

Engineering Business Intelligence

Publieke samenvatting / Public summary

Aanleiding

Corporate sustainability is a convoluted performance indicator, embedded in constraints of economic performance and consistency of production. Losses in Key Performance Indicators (KPIs), such as environmental impact, often relate to operational process anomalies; deviations in the process from the Normal Operating Conditions that harm process performance. Multivariate Statistical Process Control may observe and even predict such operational faults, but currently mostly focuses on the KPI Quality predictions. Operational process data may however also predict other KPIs for economy, sustainability and operational consistency. Disclosing the effect of process faults on different performance indicators will enable the operator to avoid high-value process faults, leveraging indicators of economic performance with environmental impact and operational consistency. The same disclosure allows management to associate performance losses to specific historical faults in process operation, enabling avoidance of expensive future faults through process innovation.

Doelstelling

The consortium aims to take the scope, the quality and the impact of data collection, data analytics and data visualisation to a new level in the process industry. We want to use human-centred design methods and replicate and exploit the insights to practitioners and scientists. Engineering Business Intelligence (EBI) will create a new digital method to detect how sub-optimal process operation measured within the process data, affects Sustainability, Quality and Economic value of the process to

Projectinformatie / Project information

Projectnummer / Project number

TKITOETKI2020_EBI

Subsidiebedrag / Grant amount

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Algemene informatie / General information

Penvoerder / Secretariat

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provide input in mitigation and consequently leverage economics with environmental performance. This novel method will provide detailed insight into the effects of process anomalies, both incidental faults and expected drifts in routine operation (e.g process fouling) on environmental, economic and consistency performance losses. The disruptive, descriptive and predictive capabilities of such new technology may be implemented as a novel information source with a specific role in the workforce, which not only requires a technological transition, but also a transition throughout the organization in which the workforce internalises the digital technologies in order to identify process failures.

Korte omschrijving

1. Investigating a novel context-based statistical identification and description of process anomalies that can be quantitatively explored, stored and associated with performance. 2. Investigating a method to develop and implement a Key Performance System that associates performance losses with process anomalies, on Sustainability, Economic Performance and Production Consistency with a specific focus on Environmental performance. 3. Investigating human-centred design methods to enable internalisation of digital methods for value-based fault mitigation by and with the workforce. For this, we will also develop specific social guidelines to create the appropriate work floor/boardroom boundary conditions for the digital solutions to have optimal effect. 4. Investigating the operational validity of the developed methods in industrial case studies, among others related to predictive cleaning of heat exchangers, as well as studying infrastructure approaches for integration of data collection, analytics and visualisation into the existing industrial infrastructures. 5. Define Key Performance Indicator sets and visualisation approaches that are intuitive, concise and complete.

Resultaat

This project results in a generic and novel digital technology, DOMA, that will be disseminated to practitioners and scientists. The industrial case

studies illustrate the potential and diversity of the developed methods; for each relevant case study, we co-develop an integration policy and workable visualization methods for data, enabling their workforce to internalise the digital solution. Our Technology providers will innovate their value propositions and enlarge their customer and knowledge base. The industrial users can use the DOMA approaches and insights to improve their efficiency, lower costs and make new steps in their digital process routes.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

Voor meer informatie over de Topsector Energie, ga naar www.topsectorenergie.nl.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar www.rvo.nl/tse.