



HAL
open science

POPCOM platform: Composites Advanced Manufacturing

Patricia Krawczak, Mylène Deleglise-Lagardere, E. Lafranche, Cosson Benoit,
Chung-Hae Park

► **To cite this version:**

Patricia Krawczak, Mylène Deleglise-Lagardere, E. Lafranche, Cosson Benoit, Chung-Hae Park. POPCOM platform: Composites Advanced Manufacturing. Journée Industrielle "Matériaux haute performance et écomatériaux dans les transports", May 2019, Paris, France. hal-02270668

HAL Id: hal-02270668

<https://hal.science/hal-02270668>

Submitted on 26 Aug 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



IMT Lille Douai
École Mines-Télécom
IMT-Université de Lille

TPCIM

Technologie des
Polymères et
Composites &
Ingénierie Mécanique

POPCOM Platform

Composites Advanced Manufacturing

POPCOM Composites Advanced Manufacturing Platform: Original facilities for development and industrialization of structural composites and reinforced polymers, embracing the whole chain of product life cycle ... the "Swiss Army Knife" of composites

- A technological platform dedicated to a **wide span of advanced manufacturing processes for both thermoplastic or thermoset polymer composites:**
 - **Stamping / Thermo-compression moulding** (1200 kN, up to 450°C, up to 10°C/min heating & cooling, 600 x 600 mm plate size, up to 450 x 450 mm part size depending on mould type)
 - **Liquid Composite Moulding**, e.g. RTM, Thermoplastic RTM, C-RTM, VARTM, Infusion (mono- or bi-component thermosets or thermoplastics injection units up to 50 bars and 170°C or 350°C, depending on the equipment and material system configuration)
 - **Automated fibre placement** (preforming, fibre/tape laying) / **Filament winding**
 - **Autoclave** (up to 400°C, 30 bars and 700 x 1300 mm² part size)
 - **Thermoplastic overmoulding**, IR oven heating, LFT or BMC **injection-moulding** (200-350T)
 - **Laser welding**
- Different **prototype moulds with complex geometries for demonstrator fabrication**. Pressure and temperature modulated by computer programming.
- **In-house numerical simulation codes** (3D resin flow simulation, numerical computation of mechanical properties of textile composites considering manufacturing defects)

Suitable for a wide range of materials and application markets

- **Matrices:** Thermoplastics (PP, PA, PET, PBT, PEEK, PEKK, Elium[®]...), thermosets (EP, UP, VE, PF, benzoxazine ...)
- **Fibres:** glass, carbon, aramid, flax, basalt, hybrids ...
- **Reinforcement architectures:** UD, NCF, mats & non-woven fabrics, woven & knitted fabrics, prepregs, GMT, commingled, film stacking, LFT pellets, BMC compounds, SMC ...
- **Markets:** auto, aero, rail, marine, sports & leisure, electric/electronics, construction, energy ...

Stakeholders



Authors

P. Krawczak,
M. Deléglise-Lagardère,
E. Lafranche, B. Cosson,
C.H. Park

Project leader

Pr. Patricia Krawczak
TPCIM lab
tpcim.imt-lille-douai.fr
youtu.be/SX62uQB481c

POPCOM platform

youtu.be/ZF5E9gUmaxM

IMT Lille Douai,
Douai campus
941, rue Charles Bourseul
CS 10838
59508 DOUAI Cedex, France
Tél. : 03 27 71 22 22
www.imt-lille-douai.fr



Autoclave

Thermocompression & Resin Transfer Moulding (incl. C-RTM, RTM-TP, VARTM)



Automated dry fibre placement

Injection-moulding & overmoulding (LFT, BMC, sandwich ...)



Contact :
patricia.krawczak@imt-lille-douai.fr

Project co-financed by the European Union with the European Regional Development Fund