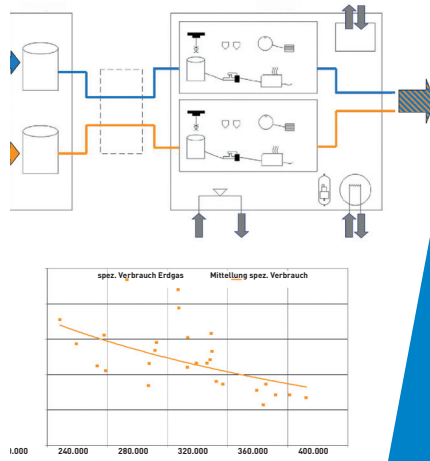
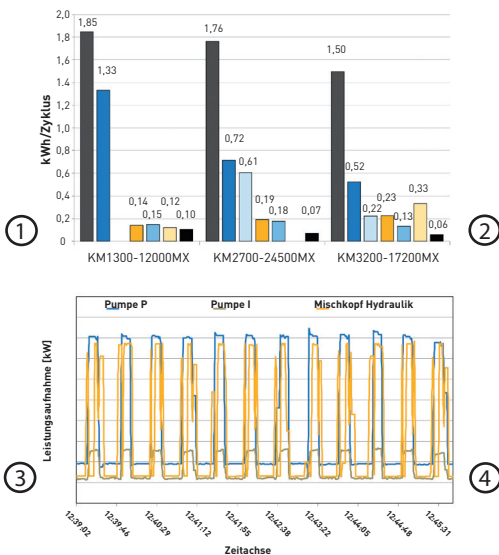


An abstract graphic consisting of multiple overlapping, curved, translucent blue bands that swirl together in a circular motion, creating a sense of depth and movement. The bands vary in opacity, with some appearing more solid and others more ethereal. The overall effect is reminiscent of a stylized eye or a dynamic, swirling vortex.

Success Story BluePower

Engineering Passion

Krauss Maffei



It was a first: Together with Siemens, KraussMaffei carried out an extensive, energy-related machine-system analysis for Volkswagen. The goal was to evaluate the energy consumption associated with the production of instrument panels. The holistic inspection of the complex process provided the fundamental principles for further optimization of the processes, the drive technology, and the thermal budget.

Extensive measurements and evaluations provide a thorough understanding of the energy consumption that is required by the process and their correlations.

First technology-spanning energy analysis „Blue Power“ meets „Think Blue.Factory.“

The production lines for instrument panels are highly complex structures. The overall process incorporates several different processing techniques and automation components. In order to be able to work economically and in a way that makes efficient use of resources and energy, the separate process steps must first be aligned with each other in a manner that cuts across different technologies. Concrete measures can be derived from the product-specific total energy consumption. Several analyses of this nature have already been carried out for individual injection molding machines and extrusion lines. But Volkswagen, Siemens, and KraussMaffei were the first to examine an entire production line.

Challenging roles

As part of the "Think Blue. Factory." program, Volkswagen has set clear goals for itself in terms of an ecological installation: based on the annual values for the year 2010, the company is planning to reduce the environmental pollution caused by all of its facilities by 25 percent by the year 2018. This applies to the CO2 emissions, the amount of waste produced, the energy consumption of each vehicle, and the amount of water consumed by the

factories. These goals are being met with the help of KraussMaffei's "BluePower" initiative, which is aimed at the efficient use of energy and resources.

Every journey begins with the first step

Each optimization process begins with a detailed analysis of the energy consumption of every single consumer load. The list of the included system components makes clear just how important the holistic approach is. In the case of the production line for instrument panels, the list included, along with the injection molding machine and the facility for the production of the slush skins, a prewarming station, a round table with 12 mold carriers (each with a clamping station and an opening), a mixing machine, a metering machine, three robots, several heating units and heaters, and various pumps. A total of 25 measuring devices had to be installed on the round table, after which they had to be connected to a central PC via a WLAN connection, thus enabling data recording. The measurements were recorded over more than ten days so that the energy-related interaction between the system components during downtimes and over the weekend can be recorded. The power consumption levels of various injection units were measured and counters were

used to measure the consumption of compressed air and cooling water. The recorded data was used to determine the specific energy consumption of every component.

Process management determines the potential for savings

The biggest consumer of the round table was the process of tempering the molds, followed by the vacuum supply, the metering system, and the exhaust system. The detailed analysis of different system statuses provided interesting savings potentials. The results can be applied to other productions as they are, after which they are incorporated into the development of new generations of machines. For example, an optimized operation with individual components of the round table that were designed in accordance with the results opened up savings potential of up to 10 percent. The system control unit plays a decisive role in this process: In this case, it is possible to save intelligent processes that control the operational behavior of the system components, depending on the process requirements. The individual measures alone can save up to 30 MWh of electrical energy per annum.