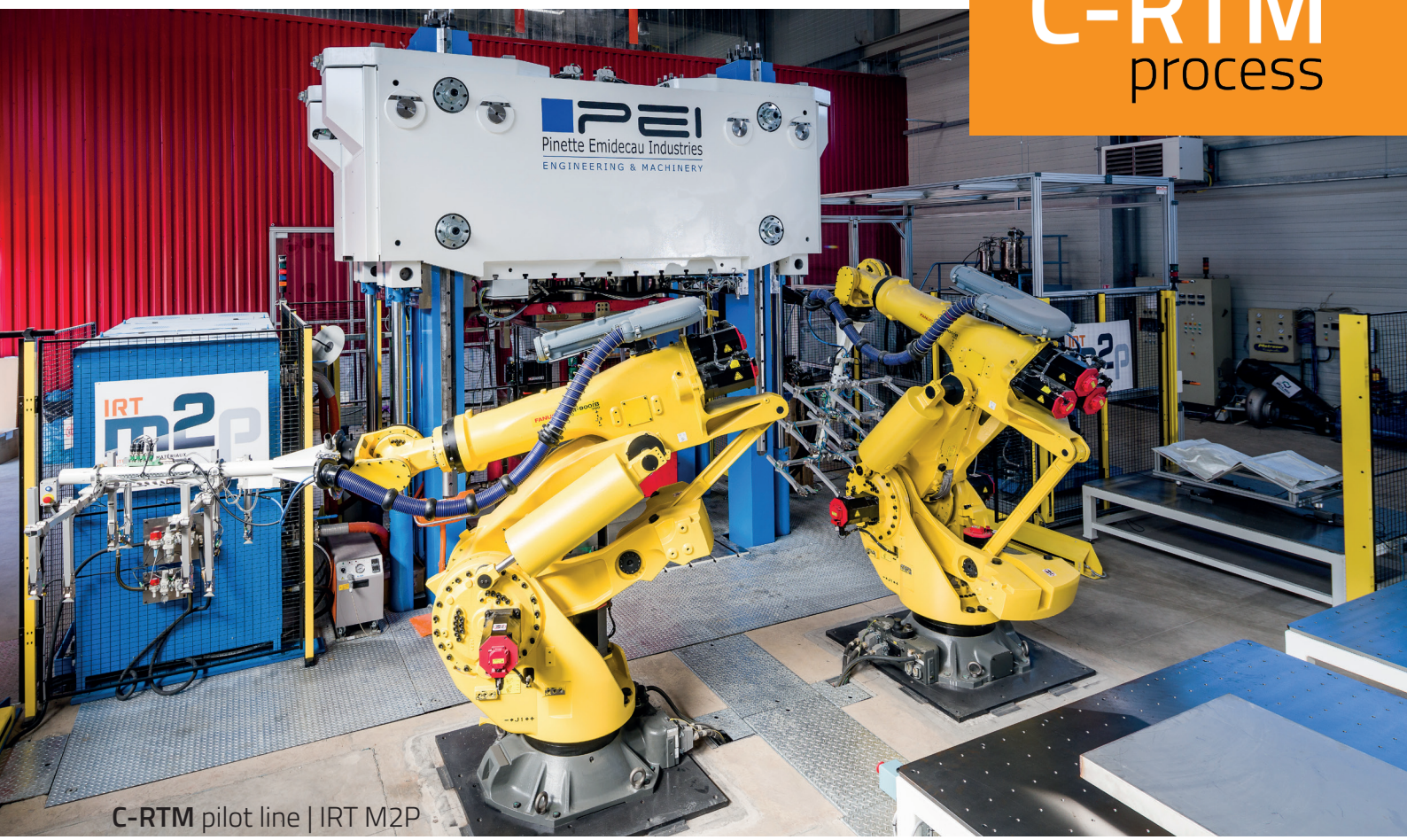
C-RTM process



C-RTM pilot line | IRT M2P

JEC GROUP WINNER OF 2017 INNOVATION AWARD

C-RTM process

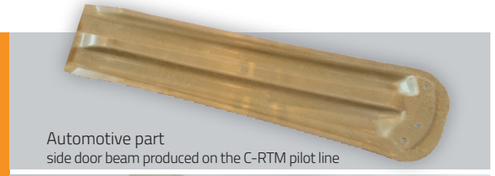
Full Scale Structural Composite Parts with a Two Minute Cycle Time

Pinette Emidecau Industries
ENGINEERING & MACHINERY

IRT m2p
INSTITUT DE RECHERCHE TECHNOLOGIQUE MATÉRIAUX MÉTALLURGIE ET PROCÉDÉS

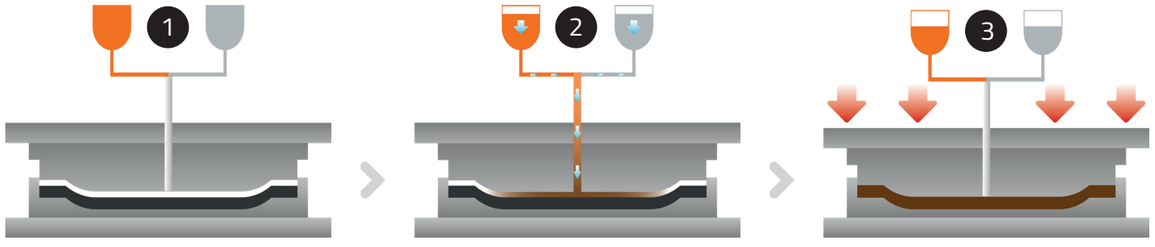
C-RTM process

1. Rapid closure of the press to a precision gap, full vacuum is applied to the tool cavity.
2. Precisely metered resin is rapidly injected into the gap on top of the preform surface.
3. Press is closed completely compacting and fully impregnating the preform to the final part dimensions.



Automotive part
side door beam produced on the C-RTM pilot line

Prototype part
Difficult geometry successfully molded with C-RTM



C-RTM process | Full Scale Structural Composite Parts with a Two Minute Cycle Time

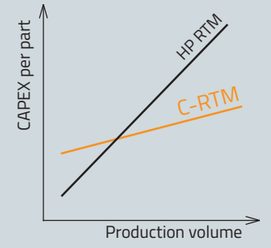
Process

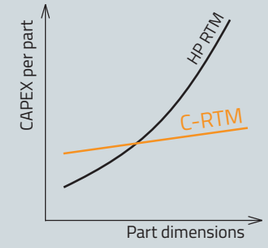
	C-RTM	HP-RTM
Average cycle time	2 minutes	4 to 10 minutes
Iso cycle time Independant of part size	✔	X
Net Shape	✔	X
100% Raw Material usage	✔	X - Sprue
Thermoplastic resins compatible	under certain conditions	under certain conditions
Thermoset resins compatible	✔	✔
High Pressure (HP) injection compatible	✔	✔

CAPEX* / Production volume
CAPEX* / Part dimensions

Comparison of high volume production technologies.

* Capital Expenditure





Performance

Product performance

- Fiber Volume : up to 60%
- Porosity <2%
- No fiber distortion from process
- Yields stable part geometry

Process performances

- Repeatability
- On line monitoring
- Flexible - Supports several manufacturing processes
- Lights out manfacturing : fully automated

Applications

Automotive

Structural and non-structural parts
- Body in white
- Side door beams, door panels, lift gates, interior components

Exterior parts
- Hood, roof, fender, front clip

Aerospace

- Low temperature component
- Secondary structure, cabin interior components
- Blades

Industries

- Railway interior components
- Building construction
- Naval
- Sports and leisure

The C-RTM pilot line is available for trials and new projects
based at IRT M2P | 57870 Porcelette | France

Tailored engineering services on a dedicated Industrial pilot line
- Part design and dimensioning
- Process development and simulations : injection strategy, materials, toolings, automation
- Prototyping, pre industrialisation and low volume productions
- Quantify economical advantages of C-RTM process

Design and supplier of the C-RTM technology and turnkey production lines.
- Pinette P.E.I. acts as a general contractor and coordinates integrating the complete technology including the **Injection systems** and **heated tools**.
- Process commissioning at customers facility
- Training & production launch support
- Maintenance

Expert partners in C-RTM technology can provide efficient support

Thermoplastic resins	Thermoset resins	C-RTM Tooling	Textile reinforcements	Composite characterization NDT (US, thermography...) Thermoplastic Composite Welding (induction, resistive...)

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