Resource-efficient Production Scheduling by Blockchain-based Energy Trading (SA)

**Lehrstuhl für Automatisierung und Informationssysteme**
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Task Description:

For the economic and ecological improvement of automated production, resource utilization including energy consumption must be managed well. Promising current approaches use blockchains to facilitate trading platforms, e.g., for CO_2 emissions or energy consumption. Regarding electrical energy, variations in its supply and demand are effectively dealt with by automated trading. At the same time, flexible control approaches are being developed in automated production, such that a rescheduling of production procedures in response to energy availability becomes feasible.

Your task is the creation of a prototype where one of the institute's demonstrator machines is trading energy consumption rights with other simulated participants on the same grid. If it cannot secure sufficient energy, the demonstrator machine's controller schedules low-energy tasks while delaying others. For the PLC-based control architecture, this work builds upon existing work that can facilitate easy rescheduling of tasks.
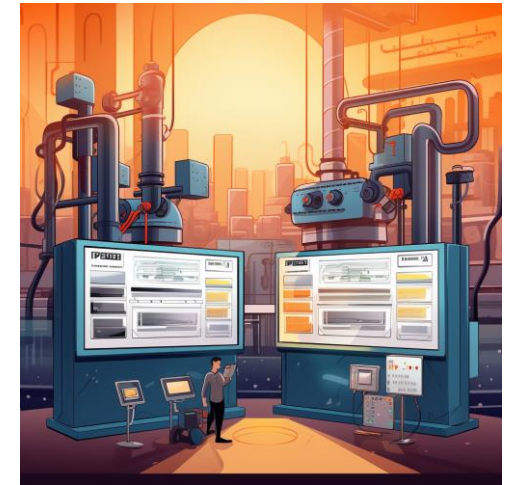
Source: Midjourney AI

Preliminaries:

- Experience in an application programming language, e.g., Python or C#
- Knowledge about industrial automation and IEC 61131-3 programming
- Independent and self-reliant work ethic

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