

Multiphysics Applications For Sustainable Engineering And Industrial Processes



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Introduction: Multiphysics simulations have been around for a while. Yet many companies neither have the resources, skills or time to integrate them into their product design nor production processes. As the pressing need for better, more sustainable engineering and production improvements, small and medium companies for the most part, but also some larger industrial corporations, will need easy-to-use, customized, multiphysics applications tailored to their needs and expertise.

Computational Methods: Armélio has designed and is now ready to deliver state-of-the-art COMSOL apps bringing multiphysics simulation into research labs and production plants. Applications range from heat transfer management in industrial ovens to RFID tag performance under structural deformation. Applications are designed using the COMSOL Application Builder. Users can run them using COMSOL Server™ installed on dedicated computers, thereby turned into Virtual Test Labs. Or alternatively, access a remote server on the Cloud. In both cases, the application development and server installation are handled by Armélio.

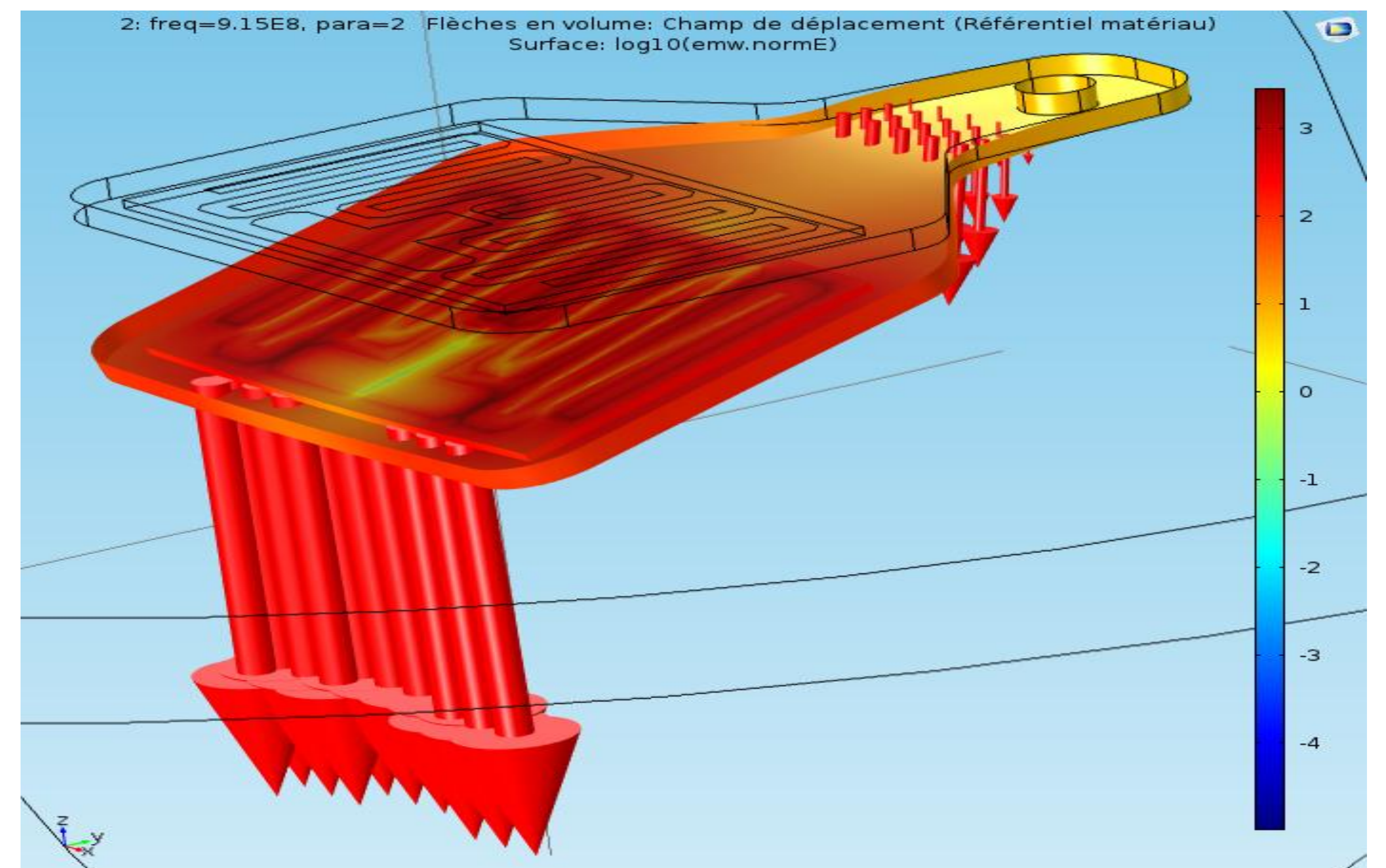


Figure 1. Deformed RFID Tag

Examples: In fig.1, we use coupled RF and Structural Mechanics Simulations in order to assess the transmission efficiency of RFID tag antennas under strain. In the fig.2, RANS simulation of an approximately isothermal flow inside an industrial oven is coupled to the heat transfer of solid parts. Both applications provide toggles and switches enabling user investigations of geometry, material or parameter-dependent features and their impact on operating performance.

