

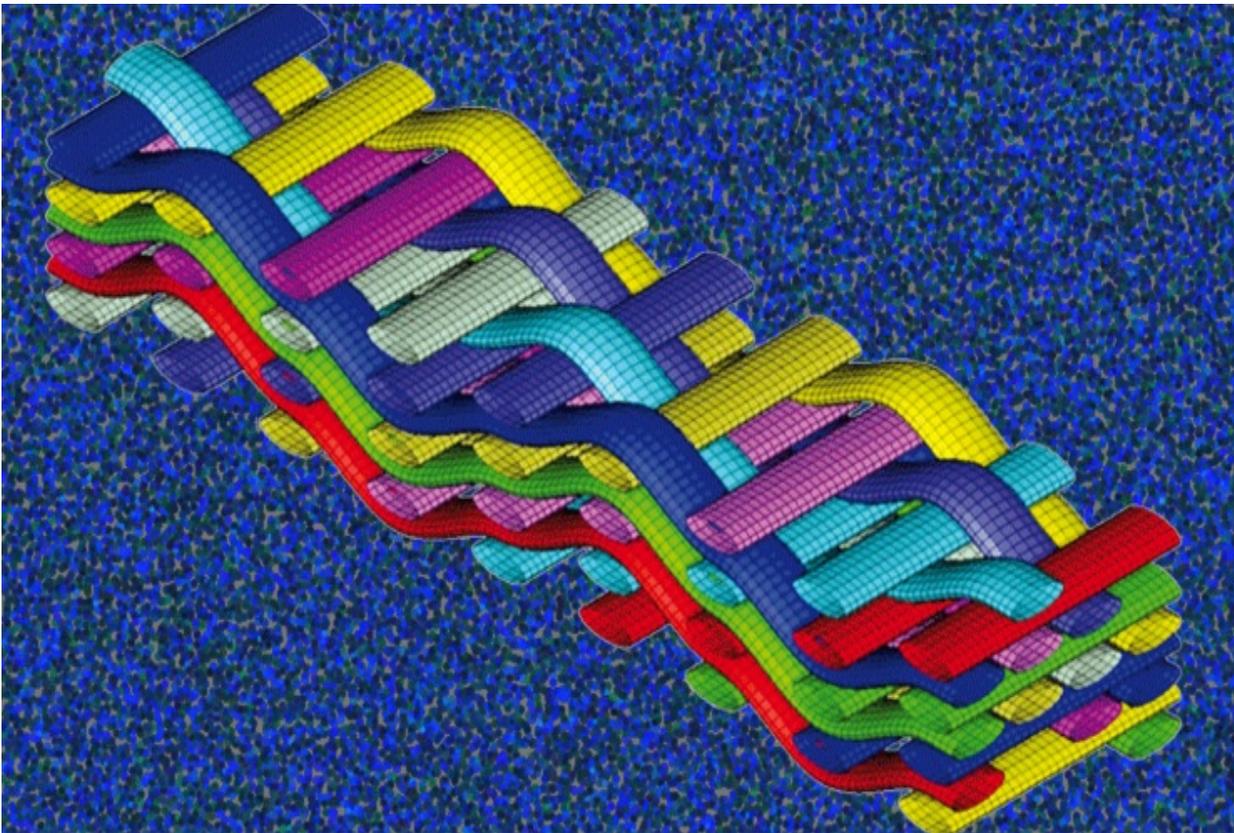
Interactions UTC

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36 : Où en est la mécanique numérique ?

Incontournable, la mécanique numérique s'insère aujourd'hui dans l'ensemble de la chaîne de conception rapide des produits fabriqués par l'industrie. S'appuyant sur les outils de modélisation géométrique et de visualisation, et intégrant les outils de simulation et d'optimisation, elle réduit les délais de conception, limite les erreurs et s'insère dans l'esprit du développement durable en aidant à concevoir des produits de plus en plus respectueux de l'environnement.

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Summary

- Computational mechanics for engineers, after 40 years research
- Has computational mechanics heralded an industrial revolution?
- Industrial die-stamping, between model democracy and expertise
- Between democracy of uses and extreme demands in industry
- An era of optimization
- Computational hydraulics at UTC

For UTC, this specialty is not just one of the numerous domains in which the university is investing as a structure than can be usefully integrated to teaching science and technologies. It is a specialty that was launched in the 1970s by three pioneers: Jean Louis Batoz, Gouri Dhatt and Gilbert Touzot, and has become a key subject matter taught at UTC, with over 300 PhDs, confirming that UTC is indeed a leader in

this field.

Computational mechanics is widely used and UTC wanted to celebrate its 40 years investment by organizing a conference Nov.26-27, 2015. The aim was to recall the pioneering days and also to update the attendees on the latest developments and on the way modelling tools have developed here, impacting an increasing number of areas.

These tools are now commonplace in mechanical engineering industrial sectors but now extends to numerous areas where multiphysical behaviours can be modelled. "There is still plenty of room for further improvement, in for instance in bio-mechanics and in environmental sciences", explains Jean Louis Batoz, emeritus Professor at UTC who underscores the prospects that lie in physics applied to complex, multiphysics and multi-scale environment such as urban physics.

Another key-note feature of the November conference at UTC was the award of a honoris causa doctorate to Professor Klaus-Jürgen Bathe, one of the most eminent pioneers of this specialty. Although born in Germany, Professor Bathe has been working for 40 now at MIT (Cambridge, USA) where he was able to tackle some of the most fundamental aspects of the topic, as well as preparing associate software packages for use in industry.

He has authored several books, published hundreds of papers and is involved in the editing of some twenty international peer-reviewed journals.