

A REVIEW OF SATURATION MODELS IN LIQUID COMPOSITE MOLDING

Keynote lecture given on Day 2 of FPCM-9, Wednesday July 9th 2008, 8 h 30 – 9 h 15

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As proposed by some investigators after the precedent FPCM conference, it would be useful to sum up and classify the numerous LCM process variants in order to facilitate their further presentation by speakers during the conference. This important issue will be addressed in the first part of the lecture, to point out the main classes of LCM processes.

Then, in Liquid Composite Molding (LCM), saturation is defined as the volume of resin contained in a unit cell of the fibrous reinforcement. It is a function of space and time in the mold as the resin front progresses during fabrication of a composite part. Knowledge of the saturation level during processing is an important issue for quality control, because the local void content in the composite has a strong effect on its mechanical properties and fatigue behavior. Various approaches have been proposed recently in the scientific literature to measure and model saturation in LCM. Replacing the issue in the context of early work in Soil Science, Dr. Véronique Michaud will first present a review of the models proposed to study saturation in LCM, and then describe the work carried out at École Polytechnique Fédérale de Lausanne (EPFL) on this important topic.