

New Data-based Technologies

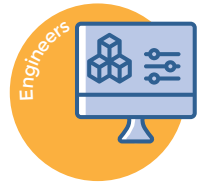
IMPROVE: PROVIDING ENGINEERS WITH 4.0 SOLUTIONS

In today's competitive, global industrial environment, engineers rely on high-level solutions for machines in industry production. The European project IMPROVE has developed innovative data-based tools to enhance efficiency and productivity in the fields of simulation & optimization, condition monitoring, and alarm management.

IMPROVE's solutions:

- Provide a simulation-optimization round trip solution ready to be implemented in industrial environment:
 - First tool combining simulation and optimization techniques on the market
 - First tool educating operators with augmented reality (AR) experience in the fields of process/machine KPI, machine documentation, and instructional content with video/audio
- Provide an innovative self-learning condition monitoring solution that prevents producers from unexpected breakdowns or product degradation:
 - Realising data-driven condition monitoring: models are learned from data and are then used to detect and localise anomalies within the versatile production system
 - Possibility of retrofitting of old machines as data acquisition for learning is flexible
 - New machine design can directly incorporate technologies for condition monitoring





- Provide the first alarm management algorithm based on case-based-reasoning (CBR) and data-driven similarity learning that integrates expert knowledge:
 - Combining similarity measure learning, offline case-base construction, semi-supervised learning, online flood detection, and CBR
 - Supporting the operator to handle an alarm flood:
 - > System gives a suggestion “where to look first”
 - > Good support for unexperienced operators
- Provide a decision support system (DSS) visualising results and assisting the operator to take the right choices in the manufacturing process
- Develop knowledge acquisition methods to translate implicit knowledge into explicit models of the machines represented by so-called cause and effect graphs and include it into data mining for efficient feature selection

Interested in learning more about our tools?

Please do not hesitate to contact us for further information.

Contact

Oliver Niggemann
Ostwestfalen-Lippe University of Applied Sciences
IMPROVE Coordinator
oliver.niggemann@hs-owl.de

www.improve-vfof.eu

