

17th International Conference on Flow Processes in Composite Materials (FPCM17) 30th June – 2nd July 2026

ABSTRACT:

An Industrial Context for Flow Processes in Composite Materials.

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Flow processes in composite manufacture have been studied extensively for decades, leading to increasingly sophisticated models for permeability, flow front prediction and process optimisation. Yet industrial practice often presents a rather different perspective. Manufacturing engineers are required to make confident decisions despite uncertain material properties, imperfect boundary conditions and the practical realities of production. Success is measured not by the elegance of a model, but by the consistent manufacture of high-quality composite structures.

This presentation draws upon a series of industrial case studies spanning aerospace, offshore wind energy and high-performance marine structures. These include the development of resin-infused aerospace structures, very thick carbon fibre marine components, large-scale wind blade infusion and numerous challenging RTM applications. Rather than focusing on individual technical solutions, the presentation explores the common engineering principles that emerge across these diverse programmes.

As digital manufacturing and artificial intelligence become more prominent, the presentation also questions whether future process optimisation will be driven primarily by data-driven methods or whether engineering judgement and practical experience will continue to play the dominant role.

By illustrating how flow science is applied under commercial constraints, the presentation aims to stimulate discussion on how academia and industry can work together to accelerate the development of robust, scalable and economically viable composite manufacturing processes.