

NATUS

INDUSTRIAL SOLUTION SYSTEMS

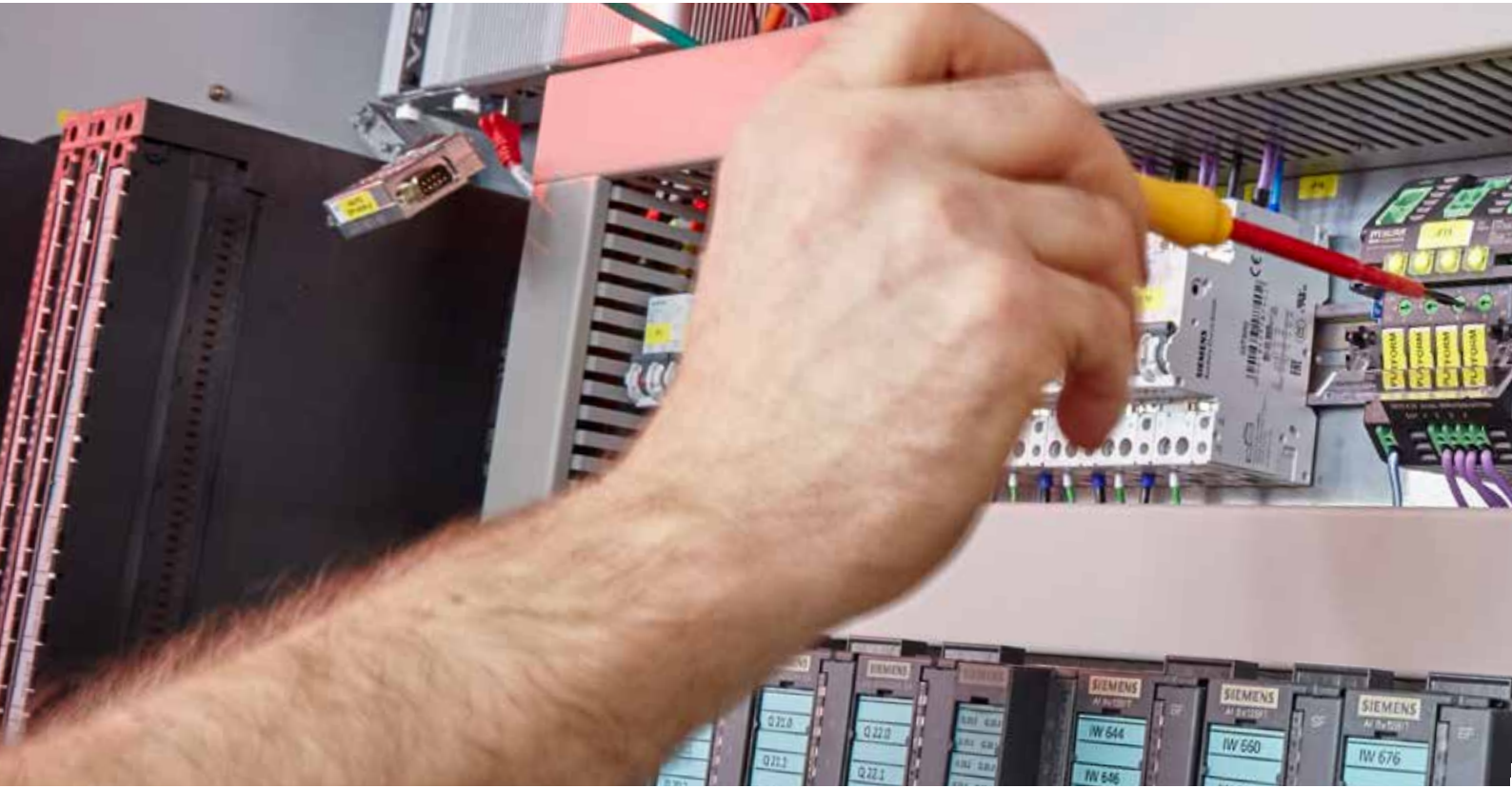
SO SMART!

AS AUTOMATION SPECIALIST

Process control system | Factory automation

Substation automation | Automation cabinets





NATUS AS AUTOMATION SPECIALIST

SO SMART!

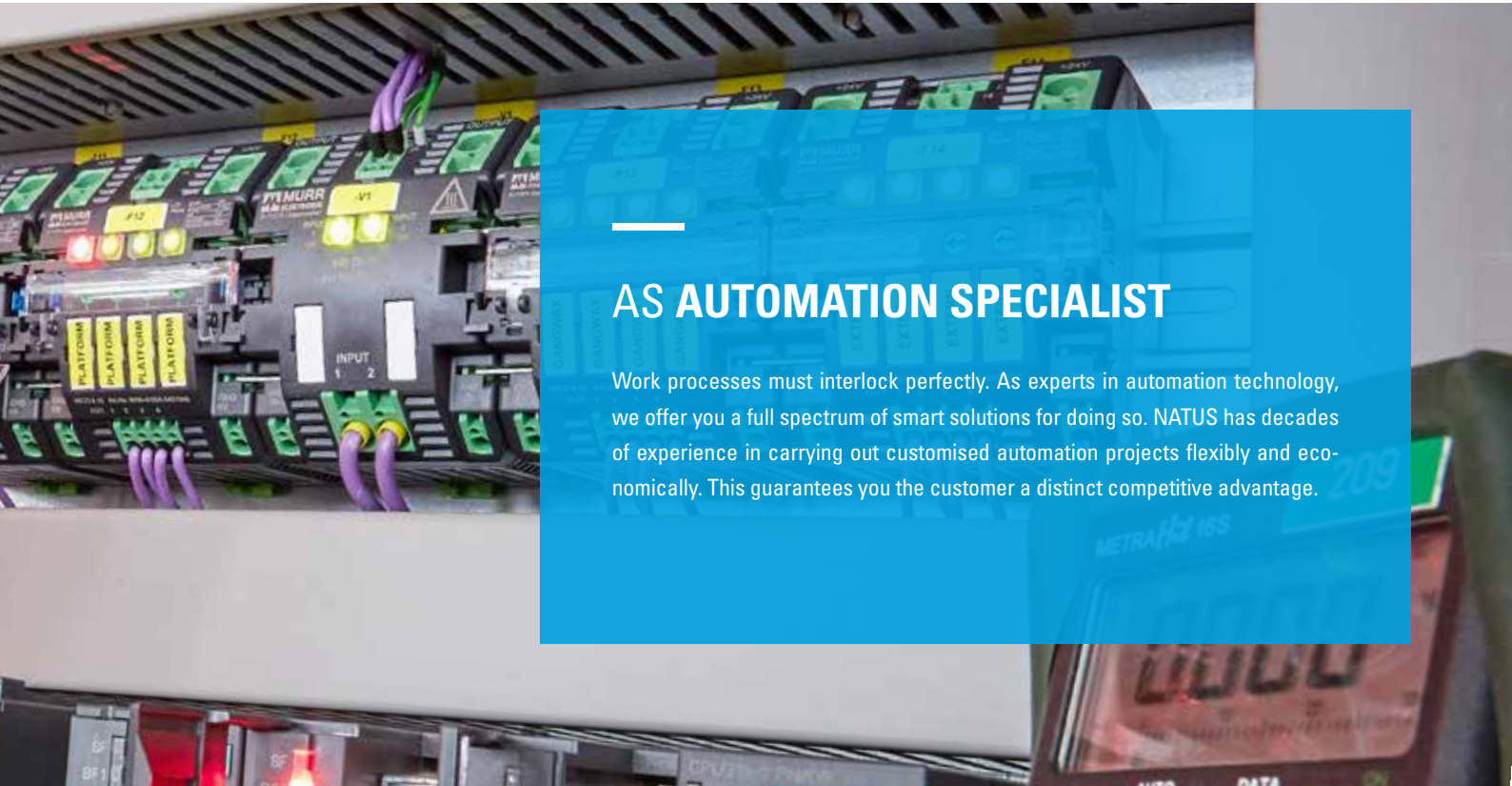
How NATUS automates your processes perfectly ...

Progressive companies need productive automation solutions that are customized, reliable and at the cutting edge of technology. NATUS has been working as a skilled partner for industry, plant construction companies and energy suppliers since 1956. Our systems supply, control and protect industrial facilities all over the world.

We work together with our customers to analyze their processes and develop solutions that are smart in terms of function and functional safety.

Such complex projects work with NATUS because you can rely on expert teams with established partners - which is where trust comes from.

FRANK NATUS
Managing Partner



AS AUTOMATION SPECIALIST

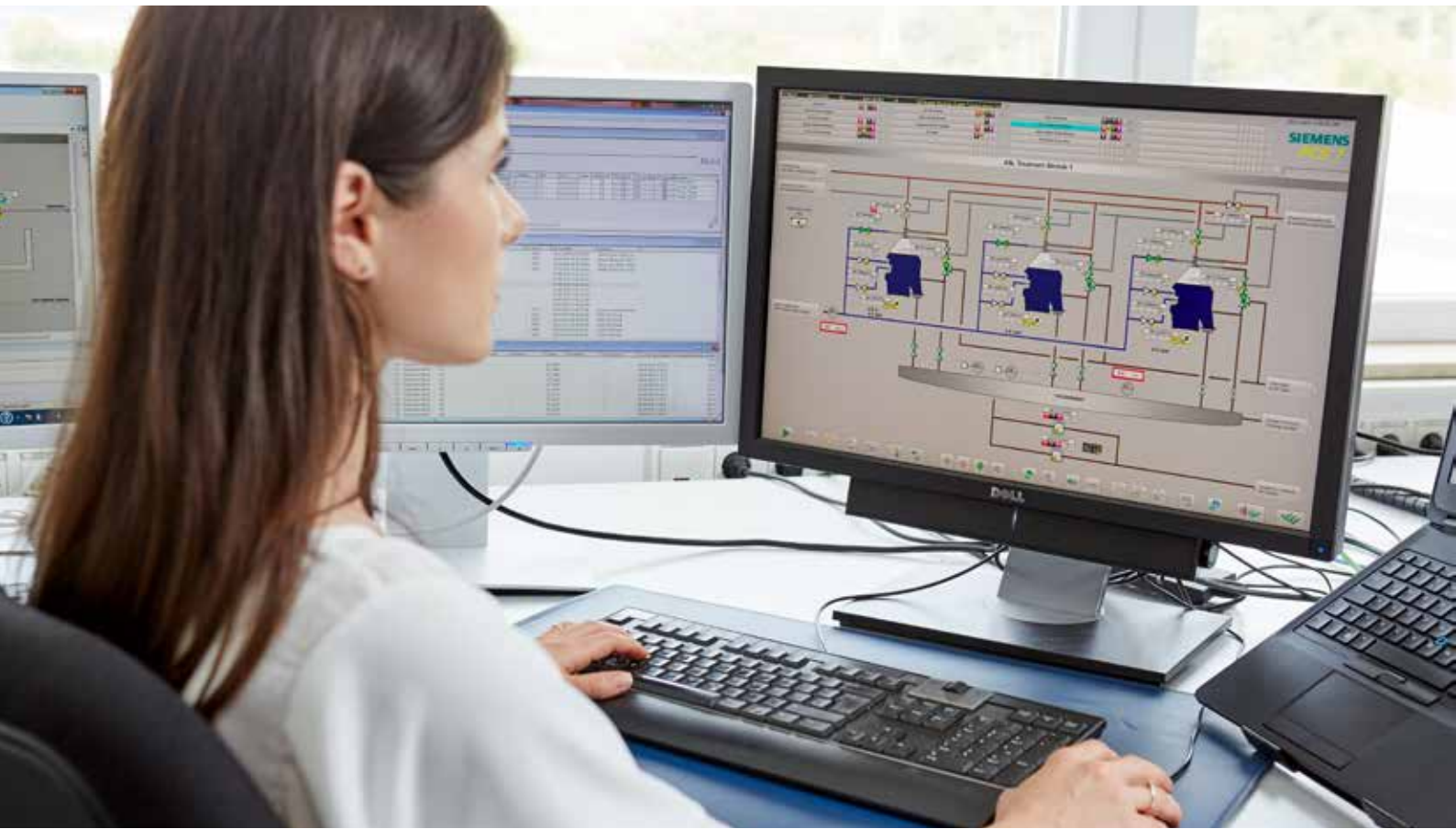
Work processes must interlock perfectly. As experts in automation technology, we offer you a full spectrum of smart solutions for doing so. NATUS has decades of experience in carrying out customised automation projects flexibly and economically. This guarantees you the customer a distinct competitive advantage.

NATUS BENEFITS

- Hardware and software development
- Permanent personal contacts
- Instrumentation & control standards
- Solutions from small to large scale facilities
- Medium/low-voltage switchgear systems and measurement & control technology under one roof
- Industry-specific process expertise
- Special custom solutions
- Development of functional components
- Test laboratory for functional acceptance testing
- In-house system integration
- Process optimization
- Commissioning worldwide

TYPICAL AREAS OF APPLICATION

- Power stations
- Transformer stations
- Municipal utilities and Power Grids
- Machine construction
- Automotive industry
- Infrastructure
- Chemicals and petrochemicals
- Pharmaceutical industry
- Oil and gas industry
- Pulp and paper industry
- Cement industry
- Mining industry and steel mills
- Waste disposal
- Glass industry
- Plant construction
- Steel and metal industry
- Water management
- Pipeline construction
- and much more



PROCESS CONTROL SYSTEM

DISTRIBUTED CONTROL SYSTEMS (DCS)

Smart processes need powerful control systems. In technical systems the DCS system is the interface to the process and hence the key to optimal added value.

The spectrum of applications for process control technology ranges from automation of small pilot systems to the automation of major

complex systems. Our selected process control systems cover the entire application area and life cycle of your system with their flexible scaling options.

We advise and support you from the budget stage to commissioning and optimisation of your process.

A fully consistent process control system firstly reduces the engineering massively, and secondly also reduces the operating and maintenance costs - over the entire life cycle of a system.

NATUS SERVICES

- Configuration / visualisation
- Connection to common MES and ERP systems
- User programming / process control
- Functional safety in accordance with IEC 61511
- Network design & interface engineering
- IT security concept (cyber security)
- Process & test simulation as FAT (virtual commissioning)
- Worldwide commissioning
- Sample run / optimisation / system tuning
- Cost-optimised and manufacturer-independent
- Operator and user manual
- Remote service



We carry out software and hardware projects for all the leading manufacturers' systems.

SIEMENS PCS 7 · SIEMENS T3000 · ABB 800xA · ABB Freelance · B&R APROL · etc.

SYSTEM COMPONENTS

NATUS supplies tailored program components for the Siemens PCS 7 process control system, with enhancement for power station or customer-specific functions. NATUS offers you a power plant compliant component library with power plant identification system (KKS) illustration in the process guidance.

SYSTEM PARTNERS

We give you the latest expertise through our partnerships with leading software providers. We offer you flexible support and special solutions for your specific tasks.

Safety first – there are no compromises when it comes to the safety and protection of human lives. That is why safety is the foremost priority in our control and system technologies.



FUNCTIONAL SAFETY

Safety first

As the complexity of electronic and especially programmable systems increases, the range of potential faults also grows. Accordingly the IEC 61508 body of standards ("Functional safety of programmable electronic safety-related systems") promotes the use of various methods for preventing systematic failures (e.g. during the specification, implementation etc. of the system) and for safe management of outages and malfunctions.

When safety-orientated controls provide these safety functions reliably, we speak of functional safety.

We offer you the opportunity to migrate to a suitable programmable safety control system based on your own danger and risk analysis, be it as a stand-alone solution or an integrated, highly-available safety control system (SCS) in a process control technology system.

As this involves your and our safety, the protection of personnel is the foremost priority for us – safety first.

NATUS SERVICES

- Support with system architecture and diagnostics in fail-safe components (hardware, software and communication)
- Allocation of safety functions to protection levels
- Design and planning of technical safety functions
- Use of standardised F-library system functions
- Use of safety applications such as Safety Matrix
- Avoidance of systematic errors in development, e.g. specification and implementation errors
- Monitoring of production environment to detect incidental errors
- Safe management of detected errors and transition to a situation previously defined as safe
- Installation and commissioning



PROCESS SIMULATION

The optimal commissioning process
takes place in the office

Everyone has been there: the cabling has been completed and the control system is ready for the I/O test. The pressure is growing as the system needs to accommodate production as quickly as possible. There are numerous reasons for this.

But if the control system planning is being tested under real conditions for the first time, the duration of the commissioning cannot be estimated.

With virtual commissioning, NATUS offers an intelligent alternative as the optimal commissioning process has already taken place in the office.

As a basis for the simulation, NATUS uses, for example, the SIMIT platform, with the option of using virtual controllers.

NATUS BENEFITS

- Faster implementation of your specifications
- Software testing during programming
- Testing under near-live conditions
- Program analysis and customer (pre-)approval on the simulator
- Quality improvement as system is tested and documented on delivery
- Training of staff on the virtual system
- Cost- and time-savings during on-site commissioning
- Commissioning support via remote access



CYBER SECURITY

So your system data actually belongs to you

Digitisation and networking are essential these days to be able to exist in global competition. Yet precisely this provides a target of attack for cyber criminals aiming to get hold of company data and expertise or disrupt sensitive operational processes.

The increasing networking of industrial infrastructure (Internet of Things, Industry 4.0) also requires adequate protective measures for the automation environments.

These range from analysis of the security situation (security assessment) to setting up protective measures such as firewalls or anti-virus software (security implementation) and whitelisting.

We support you with this by developing the necessary security concepts for your system from the standpoints of productivity, security and the applicable statutory provisions – so your system data actually belongs to you.

NATUS SECURITY SERVICES

- Generation of a security concept for your production system
- Implementation of the applicable regulations, for energy supply, for example
- Installation of routers and firewalls
- Setting up a DMZ (Demilitarized Zone)
- Installation of appropriate anti-virus software or whitelisting
- Migration from old systems to modern security standards
- Secure remote maintenance and remote diagnoses
- Support with patch management
- System test
- System installation and commissioning



MEASUREMENT AND CONTROL TECHNOLOGY

Instrumentation & Control

Production processes are becoming ever more complex. For this reason, in addition to our process control technology, we offer you optimised, manufacturer-independent I&C solutions.

The aim is to monitor and operate technical processes and production procedures.

According to your requirements, we work with our system partners to produce the basic and the detailed engineering for our smart control systems.

NATUS BENEFITS

- Basic and detailed engineering in the I&C
- Generation of loops, wiring diagrams, distributor box plans etc.
- Acquisition and commissioning of transmitters and instruments
- Field instruments and control equipment according to your requirements
- Transport and preparation for installation

TYPICAL AREAS OF APPLICATION

- Power stations
- Chemicals
- Petrochemicals
- Refineries
- Gas industry
- and much more



FACTORY AUTOMATION

WE MAKE YOU READY FOR INDUSTRY 4.0

As a specialist for the manufacturing industry, we understand your business. For horizontal integration (networking between companies) or vertical integration (networking within a single company), we offer complete customised solutions under one roof.

As a supplier of control systems with no manufacturer cabinets, we are proficient with a wide range of hardware and software systems in automation technology.

The aim of our years of experience and market knowledge is to increase the safety and efficiency of your industrial process, make it flexible and so improve the efficiency of your system and its maintenance.

We focus on the technical development of systems that even today are ready for the technology of tomorrow - and make you ready for industry 4.0.

From the development of your control cabinet, the generation of electronics documentation and the development of user software, to electrical installation and

subsequent commissioning, we offer you a complete package for your systems.



VISUALISATION SYSTEMS (HMI)

- SIEMENS WinCC TIA
- EATON
- CODESYS
- B&R

AUTOMATION SYSTEMS

- ABB
- ALLEN BRADLEY
- BECKHOFF
- B&R
- ROCKWELL AUTOMATION
- SIEMENS SIMATIC
- WAGO

INTERFACES

- Profinet
- Profibus
- Ethernet
- ASI
- IO-Link
- OPC
- Modbus RTU / TCP

MIGRATION

Fit for the future. Even well-established technology becomes obsolete one day

Complete migration to your modern automation solution and the development of migration concepts for obsolete control systems are our specialist areas.

Here, soft migration for us means the modernisation of your machinery and systems with high availability within a tight time scale.

We are your partner for S5 -> S7 migration.

NATUS BENEFITS

- S5 to S7 / TIA concept (e.g. S7-1500)
- Third-party control system to factory standard
- Analysis of the S5 program in a real-time simulation in a laboratory environment
- Programming experience throughout the existence of the S5 product range
- SIEMENS Solution Partner
- Manufacturer-independent
- Modernisation via comprehensive consideration of the entire system
- Your manufacturing standards guaranteed
- Greater range of automation functions
- System visualisation and data archiving
- Options for enhancing your system with up-to-date function and communication modules
- Integration into an MES/ERP system
- Availability of relevant data in real time for Industry 4.0
- Increase in production capacity and quality
- Reduction in increasing maintenance costs in the S5 sector
- Avoidance of unplanned production downtime
- Time-savings via reduced maintenance work
- Guarantee of qualified service and support

SUBSTATION AUTOMATION

FLEXIBLE SOLUTIONS FOR SMART GRIDS

NATUS energy automation enables communication between devices and equipment in the energy distribution and supply system with the station control technology, thus permitting the development of smart grids.

As an independent system supplier of automation solutions with years of industry-specific expertise, we know how to deliver your specific requirements effectively and efficiently. In doing so we use modern communication structures that meet the highest safety standards.

STATION CONTROL TECHNOLOGY SYSTEMS

- ABB MicroSCADA
- ABB RTU500 Serie
- ABB COM600
- SIEMENS SCC
- SIEMENS SICAM PAS
- WAGO I/O

COMMUNICATION

- IEC 61850 integration of protection / control devices
- IEC 60870-5-101 connection to power grid SCADA
- IEC 60870-5-103 protection report transmission
- IEC 60870-5-104
- OPC protocol
- GOOSE protocol

APPLICATIONS ENGINEERING

- Visualization of information (single lines, results, alarms, measurement values etc.)
- Monitoring of the grid, the primary technology (e.g. circuit breaker, transformers, cabling) and secondary technology (e.g. self-monitoring of devices)
- Integration of circuit breaker (status reports, locks, synchronisation check etc.)
System functions such as access control and time synchronisation
- Time stamp in the millisecond resolution
- Applications for interlocks, automation systems etc. (with GOOSE / CFC)
- Evaluation of historically stored data
- Future-proofed through the use of standardised protocols (e.g. IEC 61850)
- Generation of user-specific interface typicals

Whether it is a new system, a replacement or a retrofit - with NATUS you always have a reliable partner - flexible solutions for smart networks!

NATUS BENEFITS

- Energy automation using our own switchgear systems and those of third-party manufacturers
- Provision of safety and control technology cabinets
- Provision and integration of safety and control technology devices (e.g. SIPROTEC, RELION, SEL etc.)
- Retrofitting activities of IED's
- Automatic switchover for medium- and low-voltage switchgears
- Design of the necessary network technology



IEC 61850 PROTOCOL

We network you intelligently

The IEC 61850 standard describes a general transmission protocol for the protection and control devices in electrical switchgear. Since this standard was introduced, NATUS has been focused on this uniform protocol open to future needs.

In doing so we – as do our customers – appreciate the flexible communication architecture that enables your systems to be configured economically and in line with the project.

Smart applications such as switchovers or rear locking can also be integrated into existing networks under the IEC 61850 protocol.

Digitise your energy grids with us - we will network you intelligently.

NATUS BENEFITS with the IEC 61850 protocol

- Open to future needs
- Integration into new systems
- Enhancement and modernisation of legacy systems
- Definition of a uniform protocol for all areas of the switchgear
- Coverage of all switchgear functions, from safety and automation to monitoring
- Investment security via openness, enhance ability and future-proofing
- Globally applicable and recognised standards, hence is the accepted key for interoperable solutions
- Definition of quality assurance (reliability, system availability, data integrity, security etc.)
- Definition of engineering process and its tools
- Extension of the life cycle of an automation system and support with maintenance
- Optimisation of the switchgear for different system types (scalable technology)
- Use of available industrial Ethernet technology and its communication components
- Basis for a consistent data model and continuous communication architecture from the control station to the switching device

AUTOMATIC TRANSFER SYSTEM (ATS)

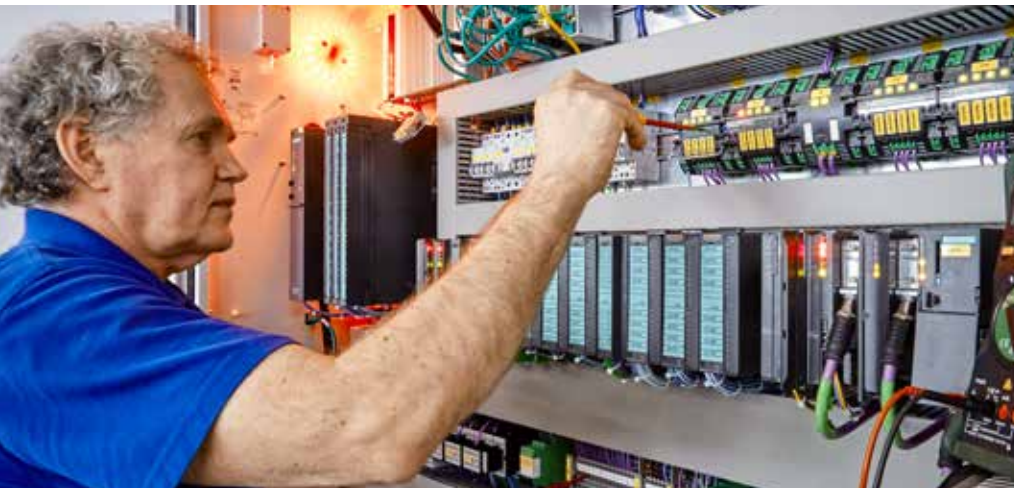
Smart synchronisation at the right moment

A constant supply of energy is precondition for your process assurance. An interruption in the energy flow can affect the functionality of your systems. Hence reliable switchover of the main feed to a reserve feed is an essential prerequisite for a reliable process.

We develop smart applications that intelligently switch over your switchgear at the right moment.

NATUS BENEFITS

- Automatic or manual switchover
- Switchover with or without interruption
- Practical implementation of your requirement
- Years of project experience
- Cost-effective standard solutions
- Individually adapted systems
- With and without visualisation (HMI)
- Different process interfaces possible (Profinet / IEC 61850 etc.)
- Integration of emergency power supply (e.g. diesel generator)
- Energy security for your production process
- No energy blackouts with high consequential costs



NATUS BENEFITS

- Hardware planning and construction, for numerous applications such as:
 - Process control technology systems: Control technology cabinets (PLC, RIO, servers etc.)

AUTOMATION CABINETS

The rapidly changing markets in the age of Industry 4.0 place high demands on modern, complex product concepts such as monitoring and control technology cabinets in automation technology.

As a specialist in automation technology, we can flexibly adapt our products to your processes. In doing so, you benefit not only from our wealth of experience over the years and our project coordination expertise, but also from the efficiency of our in-house manufacturing.

TYPICAL AREAS OF APPLICATION

- Power stations
- Automotive industry
- Infrastructure
- Machine construction
- Chemicals and petrochemicals
- Pharmaceutical industry
- Oil and gas industry
- Pulp and paper industry
- Cement industry
- Mining industry and steel mills
- Waste disposal
- Water management
- Glass industry
- Plant construction
- Pipeline construction
- and much more

MACHINE CABINETS

Our latest machine technology enables us to create a solution for your specific requirements, including on special construction projects. Whether for single or series manufacturing, alignment with your current project is always at the focus. The switchgear is designed and manufactured according to the specification. We integrate the most up-to-date hardware components for custom solutions, regardless of the manufacturer. Complete service for your switchgear is a given for us.

Our customer-specific controls are distinguished by the following features:

- Customised mechanical design via dedicated switch cabinet manufacturing
- Manufacturing according to customer documentation and/or internal engineering
- Generation of circuit diagrams also according to specific customer guidelines
- Manufacturing to international standards (e.g. IEC / UL)
- Consideration of ATEX directive for Ex areas
- Machine controls including safety application (PL / SIL)
- Separate testing of all units
- In-house FAT
- Order execution according to DIN ISO 9001
- Short delivery times

- Production automation systems:
Control cabinets for your machines
- Energy automation systems:
Safety and control technology cabinets
- Customer-orientated engineering and project management
- Highest level of vertical manufacturing at the Trier site
- Process safety
- Certified
- Worldwide commissioning

DCS CABINETS

NATUS can provide the system solution in switchgear construction for your process control technology requirements. If you are using e.g. PCS 7 for control and are looking for system cabinets to extend a standard DCS solution, NATUS will provide you with a modular, flexible system concept.

We can manufacture the following modular cabinet types for you:

- Client and server cabinets with KVM solutions
- PLC cabinets for the control unit
- Network cabinets
- Central I/O cabinets
- Decentralised I/O cabinets in the field
- Local control panels (LCPs)

In accordance with the allocation of fail-safe assemblies or Ex barriers, we develop your control cabinet either on the basis of I/O lists and the specification or according to fully prepared circuit diagrams that are supplied to us.

According to your documentation system, we then generate your end customer specification for the electrotechnology.

ADVICE AND SYSTEM CONFIGURATION

In order to adhere to the strict manufacturer standards for process control technology systems, we work with you to develop appropriate network concepts, availability analyses and heat management for the process control technology assemblies. We also take into consideration the necessary earthing and lightning protection provisions for process control technology systems.

SYSTEM INTEGRATION

Larger system acceptance processes can also be carried out with you at our premises. If required, the control cabinets can be connected with our medium- and low-voltage switchgears and delivered after testing in an integration test. This guarantees fast commissioning for your process plant.



INDUSTRIAL SOLUTION SYSTEMS

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AS MANUFACTURER

SO PRECISE!

NATUS plans and develops the right, high-quality solution for any requirement – flexibly, quickly and individually.

AS SERVICE PARTNER

SO RELIABLE!

We provide a comprehensive service package to ensure that your NATUS products always deliver the maximum in performance.

AS AUTOMATION SPECIALIST

SO SMART!

As experts in automation technology, we provide the full spectrum of smart solutions.

AS PROJECT PARTNER

SO COMPLEX!

Many of our customers have complex projects. This means that NATUS is not just a manufacturer, but also a project partner.