BE\textsuperscript{in}CPPS

The Industrial Space: the BEinCPPS Experiment in Smart Moulds

IoT & The Fourth Industrial Revolution: Solutions And Industrial Cases From EC-funded Projects

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The Georges Pernoud group: Molds for Plastic Injection
Current technologies reach their limits

- Moldmakers cannot trace how their molds are being used
- Moldmakers cannot help customers ensure production quality
- Version switching in multi-version molds is manual
- Still relying heavily on expensive hydraulic power

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 680633.
The core CPPS system: The Mould for I4.0

CPPS Applications

- Data acquisition and Management
- Better Maintenance Support
- Energy Efficiency Improvement

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The CPPS demonstrator

Data storage

Data visualization

Data analysis

Cloud

Factory Gateway

OPC-UA

NGSI

Sensor data

T1 (°C) 122.5  T2 (°C) 125

P1 (bar) 860

Motor following

I1 (A) 3.4  I2 (A) 2.7

C1 (mm) 17  C2 (mm) 67

Injection machine data

Top closing mold A6

Pull out ejection B4

Pull in ejection B3

Alerts

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Injection Machine Commands

- Mold closed ZA6
- Mold opened ZA7
- Ejection (ZB4)
- Return Ejection (ZB3)

EUROMAP67

OPC-UA via EUROMAP 78-79

Smart Mold
A RAMI 4.0 guided development

- SLM Toolbox
- Papyrus
- UAModeler
- FIWARE OPC-UA IDAS
- FIWARE ORION
- FIWARE WIRECLOUD

Used components (M9)
The obtained benefits

- Reduction of scrap rates: 5% to 3%
- Energy cost savings up to 20%
- Reduction of 15% in maintenance costs
- Automatic version switching yields productivity gains up to 15%