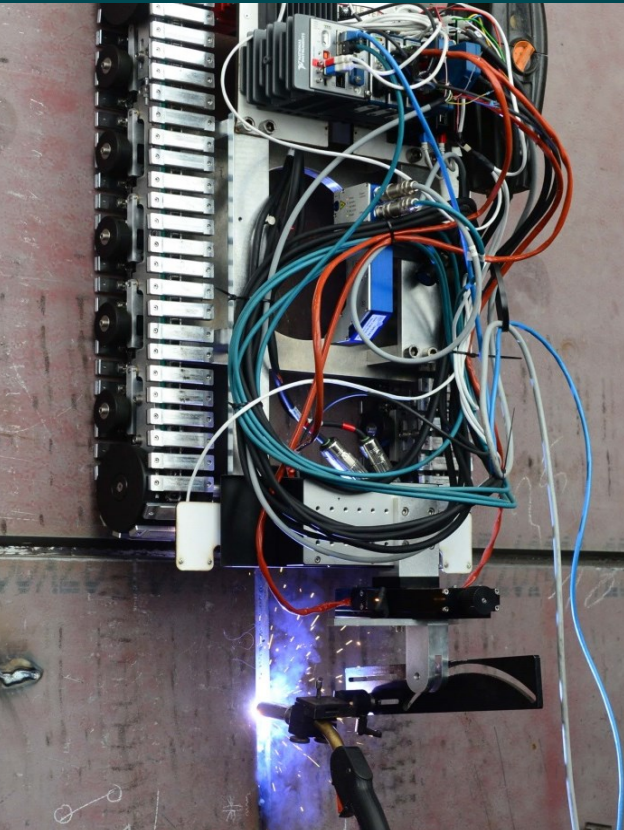


IRT JULES VERNE

Technology Center on Manufacturing



35 industrial members / partners

25 SMEs and **15** Academics

22 M€ annual turnover

100 researchers (R&D engineers and Experts)

More than 2500m² in Development Facilities

2 ongoing European projects another 6 on sight

Cluster - Members

OEMS



SMES



ACADEMICS



Manufacturing

- ▶ Optimize the time to market of product or processes
- ▶ Enhancement of products and processes performances
- ▶ Exploitation of flexible and intelligent systems

4
R&T
axis

SIMULATION and
VALIDATION

METALLIC MANUFACTURING

COMPOSITE
MANUFACTURING

INTELLIGENT AND FLEXIBLE
SYSTEMS - ROBOTICS

Activities

Research and Development

B2B projects | Collaborative R&D projects | R&D services | EU Projects

TRL

1

2

3

4

5

6

7

8

9

Technology transfer | *Licensing and services to industry*

State of Art
Technological
platforms

More than
2500m² of R&D
workshop



Composites
*Composite
manufacturing*



Testing/validation
*NDT – Fatigue – Static
RAMSSES struts evaluation*



Metalic
*Metal
manufacturing*



Agile
Manufacturing
s

MODELING & SIMULATION

- ▶ **Modeling and et simulation of**
 - Production processes
 - Structures in operation
- ▶ **Stochastic modeling and simulation**
- ▶ **Linking of product and process simulation**

METALLIC PROCESSES

- ▶ **Forming**
 - Hot, Superplastic and Magneto Forming
- ▶ **Solid state welding**
 - Friction Steer and Linear Friction Welding
- ▶ **Additive Manufacturing**
 - Composite and metallic

COMPOSITES PROCESSES

- ▶ **Composites Preforms**
 - Preforming process development
 - Function development and integration
- ▶ **Composites Processes**
 - Processing of thermoplastics
 - Hybridation of processes
- ▶ **Composites Recycling**
 - Composites recycling processes
 - 2nd life composite manufacturing

INTELLIGENT & FLEXIBLE SYSTEMS

- ▶ **Mobile cobotics** for industrial operations
- ▶ **Cable-driven parallel robotics**
- ▶ Process assistance through **augmented reality**
- ▶ **Agile Manufacturing**

Composite Manufacturing Facility

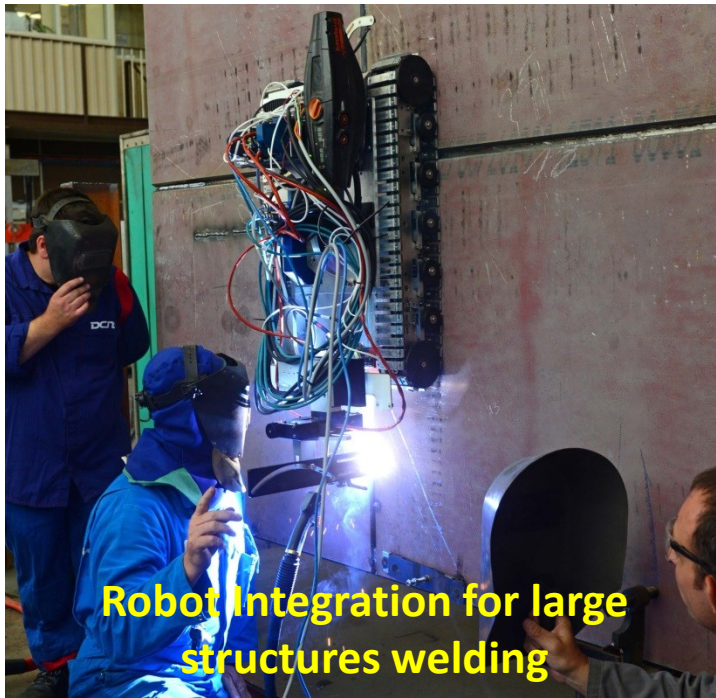


- Complex robotised textile preform
- Complex composite parts conception/forming: injection (1300T) and compression (200T) molding machines, over-molding, parts' functionalisation
- High capacity injection machine
- Development of hybrid processes and composite assemblies
- Composite inductive welding and bonding



About 300m² of R&D facilities

- 3D Process development: improvement of process impact on materials and parts made by powder bed laser beam melting
- Part performance assessment: characterization of process impact on fatigue mechanical behavior of parts
- Innovative design: development of technological bricks relating to DFAM methodology and topological optimization
- Certification: part certification methodology
- Development of new materials and catalog in data base
- Study of the influence of AM parameters and their optimisation



About 800m² of R&D facilities

- Compliance and obstacle avoidance technologies
- Perception and navigation on manufacturing floor (multi-sensor)
- Numerous autonomous mobile cobot prototypes (R&DI)
- Cabling Robot for large volumes precise loading positioning
- Sensing development for improved robot positioning on manufacturing floor
- Integration of welding know-how (from inception to completion – high TRL)

Structures Mechanical Test



200m² of Mechanical Testing Facility

- Bedplate 4x10m² with Installed hydraulic power of 200kW + climate controlled system of 60kW (-50 to 150°C & HR0 to HR95) <https://youtu.be/cCPJVEvr3Uk>
- Loading capacity from 2kN to 700kN with up to 4 simultaneous and Independent excitation, bandwidth 0-20Hz
- Technological edge Instrumentation for real time and simultaneous measurements of : temperature (Touples and IR camera 350kHz), Strain (strain gauges and stereo-correlation of images), Acoustic emission , US NDT, ...

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