

BAYER CLIMATE CHECK



INNOVATION

ENGINEERING

OPTIMIZATION

Bayer Climate Check = Climate Footprint + Energy Efficiency Check

Climate protection is a key issue for the process industry, whether it is enshrined in corporate policy, prescribed by legislators or because climate protection also means substantial cost savings in terms of energy and raw materials.

Bayer Technology Services has developed a new tool for energy-efficient and climate-friendly production – the “Bayer Climate Check”. This consists of two elements – the “Climate Footprint” and the “Energy Efficiency Check”.

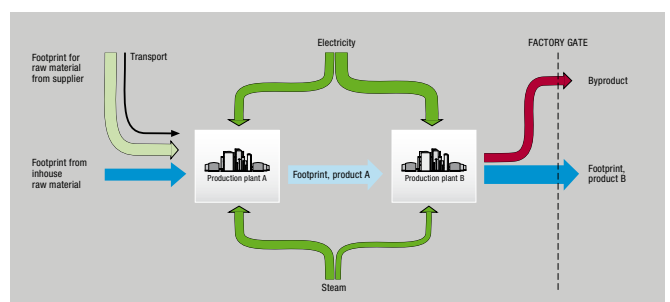
Climate-related evaluation is performed using the Climate Footprint, which quantifies the volume of greenhouse gases generated by a product in the manufacturing process. We do not only evaluate the production facilities but also the raw materials and energy necessary for production and the logistics. In addition to the established cost-effectiveness indicators, the Climate Footprint now offers an environmental indicator as a further decision-making tool for investment and technology projects.

The analysis of energy efficiency in production and, in particular, the development and evaluation of reduction measures are carried out using the Energy Efficiency Check. In this check, all the energy-related parameters in a production facility are systematically tested and enhanced using best-practice solutions and checklists. This cuts the climate footprint and energy costs of production facilities significantly.

Climate Footprint

The Climate Footprint is based on the Life Cycle Analysis (LCA) and is used to calculate the greenhouse gas emissions generated when manufacturing one kilogram of a product. All production phases are covered, from obtaining the raw materials through the production process to the finished packaged product at the point it leaves the plant. All direct and indirect emissions of greenhouse gases are quantified and assigned to the relevant products and by-products.

The methodology of the Bayer Climate Check is based on internationally recognized standards. The transparency and objectivity of the procedure have been certified by TÜV Süd, one of the world’s leading certification organizations in climate protection.



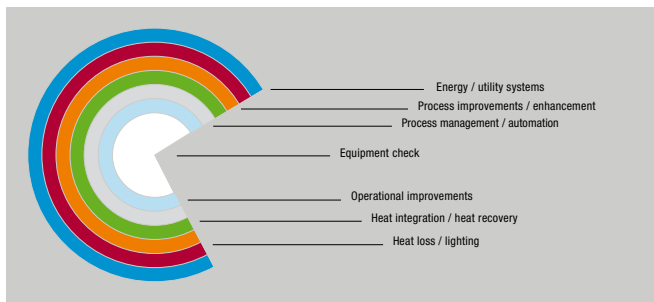
Climate Footprint: Indicator for evaluating the overall climate impact



Bayer Technology Services
Powering Your Performance

Energy Efficiency Check

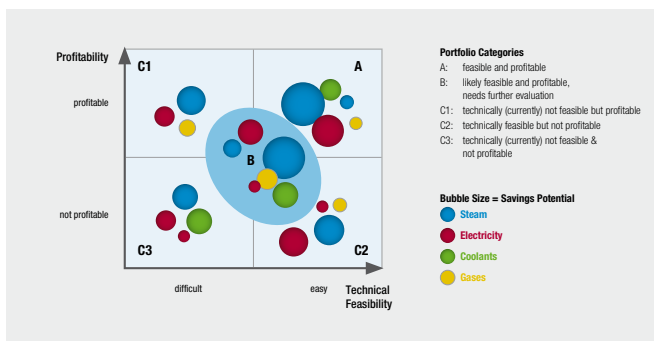
The aim of the Energy Efficiency Check is to identify measures for reducing energy consumption and to conduct an economic and technical evaluation of these. This is done systematically using a wide spectrum of method-based tools, ranging from simple operational improvements in production to the complex routing of heat flows and optimization of energy generation. Improvement in efficiency is also tested by using innovative technologies, for instance. Further measures range from better coordinated supply chains to the optimization of workflows. The extensive, in-depth technological know-how of Bayer Technology Services, combined with the customer's operational knowledge, enables identification of a comprehensive catalogue of measures.



Levels of the Energy Efficiency Check for calculating the reduction potential

Evaluating measures to reduce energy consumption

The measures identified are evaluated in terms of their feasibility, potential savings and outlay. They are then clearly set out in a portfolio according to their profitability and the technical risk involved. Additionally the potential effects of the measures on the climate footprint are expressed and quantified as a Delta Footprint. We therefore provide a clear point of reference showing the potential for reducing greenhouse gases and how this can be achieved.



Savings measures across the portfolio

Procedure

To determine the relevant data for calculating the Climate Footprint, detailed questionnaires are used to calculate all direct sources of emissions (e.g. waste gas streams in production, the company's own incineration plants and energy generators) and all indirect sources of emissions (e.g. bought-in energy sources such as electricity, steam and refrigeration energy). The product's climate footprint is calculated on the basis of this data and other databases on specific emissions.

The Energy Efficiency Check then begins: measures to generate savings are drawn up on the basis of our checklists and best-practice solutions, experts on specific types of equipment are consulted and, most importantly, plant operators are closely involved. The result of our work is an evaluated list of measures to reduce energy consumption and CO₂ emissions that is submitted to the customer.



Systematic procedure for the Bayer Climate Check

Extending the Bayer Climate Check

In an extension to the Bayer Climate Check, we offer to transfer the measures to practical day-to-day work. This transfer process normally involves the following steps:

- Creation of an implementation plan for profitable and technically feasible measures (road map) and putting this into practice
- Raising the energy awareness of plant operators through energy monitoring and effecting a cultural shift
- Developing and launching a comprehensive energy management system allowing operators to monitor trends in energy consumption over time and set savings targets in the organization

References

Bayer Technology Services has accumulated 30 years of experience with energy efficiency projects and employs around 50 highly qualified experts who are directly involved with projects of this type. We can look back on a lengthy list of completed projects. In a Bayer Group project, for example, 140 facilities from the pharmaceutical, chemical and polymer sectors at 40 sites throughout the world were inspected. This identified potential savings averaging more than 10 percent. Overall, Bayer Technology Services has successfully completed over 100 projects inside and outside the Bayer Group.