

# Energy Efficiency Engineering

Green Technology Solutions for a Green Future



INNOVATION

ENGINEERING

OPTIMIZATION



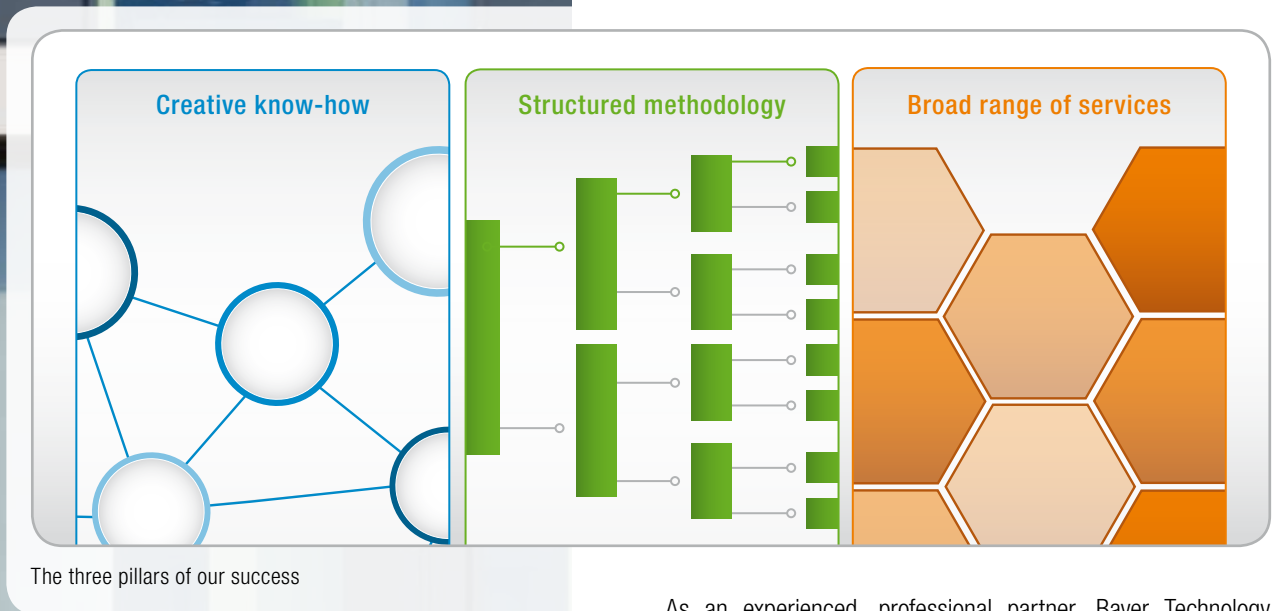
Bayer Technology Services

Powering Your Performance

# BAYER TECHNOLOGY SERVICES

## Expertise for sustainable success

Cut your energy costs now and start meeting the emission targets of tomorrow today. With our sustainable technology concepts, you not only make a real contribution to climate protection, but also generate tangible added value for your company. You can expect to discover major potential for savings when it comes to running your facility, whether it is a new building, extension work or a renovation project.



As an experienced, professional partner, Bayer Technology Services is here to help you develop ambitious concepts for the entire life cycle of your commercial property. Not only do we have access to the very latest technologies, we also have an extremely skilled interdisciplinary team of engineers.

Bayer Technology Services develops customized solutions to meet your specific needs and ensure your property fulfills its potential. This is where our tried-and-tested service portfolio comes into play. The sophisticated modular system of planning tools and technical know-how creates the perfect planning matrix for developing sustainable buildings.

# DIMENSIONS IN RELIABLE KNOW-HOW

## The three pillars of our success

### Creative know-how

Our experts can offer you an interdisciplinary network of diverse specialist areas, and can overcome even the trickiest technical problems using an integrated planning strategy.

### Structured methodology

Over many years, our experts have perfected a target-oriented approach that ensures you receive customized, carefully structured technology solutions of the very highest quality. That means you enjoy all the benefits of state-of-the-art technical standards combined with specially developed planning and analysis tools.

### Broad range of services

Whatever area of construction you are interested in, we are the experts you need to talk to when it comes to developing sustainable buildings.

Our range of buildings covers a wide spectrum of applications in the commercial and non-commercial sectors:

- Office, laboratory and functional buildings
- Production facilities, workshops and warehouses
- Special-purpose buildings, e.g. canteens, greenhouses, data centers
- Public buildings, e.g. schools, kindergartens, hospitals, administrative buildings, sports facilities

## ALL-ROUND CONSULTANCY EXPERTISE

### Energy and sustainability consulting

The right planning strategy is the key to boosting energy efficiency and ensuring your properties are cost-effective and eco-friendly. Spiraling energy costs and calls to cut emissions are placing tough demands on the planning of components, facades and building facilities.

We offer a range of attractive consultancy services for energy-optimized construction and operation. Our services cover the full spectrum, from concise energy assessments to comprehensive renovation concepts and Green Building certifications.

### Our services at a glance

- Building efficiency check with detailed packages of measures aimed at improving the energy footprint, taking into account operational and economic factors
- “Building Footprint” to determine the carbon status of your property and identify potential for reducing greenhouse gases
- Analysis of your property using technical instruments, thermography and simulations
- Examination and evaluation of renewable energy generation and heat recovery systems, including in existing stock
- Life cycle cost calculations that meet certification criteria, creation of eco-balances and legally valid documentation
- Consultancy on and implementation of Green Building audits and building certifications (e.g. LEED, and as laid down by the German Sustainable Building Council, DGNB)
- Implementation of all stages of sustainable building projects, from basic principles to the point at which the property is completed and handed over

# VISIONARY SOLUTIONS FOR MAXIMUM PERFORMANCE

## Green technology consulting

### Building simulation

Bayer Technology Services uses cutting-edge building simulation programs to develop pioneering concepts for your property. These cover everything from customized design, layout utilization and facade planning to the selection of building materials, detailed structural design solutions, heating, ventilation and air-conditioning equipment, including optimized energy supply.

Dynamic building simulations are indispensable in determining the expected energy consumption and thermal behavior of a property. Simulation is carried out in the early concept phase, thereby enabling economic and technical optimization in line with your requirements. It is obligatory to study a range of different options in order to ensure the best possible energy performance.



Building simulations

Energy evaluations

Green Building concepts

Life cycle management

Sustainability certification

### Building certification under DGNB

Bayer Technology Services is actively involved with the German Sustainable Building Council (DGNB) in developing new systems for the seal of quality that bears the same name. Certification documents your contribution to sustainability, highlights the excellent quality of a building, improves sales and rental potential, and ensures that commercial property offers a first-rate work environment. As auditor, we support you through the planning and implementation process and help you gain a much-sought-after certificate of sustainability – delivering a seal of quality that covers all aspects of your property.

# RECOGNIZE AND UTILIZE OPTIMIZATION POTENTIAL

## Making existing buildings energy efficient

We can also help you improve the energy performance of existing buildings. These present a particular challenge when it comes to energy-oriented renovations and conversions. Bayer Technology Services offers you all the expertise and experience you need to carry out work on existing buildings at the right price. You can rely on us for support in transforming potential energy savings into reality, no matter whether your property is undergoing maintenance, modernization or a change of usage.

With effective planning strategies, high-performance building materials and intelligent technical equipment, we give older buildings an ambitiously low energy footprint. Professional planning is a key part of this, as is the use of sophisticated simulation tools and component catalogs that ensure work is completed expertly and without errors.

Bayer Technology Services' many years of experience include numerous successful projects carried out on existing buildings. We have also completed some extremely challenging building works, such as renovations while facilities were still in operation, the conversion of industrial buildings into office space, and fitting laboratories in existing space. The process covers everything from initial assessments and diagnostic procedures to carrying out building work with the assistance of skilled construction managers. Thanks to the proven efficiency of our quality assurance system, we can offer you engineering solutions that meet your needs perfectly.

### Intelligent building concepts with vision – life cycle cost engineering

From construction and operation to eventual dismantling, buildings generate significant costs throughout their life cycle. Yet the predicted cost of usage is one factor often neglected during the planning process.

We draw up reliable life cycle cost calculations and studies based either on the building as a whole, or on individual components such as facades, heating systems, heat recovery systems and systems powered by renewable energy. That means you can not only make investment decisions with confidence, but will also receive a detailed overview of the costs you can expect. We offer you an opportunity to benefit from a balanced trade-off between investment and usage costs, and from a clear ranking system compiled by our experts that details the alternative solutions available.

Optimizing life cycle costs means making the right decisions at the very start of a project. Professional life cycle cost engineering from Bayer Technology Services helps you put together a comprehensive analysis of building performance, and is a key criterion in sustainability certification. Investing in us means investing in the future of your property.



### Life cycle cost optimization at Bayer Vital headquarters

- Efficient use of space
- Flexible ground plan
- Efficient building services engineering
- Easy servicing and maintenance
- Convertible for other uses
- Quality assurance
- Risk minimization
- Value retention



## INNOVATIVE CONCEPTS AND SUSTAINABLE COMMITMENT

### EcoCommercial Building

Our teams of experts ensure your investment projects run smoothly by drawing up, agreeing and monitoring binding objectives during the master planning phase. This means you can be sure of a pioneering building standard for state-of-the-art property in line with the highest levels of technology and esthetics worldwide.

The comprehensive “EcoCommercial Building Program” developed by Bayer MaterialScience in conjunction with Bayer Technology Services is an innovative step along the path to the “era of zero emissions”. Rather than using a disproportionate amount of energy to control the climate in standard buildings, our experts aim to cut energy consumption using passive methods. That means achieving maximum energy efficiency through superior insulation, shading, orientation and zoning, and the best possible ratio between wall and window areas. In the ideal scenario – and depending on the geographical location and specific circumstances of your site – integrating effective, renewable energy supply systems could cover 100 % of your energy needs.

In a joint workshop, we work together with you to develop a planning concept that takes all aspects of your specific requirements into account. Our team of experts includes architects, construction engineers, building physicists and specialist engineers from across all the relevant disciplines.

Our list of criteria is based on international certification systems for Green Buildings:

- Ecological quality, minimization of potential greenhouse emissions and conservation of resources
- Economic quality, life cycle costs and value development
- Socio-cultural quality, health and user satisfaction
- Functional quality, design quality, efficient use of space and suitability for conversion
- Technical quality, fire safety, noise protection, ease of maintenance, dismantling potential
- Process quality, integrated planning, quality of building work and commissioning

# EXCELLENT RESULTS IN ALL SITUATIONS

## “Best practice” case studies

As a subsidiary of Bayer AG, Bayer Technology Services has accumulated decades of experience as a service provider in the world's chemical and pharmaceutical industries. Our engi-

neers use this extensive expertise to develop practice-oriented, industry-specific solutions for your property. As you can see, our achievements speak for themselves.



### **Bayer MaterialScience, Leverkusen**

Construction of new marketing and administrative building D 208 and conversion of production building D 201

- Investment:** EUR 25 million
- GFA new building:** Approx. 3,300 m<sup>2</sup>
- GFA conversion:** Approx. 32,000 m<sup>2</sup>
- Scope of services:** ArchitectureEngineering/HVAC  
Construction management  
Project controlling  
Project management



### **K block, Leverkusen**

New headquarters of Bayer Vital GmbH – Building K 56

- Investment:** EUR 46 million
- Gross floor area:** Approx. 39,500 m<sup>2</sup>
- Office workstations:** Around 1,000
- Scope of services:** Concept and design  
Planning work for approvals  
Preparations for awarding contracts  
Construction management



### **EcoCommercial Building, Diegem, Belgium**

New administrative building for Bayer

- Investment:** EUR 19 million
- Gross floor area:** Approx. 13,000 m<sup>2</sup>
- Awards:** Belgian Award for Energy 2009
- Scope of services:** Concept  
Construction management  
Project controlling  
Project management

## INTERNATIONAL LOCATIONS

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