

# Bosch Global Technology Portfolio and Innovation

Invented for life — Empowering Tomorrow's Solutions

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## Mobility Solutions

Bosch's Mobility sector drives innovation in automotive and transportation technologies. The company integrates sophisticated hardware and software to advance automated and electrified mobility, from engine components and motion control systems to connectivity platforms and user-focused services. Bosch's software-defined vehicle strategy includes brake-by-wire and steer-by-wire systems, centralized Vehicle Motion Management, and advanced driver-assistance (ADAS) capabilities.

- **Software-Defined Vehicles:** Modular platforms combining embedded software and hardware (e.g. Vehicle Motion Management) that enable over-the-air updates and adaptive learning, making vehicles safer and personalized over time.
- **Electrification:** A broad portfolio of e-mobility solutions (electric drives, power electronics, battery management, and charging infrastructure) enabling faster adoption of electric vehicles and more efficient use of energy.
- **Connected and Autonomous Driving:** IoT-enabled connectivity and AI-powered systems (car-to-cloud services, predictive maintenance, sensor fusion) that enhance safety and driving comfort.

By uniting hardware and digital capabilities, Bosch transforms mobility toward sustainability and user-centric flexibility. Vehicles become greener, smarter, and ready for future autonomous and shared mobility.

## Industrial Technology

In Industrial Technology, Bosch brings automation and intelligence to manufacturing and logistics. The company offers industrial drives, controllers, and robotics (via Bosch Rexroth and Bosch Manufacturing Solutions) as well as comprehensive software for smart factories. Industry 4.0 is at the core: Bosch uses IoT sensors and AI to create factories where machines communicate and self-optimize. For example, Bosch's Nexeed platform provides real-time monitoring and control of production processes across the plant.

- **Smart Manufacturing (IIoT):** Networked machines and production lines that leverage sensors, edge computing, and cloud analytics to enable predictive maintenance and

adaptive scheduling. AI-based vision systems automatically detect defects, improving quality and reducing waste.

- **Automation & Robotics:** Advanced collaborative robots (such as APAS Inspector) and automated material shuttles (ActiveShuttle) work with humans in assembly and inspection. Bosch's open ctrlX Automation controller (5G-capable) simplifies integration of PLC, motion, and visualization for flexible automation.

- **Energy & Efficiency:** Platforms like the Bosch Energy Platform use intelligent algorithms to optimize energy consumption, integrate renewables, and smooth peak loads in factories. Bosch reports CO<sub>2</sub> reductions of ~10% in plants using these tools. Overall, Industry 4.0 solutions can boost plant productivity by 20–25%.

Bosch's industrial portfolio empowers manufacturers to modernize operations with connectivity and automation, making factories more efficient, flexible, and sustainable.

## Consumer Goods & Home Technology

Bosch's Consumer Goods division brings innovation into homes and daily life. The company offers premium home appliances, power tools, and smart home systems, all engineered for quality and efficiency. These products increasingly leverage connectivity: for example, kitchen appliances (refrigerators, ovens, coffee machines) can be controlled via mobile apps and optimized for energy use. Bosch's Smart Home ecosystem links thermostats, lighting, and security sensors into unified, automated home solutions.

- **Connected Appliances:** Smart home devices and appliances combining precision engineering with digital convenience (remote monitoring, voice control, automated programs) to simplify everyday tasks. Bosch supports interoperability (through standards like Matter) so users can integrate devices across different platforms.

- **Home Comfort & HVAC:** Energy-efficient heating and cooling solutions (inverter-driven heat pumps, hybrid electric water heaters) that adapt to building needs. Bosch has developed heat pumps that operate efficiently in extreme cold (down to -13°F), bringing affordable clean heating to more climates.

- **Quality and Sustainability:** Durable, eco-friendly design: Bosch products are built to last and consume less energy. Features like LED lighting, high-efficiency motors, and recyclable materials reflect the company's commitment to environmental responsibility.

Through its consumer and home technologies, Bosch improves quality of life and home efficiency, aligning modern convenience with sustainable living.

## Energy & Building Technology

Bosch's Energy & Building Technology sector provides efficient, intelligent infrastructure for buildings and utilities. The company offers climate control systems, renewable energy products (like solar panels), and building automation that enhance comfort and safety while saving energy. By embedding sensors and intelligence, Bosch enables fine-grained control and proactive management. For example, smart thermostats learn occupant schedules to optimize heating, and building management software automatically adjusts

ventilation and lighting for efficiency.

- **Smart Energy Management:** Cloud-connected platforms and analytics that monitor energy flow in real time, control demand-response, and integrate renewable sources. These solutions help facility managers cut energy costs and carbon emissions.
- **Efficient HVAC & Solar:** Highly efficient heating/cooling units with smart controls that minimize energy use. Bosch's solar and storage systems can power homes and businesses for greater self-sufficiency. Together, these technologies support net-zero goals.
- **Security & Automation:** Integrated fire alarm, surveillance, and access-control systems using Bosch's sensors and AI. These systems detect anomalies (smoke, intrusion, equipment faults) and trigger automated safety measures, contributing to a secure and reliable environment.

Bosch's building solutions make infrastructure greener and smarter, supporting comfortable living and working spaces with lower environmental impact.

## Bosch Global Software Technologies (BGSW)

Bosch Global Software Technologies (BGSW) is Bosch's worldwide software development center and a key driver of its digital strategy. Established in 2010, BGSW has over 23,000 engineers globally, making it one of Bosch's largest engineering hubs. It delivers end-to-end software and IT solutions that complement Bosch's hardware expertise. BGSW builds Bosch's IoT platforms, cloud services, and AI algorithms, enabling connected products across industries. For example, BGSW teams developed the Bosch Energy Platform and digital twin solutions that help clients optimize industrial assets.

- **Connected Products & IoT:** Engineering Bosch's Internet-of-Things platforms that turn traditional products into connected, data-driven solutions. This includes creating digital twins and scalable edge/cloud architectures for predictive maintenance and new service models.
- **Digital Enterprise Solutions:** Consulting and software for enterprise digitalization (covering manufacturing execution, supply chain, or customer experience). By combining Bosch's manufacturing and domain expertise with software (AI/ML, cloud, edge), BGSW helps companies modernize – from retrofitting factories with smart sensors to enabling connected vehicle services.
- **Security & Quality Assurance:** Implementing robust cybersecurity (secure device identity, encrypted updates) and rigorous software testing. BGSW's frameworks for secure firmware updates and quality gates ensure Bosch's connected products are reliable and safe.

BGSW effectively bridges Bosch's hardware and software capabilities. Its global teams accelerate Bosch's innovation by integrating digital intelligence across all products, making the full Bosch ecosystem more agile and "smart."

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Bosch's technology portfolio spans all key industries with a unified vision. In Mobility, Industry, Consumer, and Energy sectors, Bosch leverages its expertise in sensors, power electronics, and software to address the latest trends. Each domain adopts AI, IoT, and electrification to create smarter, greener solutions: vehicles become electric and software-defined; factories become IoT-enabled and autonomous; homes become safer and more efficient; buildings become energy-smart and automated. Bosch Global Software Technologies (BGSW) weaves software into every offering, acting as the digital backbone. Together, Bosch and BGSW embody the "Invented for life" ethos, delivering innovations that drive sustainable digital transformation and improve quality of life across industries.

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