

# BMW engine plant in Steyr: energy efficiency is imperative

**BMW  
GROUP**  
Werk Steyr



"At the BMW Group Plant Steyr, we are committed to implementing environmental and climate protection measures in line with our sustainability policy and to continuously reviewing the achievement of our targets."

Alexander Susanek, Managing Director, BMW Group Plant Steyr



Sustainability is part of the BMW Group's business model. A clear commitment to sustainability has long been anchored in the company's corporate strategy. Group-wide, measurable targets across all corporate levels ensure that decision-making processes consider both economic and environmental factors. For the BMW Group Plant Steyr – BMW's largest engine plant worldwide – this primarily means goals for reducing product-specific energy consumption. The staff members follow the motto "Only known problems can be solved". Detailed energy monitoring lays the foundation for effective and extensive efficiency measures. These are accompanied with investments in renewables, innovative technologies, and employee training and engagement programmes.

## What was achieved?

### Results at the Plant Steyr

- **Reduction of energy consumption per engine**
  - minus 45 % since 2006
- **Energy supply**
  - 80 % CO<sub>2</sub>-neutral
  - 100 % renewable electricity
  - biomass district heating
  - CHPs
- **Project for baseload reduction**
  - more than 30 % since 2016
  - savings in the GWh range
- **Optimisation of cleaning cells**
  - reduction of water consumption
  - savings in the GWh range
- **Engine function testing**
  - cold testing, without fuel
  - fuel savings: several 10,000l/a
- **New traffic concept**
  - decreasing truck traffic for local residents, reduction of 340 truck km/day
  - corporate mobility concept: installation of an attractive e-bike charging infrastructure



### Champion engines from Steyr: drive train expertise for the whole world

With the brands BMW, MINI and Rolls-Royce, the BMW Group is a leading premium manufacturer of automobiles and motorcycles. The company employs more than 130,000 people in over 140 countries worldwide. With over 1.2 million engines produced per year, the BMW Group Plant Steyr is the world's largest engine plant. It is also the Diesel Engine Development Centre for the whole Group and one of the largest industrial companies in Austria. Around every second vehicle delivered by the BMW Group is powered by an engine from Steyr. The plant achieves an output of up to 6,000 engines per day at peak times. These include three, four and six-cylinder petrol and diesel engines, complex drive systems for future-oriented mobility, such as engines for hybrid drive trains and housings for the latest-generation of electric drive trains (i.e. e-machines, transmissions and inverter electronics).

### Energy efficiency anchored in corporate targets

In 2012, the BMW Group set itself ten strategic and measurable sustainability goals running through to 2020 and then consistently pursued them. These group-wide guidelines encompass, among others, resource consumption, quantity of waste, CO<sub>2</sub> emissions from the new vehicle fleet, employee development and social commitment. Detailed and binding targets were set from these guidelines for individual business areas, locations, departments and products. One of these targets is a 45 % reduction of the energy consumption of engine production by 2020 (base year: 2006). The plant in Steyr achieved this target already in 2018 and has set itself the ambitious goal of being among the top 3 most energy-efficient locations of the entire BMW Group.

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"Measurement technology, monitoring and energy management are crucial for planning and controlling our efficiency measures. Achieving our ambitious savings goals is only possible with reliable consumption forecasts."

Peter Knoll, Facility Management

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## Energy management: objectives, ideas and monitoring

Energy management at the plant in Steyr is multi-faceted and well-integrated into the company's processes. Robust energy data are an important building block for successful efficiency measures. Modern measurement technology and high-performance monitoring software enable reliable forecasts for proposed measures and make consumption levels transparent for staff members. Dedicated employees contribute significantly to resource efficiency. Their suggestions for improvements are systematically recorded, evaluated and prioritised by the BMW Group in a database across all locations. This central management of project ideas is a prerequisite for the allocation of financial resources. It also strongly supports and improves the group-wide transfer of know-how.

## Optimised processes, training, and new technologies

BMW Group Plant Steyr achieved the group-wide goals through a broad mix of measures. Combined heat and power systems were installed on site. The lighting was switched to LED technology in all production areas. The quality control of the engine testing relies on so-called "cold testing", which is carried out without starting the engine or needing fuel. In addition, a training module on energy saving was developed. It presents effective measures and is widely used in the plant.

## New production lines: efficient from day one

For new production lines, BMW Group Plant Steyr considers energy and resource consumption right from the start. This prevents having to laboriously track down and optimise "energy guzzlers" later on. Machinery and equipment suppliers must comply with specifications for resources efficiency and consider these in their offers. They are also requested to provide an "energy pass" for their products. These allow the company to compare energy consumption and life cycle costs and use this information as purchase criteria.

## Highly efficient use of energy: baseload and systems optimisation

A range of major projects helped to reduce energy consumption significantly in recent years. One of these aimed at lowering the baseload in mechanical production, which accounts for around 80 % of plant's energy consumption. Through the implementation of an energy-optimised operating concept, the electricity consumption in non-production times was reduced by more than 30 %. In addition, BMW Group Plant Steyr is constantly looking for ways to optimise. The washing of engine components required after specific machining processes is a particularly energy-intensive process. 20 cleaning stations were retrofitted with frequency inverters for pumps and fans. Shut-off valves were installed in the exhaust air ducts to increase the air tightness to reduce heating demand. The resulting annual energy savings are in the GWh range.

## What's next: targets for 2030

45 % savings in energy, water, waste, solvents, and CO<sub>2</sub> – this was the BMW Group's target for 2020. The next group-wide goals have already been set: reducing CO<sub>2</sub> emissions per vehicle over the entire life cycle by at least one third compared to 2019. In production, this means a reduction of 80 %. Binding corporate goals make sustainability and energy efficiency an integral part of BMW Group's business model and offer the company a competitive advantage by promoting future-oriented solutions.

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## The company – key facts & figures

### BMW Motoren GmbH

Founding year: 1979

### Products and services

- engines and engine components
- competence and development centre for diesel engines

**Location:** Steyr/Upper Austria

**Employees:** about 4,500

**Annual turnover:** 3.7 billion Euro (2019)

**Legal structure:** Company with limited liability

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