Boosting Industrial Production

IMPROVE PRODUCTION THROUGH INNOVATIVE 4.0 TECHNOLOGIES

In the face of international competition and globalised production chains, new technologies are required to increase the productivity and efficiency in production plants. The European research project IMPROVE has developed innovative data-based solutions to enhance the productivity, reduce downtimes and increase the reliability of the production.
Main achievements of the IMPROVE project are solutions in the fields of simulation & optimization, condition monitoring, and alarm management. These tools can be implemented as an upgrade to already existing production plants or in new lines.

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
  - Carries out short-time forecast analyses to identify wrong machine settings after a product changeover or problems related to raw material changes

- 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
  - Suggesting solutions in case of alarm floods (identification of the flood, repair instructions, etc.)
- 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

Your benefits:

- Enhance productivity
- Reduce downtime
- Cut down costs
- Reduce employee stress
- Boost production efficiency
- Increase profit

Interested in learning more about our tools?
Please do not hesitate to contact us for further information.

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