

INCASE MISSION

Within the world of Industry 4.0, we develop test set-ups and demonstrators for sustainable technologies to prove the viability and applications of this technology. We introduce the technology to the industry by means of workshops and lectures based on own research and experience.

www.incasetseas.eu

Project

PROFenergy

Smart energy-savings with PROFINET during breaks or downtimes on production lines



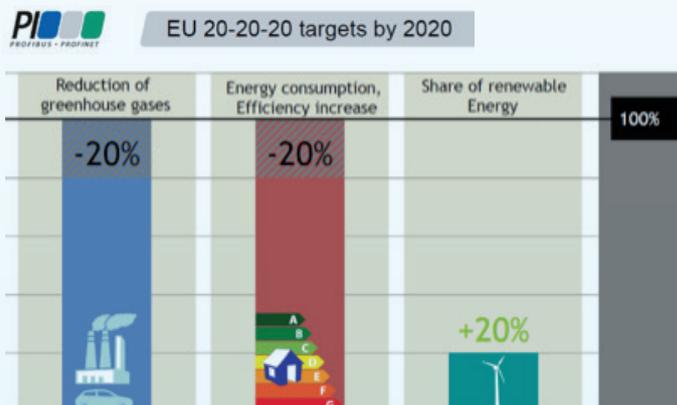
What

Most production sites have quite a few downtimes such as planned breaks for shift changes, at night-time or weekends, or unplanned breaks due to faults or failures, etc. About ten years ago, the German automotive industry found that when production lines or robots are not operating, they are still using up to 60 % of the total energy consumption they use when they are in full production.

PROFenergy was developed at the German automotive industry's request to save energy in their production lines and cells.

PROFenergy is a unique, fully automatic "profile" within PROFINET that allows devices to go into power-saving mode during breaks or downtimes, just like a television or PC in standby or sleep mode. Just before the end of the planned break, the devices restart, so that after a short or long production downtime, operations can be resumed quickly.

It is a profile in addition to the industrial communications with PROFINET, which is an Ethernet-based industrial data communications network that connects components such as electric drives, touchscreens, and robots in a network that is controlled by devices such as PLCs (Programmable Logic Controllers). In PROFenergy's "low-power" mode, the network remains active to allow for a quicker start-up but consumes less energy.



(Source: Y. Vandorpe, "PROFINET & Energy savings," Siemens NV, Edegem, 2012)
ICAM's PROFenergy demonstrator at "Briques Technologiques" in Lille 2019





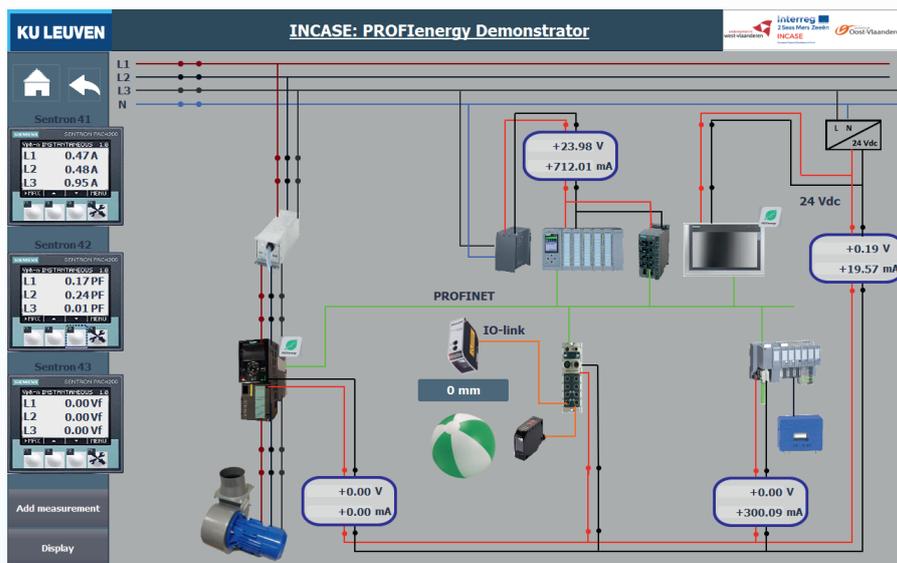
Pilots (applications at laboratory level and measurements at industrial level)

Although the technology is very promising, we need more measurements, demonstration set-ups, calculation tools, etc. for further evaluation and to push the technology to relevant industrial applications.

We researched the actual network technology – network messages, programming, etc. – in smaller laboratory set-ups. In a second phase, ICAM, Univ-Lille, and KU Leuven in cooperation with observer partners such as Volvo Cars Ghent and Siemens, produced more sizeable demonstrators for trade fairs, conferences, and hands-on training.

KU Leuven's eye-catching demonstrator keeps a beach ball in the air at different heights in a controlled manner, and also introduces "normal" and "PROFenergy" breaks in this "production process" with industrial components.

We developed a calculation tool with three use cases based on two conveyor belts and a robot cell at Volvo Cars Ghent, which contains all typical components.



Human-Machine Interface (HMI) on the touchscreen of KU Leuven's demonstrator; this touchscreen also goes into energy-saving mode.



Results/Conclusions

We are still validating our test results. Although INCASE is not yet fully completed, there is already a great deal of (international) interest in the test results, as only a limited number of results have been published until now. This technology can also be used in other applications in the manufacturing industry, and not only the automotive industry.



Companies reached through workshops and lectures

We give systematic demonstrations of PROFenergy at our four-day PROFINET workshop. We also demonstrate the technology at various seminars for industry, evening lectures, etc. We have reached 126 unique companies with 252 participants.

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