News: Intelligent optimization for sustainable energy supply, production and mobility

With Industrial AI to Green Business

The PSI Group is increasingly relying on Industrial Artificial Intelligence to support customers in the sustainable design of their business processes. Thus, a Group-wide working group has been formed in order to expand the existing optimization processes by including key performance indicators (KPIs) based on sustainability aspects and to integrate these into further PSI products. PSI has already been using Artificial Intelligence (AI) for two decades to optimize the flow of energy and materials in industrial processes.

On the basis of the highly-available PSI software platform, over fifty different AI methods are used productively in customer projects. In addition to classic business management goals, the focus is increasingly shifting to sustainability goals.

Sustainable grid management

By means of integrated AI processes, PSI products are already making an important contribution to sustainable energy supply and sustainable production. For example, in the management of power grids, precise feed-in forecasts based on machine learning and neural networks are used to predictively determine proposals for eliminating current and expected faults in the grid and evaluate them by using PSI's own Qualicision optimization software. This provides a self-learning grid autopilot, through which a higher proportion of renewable energy can be integrated into existing grids.

Optimized sequencing

When optimizing assembly sequences in the automotive industry using Qualicision, an average of 15 percent of resources can be saved, which corresponds to an annual CO_2 avoidance of several thousand tons for a vehicle factory. In the metal industry, AI algorithms from PSI optimize the use of energy and resources, and also accompany the structural change to low-CO_2 steel production.

Machine learning mechanism, increases efficiency

In logistics, routes in order picking can be shortened by 30 percent with a machine learning mechanism, and the efficiency of processes in the distribution center can be increased by over 10 percent overall. In transport logistics, the optimization of logistical networks enables emissions to be cut by 10 percent.

In the maintenance of electrical networks and other critical infrastructures, Qualicision improved business processes to handle the same workload with 15 percent less resource use and CO_2 emissions. By avoiding unnecessary workload peaks, employee satisfaction improved at the same time.

AI supports emission-free local public transport

A current example of the successful use of AI is the switch to emission-free local public transport with electric buses. With the holistic depot and charging management system PSIebus important influencing factors such as limited range, charging infrastructure along the route and in the depot, number of passengers and the outside temperature are taken into account and optimized with Qualicision. PSI's decision-supporting optimization is already being used by more than 15 transport companies in Germany, France and Poland. ◉

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