INEA

Art of automation.
Power of energy.
Edge of digital.

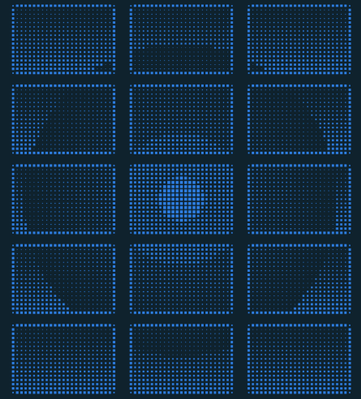
Uniting advanced technology, knowledge, and innovation to design, build, integrate, and maintain turnkey systems that shape and empower modern manufacturing.

inea.eu

Redefining
standards of excellence
through sustainable practices.

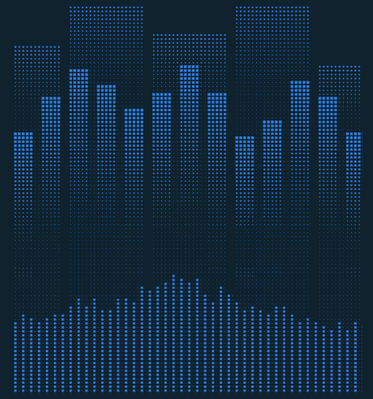
Automation

We breathe industrial automation by merging advanced robotics, industrial vision technology, specialized engineering expertise, and breakthrough innovations in intelligent manufacturing.



Intelligence

We elevate production through digitalized data-driven solutions, using analytics to enhance decision-making, production planning, process visibility, and operations management in real time.



Energy

We design industrial energy systems that use demand response, predictive analytics, real-time consumption tracking, peak levelling, and continuous energy flow monitoring to manage and optimise energy usage.

Specialized production lines

Harnessing the potential of modern manufacturing with fully automated production and assembly processes that seamlessly fit any factory floor. The lines are complete with monitoring and control, and compatible with any existing process before or after.

Our solutions are tailor-made to meet specific needs of the industry, user, or product. Each process, line, or system is engineered for performance and flexibility, yielding high OEE and low scrap with comprehensive quality assurance.

Assembly process

Automated assembly processes with strict control over part or product quality, presence, orientation, and placement. It creates a fully closed-loop system, which increases productivity, reduces scrap, speeds up cycles and overall competitiveness.

Applications: screwdriving | pick-and-place | feeding | repress | bubble removal | dispensing | pressfit | curing

Material handling systems

Designing and implementing automated systems that streamline material movement, protection, storage, and control in production lines using conveyors, AGVs, AMRs, robotic arms, and sorting systems. AI and machine vision reduce handling times, boosting efficiency, safety, and throughput.

Applications: infeed/outfeed systems | rotary tables | conveyors | robot systems

Marking process

Automated in-line marking systems ensure full traceability by tracking each component from raw material to finished product. Based on the information engraved, printed, marked, or labelled, the line or operators can sort parts into correct lanes, boxes, or reject bins.

Applications: laser marking | inkjet printing | pad printing | labelling | grading

Precision coating

Automated precision coating of liquids and powders provides a uniform, high-quality protective or reactive application of washcoats, catalysts, or inks on any substrate. The dose is actively monitored and adjusted to optimise application and minimise material waste.

Applications: top or bottom dosing with vacuum and/or piston push | electrostatic powder coating

Integrated quality control

Automated inspection ensures consistent product quality throughout production with real-time monitoring, data analysis, defect detection, and dynamic process adjustments. Detecting faults as soon as they appear is pivotal to continuous output of high-quality products.

By covering visual anomaly detection as well as in-line electrical and mechanical testing, manufacturers can uphold high standards, ensuring reliable, optimized products that meet rigorous quality demands.

Visual inspection

AI-driven visual inspection systems leverage advanced imaging technologies, including line and area scan cameras, 3D scanning, X-ray, and deep learning, for non-destructive defect detection and quality control. They distinguish defects from design features, identifying visual distortions and deviations.

Applications: part position/assembly | catalytic honeycomb | geometrical properties | surface quality | marking | sorting

Electrical tests

Automated in-line electrical testing systems of digital and analogue signals for even the most intricate electronic components with flawless connection between test probes and circuitry. The system features micro-contacting precision with visual offset compensation, fail-safe disengage, and customized adapters.

Applications: PCBs | flexible circuits | connectors | HSD signal testing | ECUs | complex electronic assemblies

Mechanical tests

Designed with custom interfaces, testing systems can either replace or assist operators with the inspection of parameters like strength, durability, surface quality, and functionality. With modular components, the system provides real-time measurements, 100% traceability, and scalability to meet evolving production demands.

Applications: touch tests | torque tests | dimension inspection | pressure tests | stress tests | leakage tests

Manufacturing intelligence

Real-time data collection, analysis, and reporting for enhanced decision-making and efficiency. This platform-agnostic approach supports Industry 5.0 standards, enabling monitoring, tracking, and control across production processes.

They optimize resource allocation, document production data, and provide predictive insights for reducing downtime. Effective process management is achieved through vertical integration with all levels of the ISA-95 manufacturing model.

MES / MOM solutions

Dynamic software monitors, tracks, documents, and controls manufacturing in real time. Integrated with ERP, APS, SCADA, and control systems, it provides a unified view of production, enhances decision-making, quality management, efficiency, and supports regulatory compliance.

Platforms: AVEVA MES | Dassault Systèmes Delmia Apriso | Siemens Opcenter Execution

Advanced planning and scheduling

Automated and customizable solution for long-term planning, intelligent scheduling with dynamic adjustments, ERP/MES integration, and visibility into production details. Optimizes the use of resources, materials, and labour to reduce waste, improve efficiency, and ensure on-time deliveries.

Capabilities: MTO/MTS planning | schedule visualization | material & energy constraints | sequencing optimization | order enquiry (CTP)

Batch automation

Automated batch manufacturing processes (ISA-88) with resource allocation, recipe management, and real-time monitoring. We provide end-to-end solutions that include consulting, designing, improving, and maintaining batch processing systems.

Applications: machine and computer vision | predictive maintenance | predictive energy management | acoustic detection

SCADA solutions

Unified industrial software platform offers real-time management, visualization, analytics, and control across thousands of mobile touchpoints. It enables efficient operation, real-time oversight, and detailed analysis of complex, dispersed processes, which are essential for manufacturing control and monitoring.

Platforms: AVEVA System Platform | Siemens SIMATIC WinCC | Rockwell FactoryTalk | General Electric iFix | ARC PcVue

Data historian

Specialized software system acquires, stores, processes, and displays real-time manufacturing data, providing a centralized repository for production metrics, machine performance, and environmental conditions. It enables trend analysis, operations optimization, and data-driven decision-making.

Applications: predictive maintenance | performance metrics | compliance reporting | pattern recognition | forecasting

Artificial intelligence

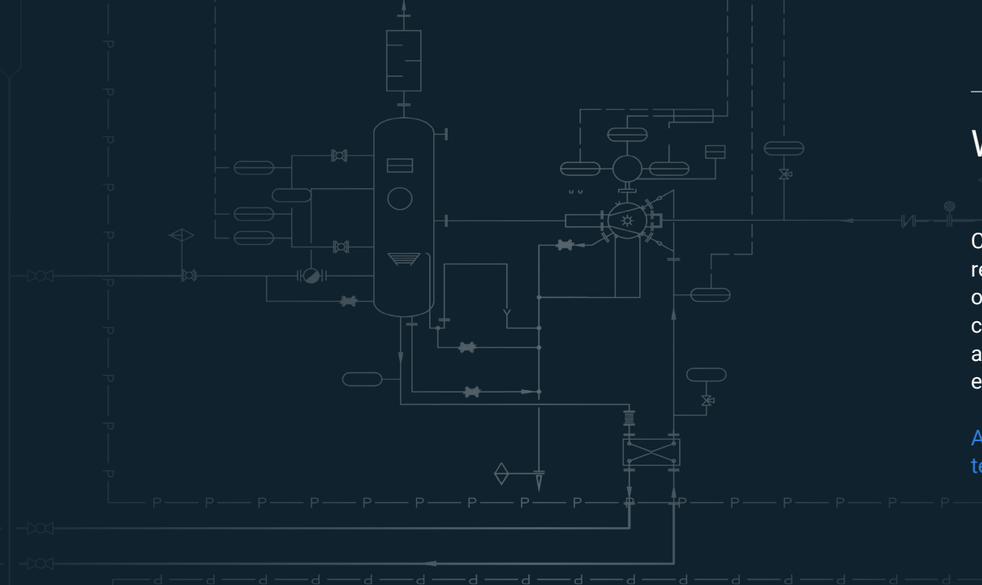
AI models enhance anomaly detection with real-time monitoring, identifying subtle issues often missed by traditional methods. Specialized AI systems optimize production processes, enhancing quality control and defect detection through segmentation and identification of critical parameter patterns.

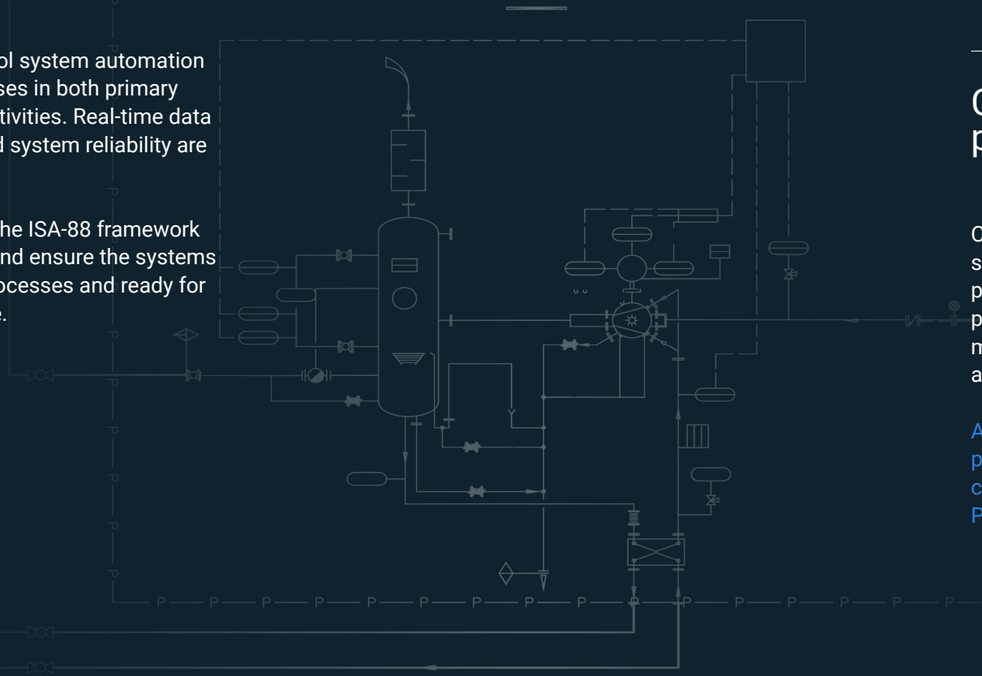
Applications: machine and computer vision | predictive maintenance | predictive energy management | acoustic detection

Process automation

Comprehensive distributed control system automation for continuous and batch processes in both primary and secondary manufacturing activities. Real-time data availability, simulated testing, and system reliability are prioritised during integration.

Tailor-made improvements over the ISA-88 framework make specific processes better and ensure the systems can be retrofitted into existing processes and ready for future upgrades at the same time.





Washcoat preparation

Catalytic washcoat preparation features precise dosing, real-time monitoring, and material traceability focused on consistent individual batch quality. The ISA-88 compliant and improved process can be vertically and horizontally integrated into the wider production environment.

Applications: dosing | mixing | milling | measuring | temperature control | automatic material transfer

Ink preparation

The system ensures precise addition, dispersion, and heat treatment of inks for additive manufacturing, integrated into production environment. ISA-88 compliant, it features custom-designed vacuum/pump systems, tank inertization, and continuous material tracking.

Applications: dosing | mixing | milling | measuring | temperature control | automatic material transfer

Chemical production processes

Comprehensive, automated, and ISA-88 compliant software solutions support a wide range of chemical processes, using PLC and batch system control for precise dosing, mixing, temperature control, and material transfer. The system ensures high-quality, safe, and reliable chemical handling.

Application: resin/nanomaterials synthesis | preparation & addition to reactants | neutralization & pH control | peptization | pigmentation & crystallization | PVA glue production

Industrial utility automation

Designing and implementing industrial systems like tool cooling, compressed air, and HVAC with advanced technologies such as sensors, PLCs, SCADA, and AI. These solutions maintain optimal production conditions, ensure equipment longevity, improve energy efficiency, and enhance productivity.

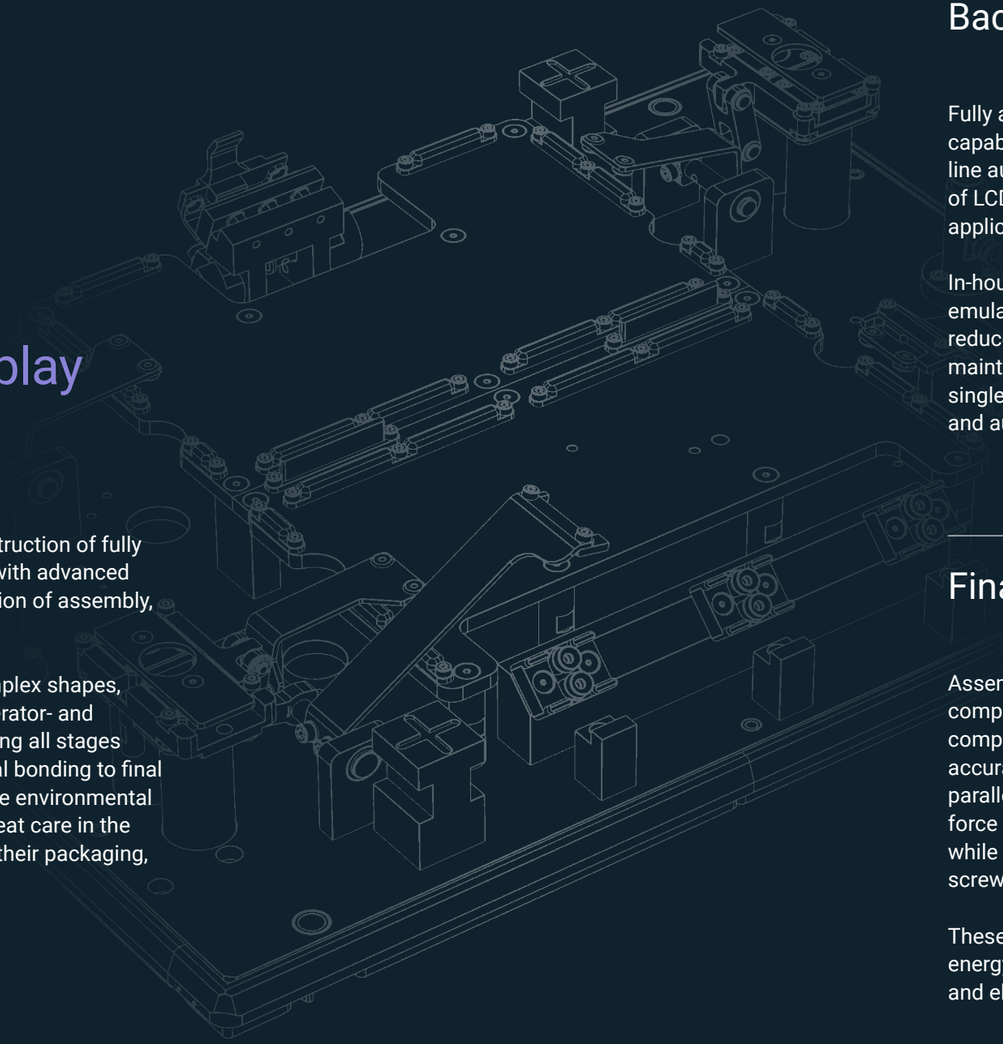
Applications: tool cooling | compressed air systems | HVAC automation | energy management

INEA INCLASS

Automated display assembly

Specializing in the design and construction of fully automated display assembly lines with advanced technologies for complete automation of assembly, inspection, and testing.

The solution handles simple to complex shapes, optimizing resource usage with operator- and maintenance-friendly design, covering all stages from backlight assembly and optical bonding to final assembly. Focused on cost-effective environmental sustainability, the system places great care in the handling of materials, rationalising their packaging, and reducing energy costs.



Backlight assembly

Fully automated assembly line with energy saving capabilities and automatic feeding mechanism for long line autonomy. It assembles all layers of any shape of LCD backlight using custom tooling for precise application and quick changeover between products.

In-house developed special ISO 7 clean room emulation inside each assembly station significantly reduces costs of line installation. The lines offer easy maintenance and loading access, requiring only a single operator, enabled by advanced MES integration and automated in-line quality control.

Final assembly

Assembly lines feature AI vision systems for precise component positioning and tolerance measurement, complemented by digital contact sensors for high-accuracy assessments of thickness, flatness, and parallelism. Servo-controlled presses ensure even force distribution during delicate press operations, while torque, angle, and depth measurement optimize screwdriving processes for enhanced control.

These modular lines include in-line quality control, energy consumption monitoring, and robust mechanical and electrical end-of-line testing.

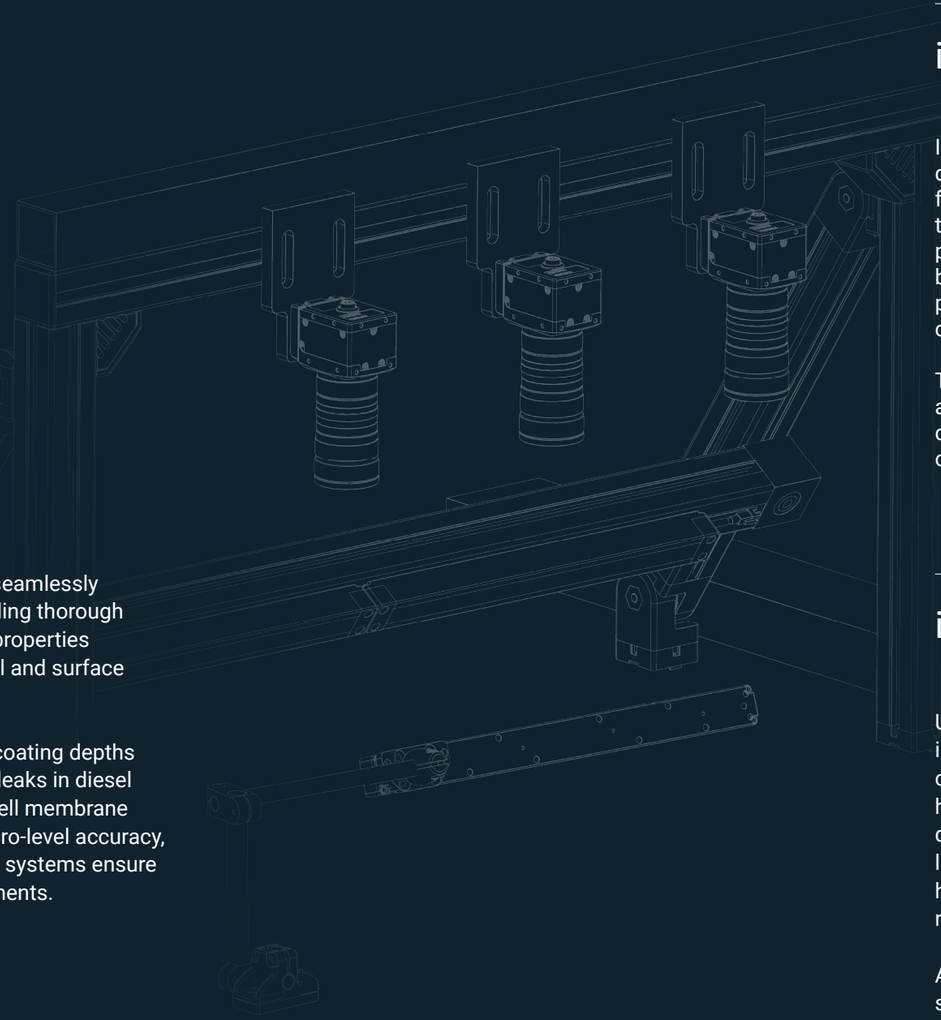
Optical bonding

Dry optical bonding of touch-sensitive displays, regardless of curvature, shape, or type, is achieved through advanced soft-to-hard and hard-to-hard lamination techniques. These processes use optically clear adhesive (OCA) to ensure uniform coating and high optical clarity, delivering a bubble-free, defect-free result.

Automatic feeding and material handling improve efficiency, while in-line quality control allows adhering to stringent standards. Final optical inspections verify bond integrity and quality, ensuring compliance with modern display technology requirements.

INEA INSPECT

Industrial vision systems



Advanced industrial vision systems seamlessly integrate into production lines, providing thorough inspection of products' geometrical properties and precise detection of both internal and surface anomalies or defects.

From identifying cell blockages and coating depths in catalytic honeycombs and optical leaks in diesel particulate filters to inspecting fuel cell membrane integrity and connector pins with micro-level accuracy, our non-destructive vision inspection systems ensure optimal quality control for all components.

inSpect CAT/DPF

In-line vision inspection solution enables non-destructive, high-precision quality assessments for each substrate by using industrial imaging technologies, backlighting, and advanced image processing algorithms. It effectively detects cell blockages in catalytic converters, optical leaks in diesel particulate filters (DPFs), and physical defects such as chips, cracks, or deformations.

The system supports a wide range of substrate sizes and is ideal for integration into extrusion, coating, and canning production process, facilitating both input and output control.

inSpect Fuel Cells

Designed for high-volume roll-to-roll fuel cell production and additive manufacturing, the in-line visual inspection employs advanced image processing techniques to detect defects such as scratches, cracks, particles, and pattern irregularities. It performs real-time analysis within an ISO class 3 clean room environment.

The system monitors critical process parameters, including material thickness, colour, conductivity, temperature, humidity, tension, and pressure. Integrated sensors dynamically adjust these conditions to ensure consistent product quality.

inSpect Bent Pin

Using advanced imaging technology, the in-line visual inspection system detects bent pins in electronic connectors with precision up to 1 micron, offering high-resolution pin height measurement and defect detection. It leverages HDR imaging and adaptive lighting to handle varying depths, colours, and housings, while laser displacement sensors reduce noise for greater accuracy.

Accommodating connectors up to 60 mm wide, our system precisely assesses pin X, Y, and Z coordinates, guaranteeing all measurements meet required tolerances regardless of connector size or type.

inSpect Display Assembly

In-line visual inspection technology monitors defects, alignment, cleanliness, and overall quality of display assemblies, including their software functionalities. The system leverages advanced vision algorithms for detecting, sorting, and positioning all assembly components. It includes assembly quality inspection, marking, labelling, robot manipulation, and part positioning for part-picking accuracy and micro contacting.

The system also conducts end-of-line functionality tests, including touch tests, homogeneity tests, surface, and subpixel inspections.

INEA INGENIOUS

Industrial energy management

Integrating sustainable energy solutions into every step of the manufacturing process—from energy planning, material management, retrofitting without waste, and making data transparent for compliance with ISO 50001 and ESG reporting.

Local renewables and storage, combined heat and power, and energy efficient manufacturing help maximise the benefit of existing energy sources, while energy exchange among different stakeholders generates savings from mutual flexibility.

inGenious Flex

Industrial demand response EMS

Uses demand response to maximise the potential of existing resources and to manage all energy sources, loads, and storage with dynamic schedules, long-term forecasts, and price signals.

In a multi-rate or dynamic tariff system, it adapts demand based on financial criteria, creating predictable energy consumption and generating passive savings without impacting production.

inGenious Peak

Industrial peak levelling system

Reduces peak power charges of energy-intensive processes and eases the strain on the grid. It includes interval-based forecasting, custom intervention triggers, and load management based on a priority list.

The solution is ideal for industrial consumers facing high costs from uneven and peak energy use, reducing consumption efficiently without impacting productivity.

inGenious View

User-centric energy monitoring

Energy information system designed for complete oversight of energy flows, including electricity, water, and gas. Its customizable dashboard features automated measurements, indicators, analytics, alarms, and detailed reporting.

It uncovers hidden information, such as leaks or poor flow control, for more efficient energy management that can create savings almost effortlessly.

inGenious Cube

Energy management of individual devices

Industrial energy communication interface for connecting, monitoring, and basic management of individual energy loads, sources, or storage units.

It is suitable for any device that requires a predictable, manually created schedule and control. When used for demand response with inGenious Flex or Grid, it can automatically generate flexibility offers and execute schedules.

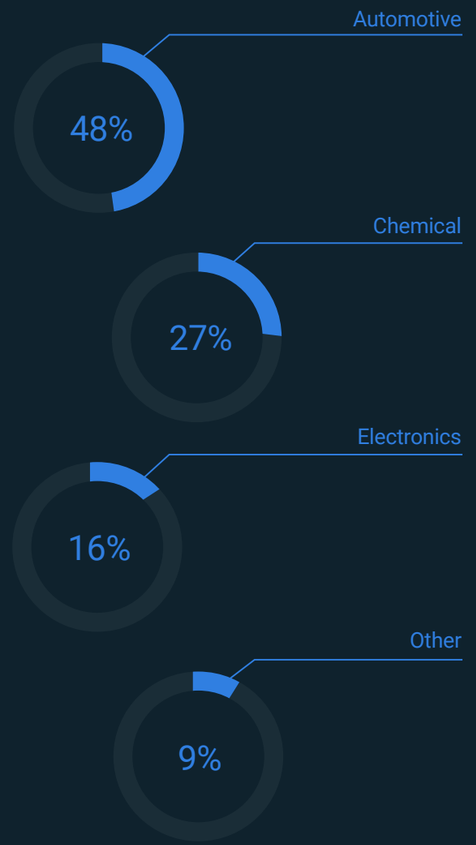
inGenious Grid

Grid-level flexibility trading solution

Automated energy flexibility management platform connects several users into an energy community. It creates flexibility by finding gaps and overlaps in users' energy usage profiles.

Such groups have even higher benefits with joint use of local energy sources and storage, as well as connecting to the market to trade energy at the optimal time for all members of the community.

Transforming industries worldwide



BALLARD™ BASF Continental umicore JM Johnson Matthey Inspiring science, enhancing life BOYSEN INNOVATIONEN ABGASTECHNOLOGIE FORVIA TENNECO Honeywell TESLA

We build and integrate

vertically from machine building to ERP integration, horizontally from design to maintenance, and diagonally from research and feasibility studies to continuous improvement.

We support and empower

with a feel for your needs and the understanding of industry specifics we serve as a cornerstone of your shopfloor endeavours—driven to empower your production and your team for the long run.

We care and commit

with an integrity, passion, and unstoppable determination we inspire trust every step of the way—for your peace of mind and unparalleled stability you look for in your long-lasting partner.

We know.

Throughout our entire collaboration, INEA's team showed commitment, persistence and excellent problem-solving skills.

— Frank Bollmann, Tenneco

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