AMPLI

Press Release

October 20th, 2020

Plastic transformation simulation to take the Augmented Reality to a new level thanks to the AMPLI project

Launched in February 2020, the AMPLI project simulation, supported by the EIT Manufacturing and reuniting a consortium of five partners – ESI Group, coordinator of the project, Whirlpool, IPC (Innovation Plasturgie Composites), ENSAM and LMS (Laboratory for Manufacturing Systems & Automation) – will combine advantages of simulation and augmented reality to provide manufacturing workers with real-time knowledge and information. The project will bring an important step forward the digital transformation of European factories.

The plastics industry has already introduced enabling technologies to achieve zero-defect manufacturing and improve work cells flexibility such as in-mold sensors, in-line quality control, autonomous devices or predictive models. Augmented Reality (AR) offers new ways to interact not only with machines but also with manufacturing and product models. However, for further adoption, existing AR tools are still not specific enough to be relevant and need to offer dedicated platforms regarding each industrial domain.

The objective of the AMPLI project is to provide machine operators with real-time knowledge and information to improve decision-making and working procedures thanks to the development of an AR tool dedicated to the manufacturing value chain of polymer forming process. The AR tool will be based on the combination of plastic domain-based knowledge (from tuning, production and maintenance) and the integration of numerical simulation.

AMPLI project target 3 main benefits:

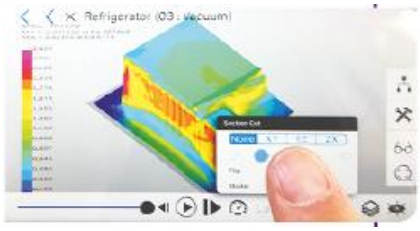
- Improve manufacturing efficiency
  - time reduction for tuning a work cell: -10%
  - increase machinery availability by preventive maintenance: +8%
  - reduction of training period of work force: -25%
  - reduction of scraps: -10%
- Eliminate skill shortages by capturing and return process knowledge
- Increase attractivity of shop floor work by fostering the use of digital tools, which is appealing for young people. Work becomes more visual, accessibility increases and facilitates the training

AMPLI project approach is to embed and enable physically realistic virtual objects in a real environment to be interactive. It is based on the improvement of AR mechanisms and usability through:

- embedded process simulation results thanks to reduced order model
- customized plastic and composite processing interface by mixing measured information coming from the manufacturing work cell and information coming from models

The project is sponsored by the EIT Manufacturing (European Institute of Innovation & Technology) and is supported by a consortium of 5 European partners led by ESI Group. Together, and for a period of one year, the consortium partners will be working on developing, testing and validating AR and simulation technology dedicated to a thermoforming process.

ESI will be the integrator of the final output based on existing AR tool. This step will be particularly challenging and key as AR need real-time information to be efficient which will not be possible without ESI's expertise and innovation technologies like its model-order reduction platform. IPC will provide knowledge rules regarding setting and supervision. They will use their skills in machine interoperability and process control as guidance for the project. Moreover, IPC simulates currently thermoforming process using ESI software PAM-FORM.
LMS has extensive experience in developing AR application for the manufacturing domain to support different steps of the lifecycle. Among other AR apps, LMS has developed an AR solution to support the maintenance phase of injection molds.
ENSAM will develop AR features to mix manufacturing process simulation with reality.
Whirlpool as plastic converter will provide requirements and a pilot case dedicated to thermoforming to test and validate the product at an industrial scale.



AMPLI will bring to the market a new product with AR integrating both plastic domain knowledge and simulation as differentiator.

In mid-term, such benefits will be transferred to other manufacturing processes.

Project title: Augmented Mold for setting and supervision of PLastIc product manufacturing
Project Duration: 12 months
Project Consortium:

If you have any questions about this release, feel free to get in touch with:

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About ESI

Founded in 1973, ESI Group is a leading innovator in Virtual Prototyping solutions and a global enabler of industrial transformation. Thanks to the company's unique know-how in the physics of materials, it has developed and refined, over the last 45 years, advanced simulation capabilities. Having identified gaps in the traditional approach to Product Lifecycle Management (PLM), ESI has introduced a holistic methodology centered on industrial productivity and product performance throughout its entire lifecycle, i.e. Product Performance Lifecycle™, from engineering to manufacturing and in operation.
Present in more than 20 countries, and in major industrial sectors, ESI employs 1200 high level specialists. In 2019, its proforma turnover was 146.2M€. ESI is headquartered in France and is listed on compartment B of Euronext Paris.

For further information, go to www.esi-group.com.

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About the EIT & EIT Manufacturing

The European Institute of Technology and Innovation (EIT) is a body of the European Union and is an integral part of the Horizon 2020 program. EIT was established to support the innovators to change their best ideas to products, services and job positions for Europe. EIT consists of 8 Knowledge and Innovation Communities: EIT Manufacturing, EIT Climate-KIC, EIT Digital, EIT Food, EIT Health, EIT InnoEnergy, EIT RawMaterials, and EIT Urban Mobility.

EIT Manufacturing's main goal is to bring European stakeholders focused on manufacturing together in innovation ecosystems that add unique value to European products, processes and services and inspire the creation of globally competitive and sustainable manufacturing. EIT Manufacturing associates more 50 organizations (universities, research institutes and business), such as Volkswagen, Volvo, Darmstadt University of Technology, the French Alternative Energies and Atomic Energy Commission (CEA), Siemens, Slovak University of Technology in Bratislava, Phillips, Procter & Gamble, and Whirlpool Europe to name a few.