

A large, dark, industrial photograph of machinery, possibly a bearing assembly, is positioned on the left side of the page. The image is partially obscured by a white diagonal shape that separates it from the rest of the page. The machinery appears to be a complex mechanical part, possibly a bearing or a component of a larger machine, with various bolts and surfaces visible. The lighting is dramatic, with some parts appearing to glow with a reddish-orange light, suggesting heat or a specific industrial environment. The overall composition is modern and technical.

Success Story

How has AI combined with human expertise enabled SKF, a major global manufacturer of bearings, to optimize its energy efficiency?

The SKF Group

Founded in 1907, the SKF Group provides products and services to more than **40 industries around the world**, and is present in 130 countries. The offer includes the development and production of a wide range of bearings, sealing solutions and lubrication systems, as well as services and solutions for rotating equipment to monitor machine condition, management of engineering, reliability and repair projects.

The SKF network brings together **43,360 employees**, 17,000 distribution partners and 103 production sites around the world.

The Challenge at SKF Saint-Cyr-sur-Loire

The SKF Group aims "to support manufacturers in improving their performance, reducing their energy consumption, and optimizing their costs" (source: skf.com).

Energy performance is therefore a key issue for the SKF Saint-Cyr-sur-Loire site, the largest SKF site in France. In 2018, the teams decided to deploy a new project to find additional energy savings.

The selected workshop is one of the most significant energy consuming UES (Significant Energy Use). It represents, with € 1 million / year, **30% of the plant's energy consumption**. This consumption is monitored by a dedicated SKF team, working since 2006 to optimize energy consumption. To add to the challenge, none of the sub-meters is connected to the GTC. There are only 2 main electricity and compressed air meters.



The Meeting with Energiency

In October 2017, the SKF group and ATOS launched the **“Industry of the future 2017” Challenge**. One of the objectives was to select an energy performance partner among innovative French start-ups. They received more than 80 applications!

Selected from among the 14 winners and coached by their mentor François Niarfeix, the Energiency teams asked to meet with the Energy Manager of the Saint-Cyr-sur-Loire site, Jacques Buffet, to define **a tailor-made Proof-Of-Concept**. In November, during the final pitch, Energiency presented this POC and **won the First Prize in the Industry 4.0 category**. The jury was convinced by the innovative approach to the ecological challenges of the industry and the expertise of Energy, consolidated by the support of great references such as Nissan or Faurecia.

The second operational meeting was very fruitful: the SKF teams then discovered the recommendations and ideas for new savings proposed by the Data Scientists of Energiency. These first encounters helped build **a high level of trust** in Energiency's approach.



Just by looking at the data, you succeeded in creating a model and a follow-up which allowed us to find other avenues for improvement.

**Bruno Valenti, Central Manager,
Energy & Tool Optimization Coordinator for Bearing Factory at SKF France**

1st Step: Setting Up AI Models

At first, Energiency developed **two statistical artificial intelligence models**: One model for electricity ; another model for compressed air.

These models are fed by **historical data from production** over 18 months (8 production lines, 120 different types of ball bearings). With these models, Energiency determined **an energy gain potential of 3.5%**. The SKF teams then decided to continue the project with the implementation of the Energiency platform, and with the benefit from the support of Energiency Energy Managers.



2nd Step: Deployment of the Application and Monitoring

Initially, the desire of the SKF teams was to **visualize the energy performance of the workshop** on a weekly report. Depending on the desired frequency, visual color management enables consumption to be controlled and monitored and compared to the **reference consumption model**, which takes into account all **influencing factors**.

Since then, the Energiency application allows them:

- to receive **real-time over-consumption alerts (color codes)**, which allows for great responsiveness from the teams,
- to **test** energy optimization actions by verifying their effectiveness without delay,
- to **calculate** with precision, a posteriori, the energy savings achieved.

Supported by the Energiency Energy Managers, the SKF operational teams quickly became familiar with the application and come to consult daily electricity consumption, thanks to **custom-made dashboards**. Energiency also automates the distribution of weekly reports, and meets with SKF once a month to take stock.

6% Energy Savings in Less Than a Year

The results are clear: estimated at 3.5% in 2018, the **savings achieved reach 6% in 2019**.

This represents:

- **€ 60,000 saved per year**,
- **an ROI of less than 1 year**.

Beyond energy savings, the SKF Saint-Cyr-sur-Loire team underlines the fact that the application and monitoring of Energiency has enabled them to:

- implement **better management of workshop downtime**, especially during weekends (out of production),
- to use the model to **determine the actions to reduce consumption** on the compressed air distribution network.



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Thanks to the reliability of the model implemented in the platform, we were able to verify the energy savings made on compressed air and electricity. We look at the weekly report every Tuesday, and send an email congratulating the production teams if they have reached the weekly consumption targets, or giving them information about drifts if the targets have not been reached. After all the actions implemented, we need to "re-train" the model to continue to progress in a logic of continuous improvement.

**Bruno Valenti, Central Manager,
Energy & Tool Optimization Coordinator for Bearing Factory at SKF France**

Conclusion

Energency was chosen by SKF for its **expertise in AI and Data Science**, its capacity for **operational implementation** of statistical predictions, and for the quality of its **support**.

The project deployed with SKF Saint-Cyr-sur-Loire proves that artificial intelligence combined with human expertise makes it possible to **achieve real energy savings** in record time: more than 6% of energy savings on the annual invoice, i.e. **60,000€ / year, for an ROI of less than 1 year**. This collaboration is in keeping with the recommendations of Standard **ISO 50001**.

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SKF and ENERGENCY, it is the meeting between a large company which consumes a lot of energy resources (by the nature of its production) and a start-up, which had the brilliant idea of applying AI to improvement energy consumption.

François Niarfeix, Global manager product development & delivery at SKF Group



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