AI·PROFICIENT

Artificial *i*ntelligence
for improved *p*roduction e*ffici*ency,
quality and ma*in*tenance

Overview

AI-PROFICIENT aims to improve manufacturing processes in terms of production efficiency, quality and maintenance, by combining human knowledge with AI capabilities (human-machine interaction). The overall goal is to increase the positive impact of AI technology on the manufacturing process as a whole, while humans assume supervisory (human-on-the-loop) and executive (human-in-command) roles.

AI-PROFICIENT will develop a technical and business ecosystem to showcase the potential that advanced AI technologies bring in production plants, alongside with human interaction. In this regard, AI-PROFICIENT proposes an evolution from hierarchical and reactive decision making for plant automation, towards self-learning and proactive control strategies.

Key Features

Reinforcement learning algorithm

Using operator's feedback and initial Anomaly Detection and Root Cause Analysis results, the algorithm is improved and provides better results in future cases where a problem is detected

Generative holistic process optimization algorithm

Provides real-time decision support to the operator in the plant, by performing data-driven holistic process optimization and generating optimal corrective actions

Anomaly Detection algorithms

Enable the operators to early detect deficiencies in product characteristics and malfunctions in the production line machines

Root-Cause Analysis operation

Assists the operator to determine the cause of the detected anomalies

Digital Twins

Simulate operations and increase Reactor stability

Explainable AI

Enabling transparent and explainable AI support for effective human-machine collaboration

Speech to Text module

Facilitates the operator in verifying the correct additive selected

Optical Character Recognition module

Used to speed up the operator's task to quickly recognize bags with additives and insert them into the production process

"Ethics by design" approach

Software modules follow the four principles: (i) respect of human autonomy, (ii) prevention of harm, (iii) fairness and (iv) explain ability

Use Cases

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TIRES MANUFACTURING

SARREGUEMINES PLANT (FRANCE)

INEOS

PETROCHEMICALS MANUFACTURING (POLYPROPYLENE)

GEEL PLANT (BELGIUM)

INEOS

PETROCHEMICALS MANUFACTURING (POLYETHYLENE)

COLOGNE PLANT (GERMANY)

- Reduce production failures due to system breakage or disturbance

- Reduce low-quality products due to system degradation

- Optimize machine control setting and product set up

- Increased product quality through drift identification and operator-in-the-loop

- Achieve increased raw material conversion

- Optimize use of raw materials through intelligent image recognition

The Team

The project is a collaboration of 10 partners in 7 countries:

Contact Us

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