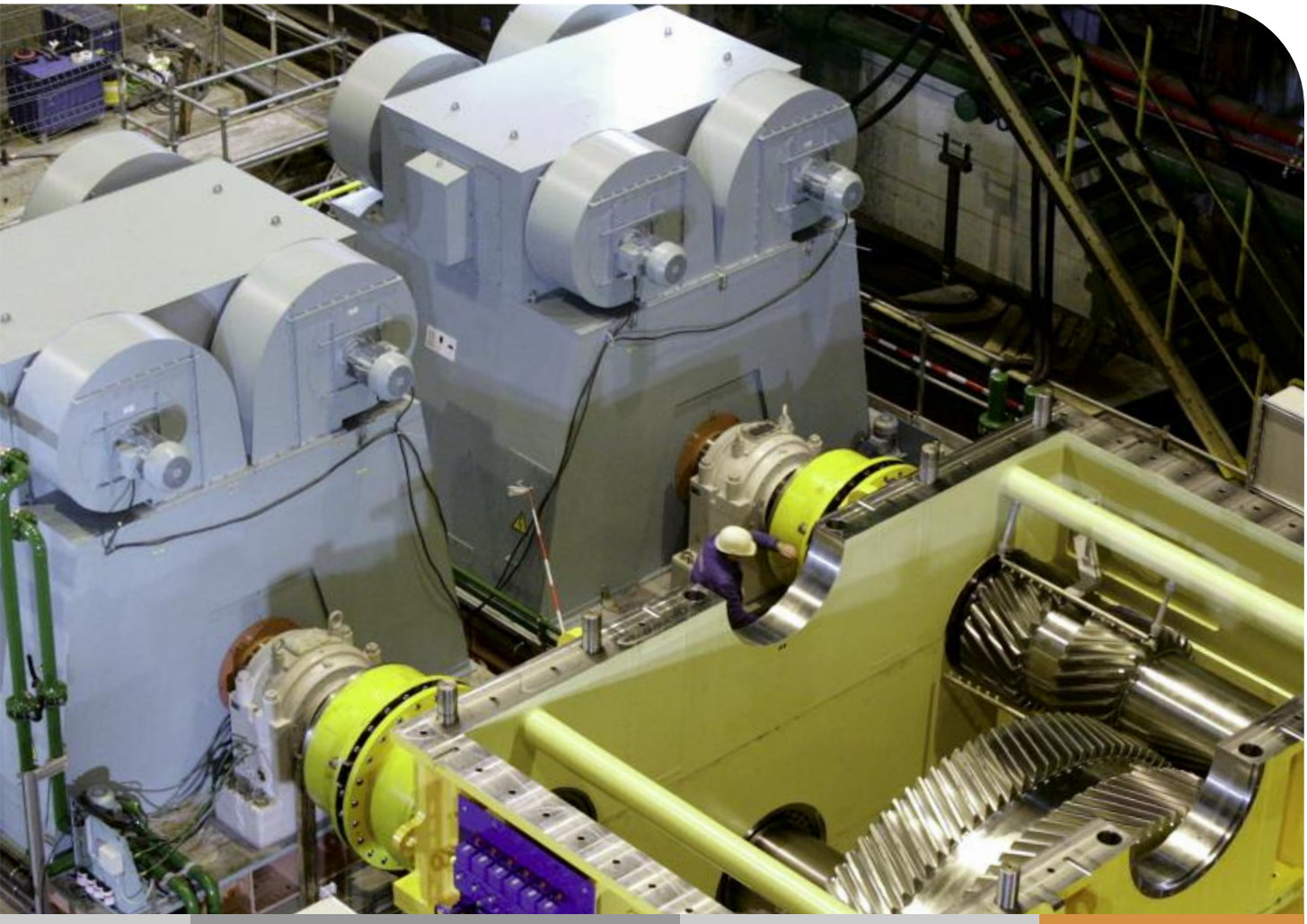
SMS group

X-Pact®

# AluControl® – Level 0

## Electrical and Automation Systems






# AluControl® – Level 0

## Power distribution and drive systems

AluControl® Level 0 is a part of the SMS group X-Pact® automation package and takes into account the special requirements of aluminum hot and cold rolling processes. Main components of Level 0 are power distribution and drive systems.

### POWER DISTRIBUTION

For the operation of our plants, a reliable power supply suited to the process of aluminum rolling is of major importance. Exact knowledge of the process requirements enables us to come up with tailor-made dimensioning and design of the power distribution systems for all levels.

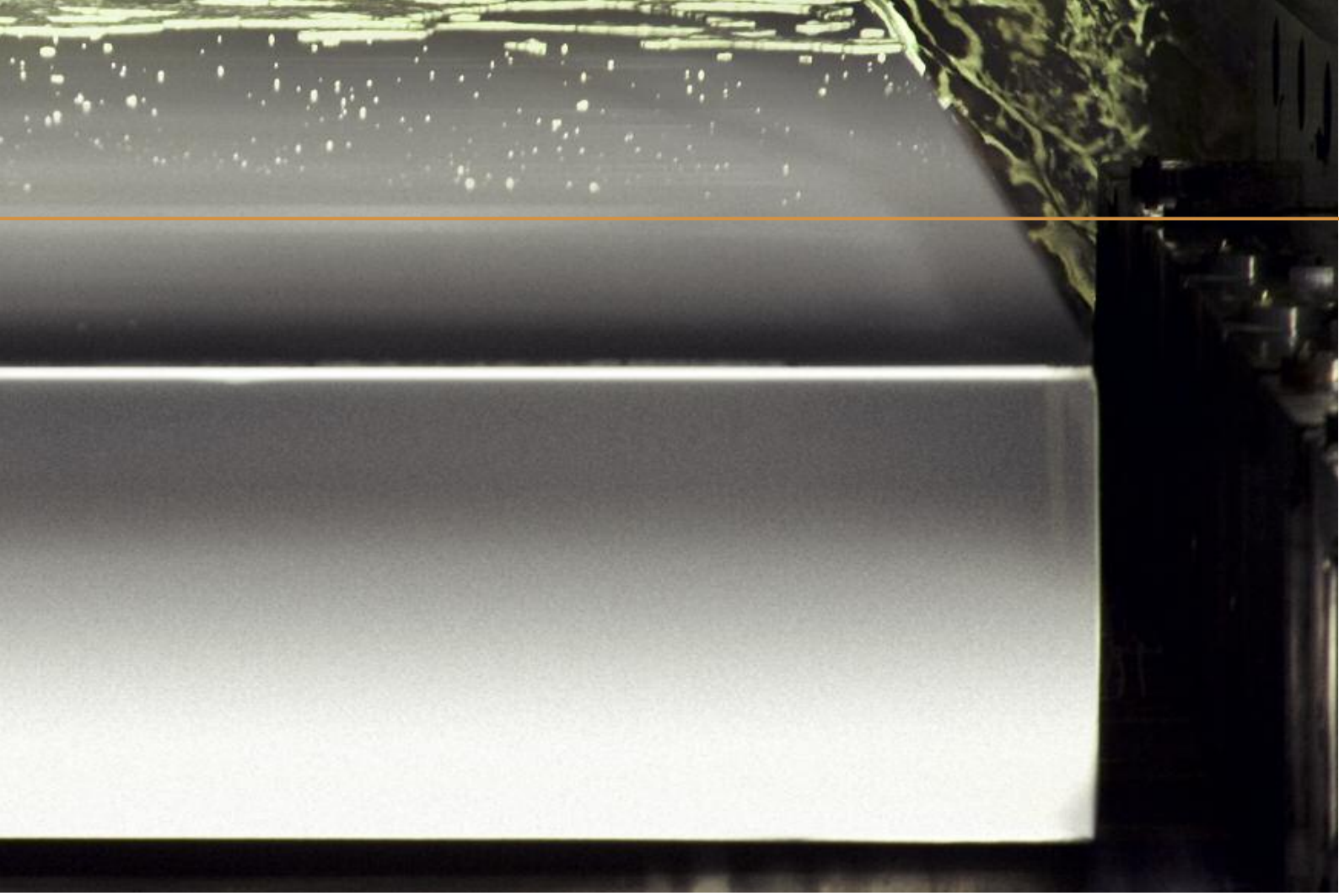
The definition of simultaneity factors determined by the production sequence and the correct evaluation of the pass schedule data calculated by means of our process models contribute to the optimal dimensioning of all components. Dimensioning comprises all components, from the overhead-line power supply to the mechanical actuator. In this context, we focus on the investment costs in the same way as on the maintenance costs and finally the operating costs, which are kept low by reducing power dissipation. To be able to dimension and design the required filter and compensation equipment as a function of the electrical consumers, we perform a grid analysis together with our customer in the scope of which the mains harmonics and the reactive power demand are determined, amongst other things. Furthermore, we advise and support our customers as regards the right strategy for linking up to the interconnected power system.

For every new project, we contribute our long-standing experience from the handling of international orders and the knowledge of country-specific requirements as regards power supply and distribution gained in the process.

Our supply range for power distribution systems comprises:

- High and medium-voltage switchgears
- Distribution transformers
- Compensation and filter equipment
- Emergency power generating sets and UPS systems
- Low-voltage main distribution boards

For all components, our experts prepare the required and pertaining emergency stop concepts.



## RELIABLE DRIVE SYSTEMS

In our plants, we at SMS group integrate drive systems with motors from all major manufacturers. Thanks to the resulting flexibility in terms of component selection, we are in the position to harmonize the drives with the process as closely as possible and at the same time cater to our customers' desire to employ certain manufacturers.

Furthermore, the customer benefits from reduced stock-keeping of spare parts if identical components as in other plants can be used. Also the existing technical knowledge of the maintenance personnel can immediately be used on new plants.

The free selection and combination of components applies to the large rolling mill main drives in the same way as to low-voltage converters, motors or auxiliary drives. Our drive specialists dimension and design converters and motors in accordance with the process-technological requirements and forward these requirements to the suppliers.

For the dimensioning and design of the rolling mill main drives, we make use of the performance potential of the electric machines in order to offer our customers a plant with a high degree of flexibility as regards the production process configuration. At the same time, we also focus on optimizing the plant in terms of low investment costs.

We generally carry out simulations of torsional vibrations for the entire drive train by means of which the natural frequency behavior is determined. Subsequently, the correct configuration for uncritical dynamic plant operation is defined.

Once again, the combination of mechanical and electrical engineering at SMS group pays off by optimizing the overall system through the targeted shifting of spring rigidities and mass between motor, gear unit, drive shaft and millstand. Short ways for a direct exchange of data and information between all specialist departments involved provide optimum conditions for this.

The supervision of the manufacturing process for the drive components, such as transformers, converters and motors, and a workshop test based on standardized function tests are an integral part of our tasks just as well as the commissioning on site at a later point in time.

The "Speedmaster" for the plant is part of our Level 1 system and therefore integrated directly with the technological process control systems. The drive systems and components are connected to the automation system by means of defined, slim interfaces between the converters and the X-Pact® automation system.

The drive and utilities system developed by SMS group controls and monitors all auxiliary units of the main drives including the transformers, such as cooling water or bearing lubrication. In this way we offer a consistent and standardized connection to our plant automation also for these systems, regardless of the manufacturer of the drive components.

SMS group low-voltage frequency converter.

X-Pact® Drive

## LOW-VOLTAGE CONVERTER

In cooperation with our partner VACON – one of the world's leading manufacturers of frequency converters – we have developed a modular, standardized cabinet system for low-voltage frequency converters.

The power elements are standardized, so that the only differences between them are the power ratings of the converter modules and the make of the peripherals, such as fuse load-break switches, output reactors or du/dt filters.

The application software in the converters is precisely designed for the application requirements of our machines.

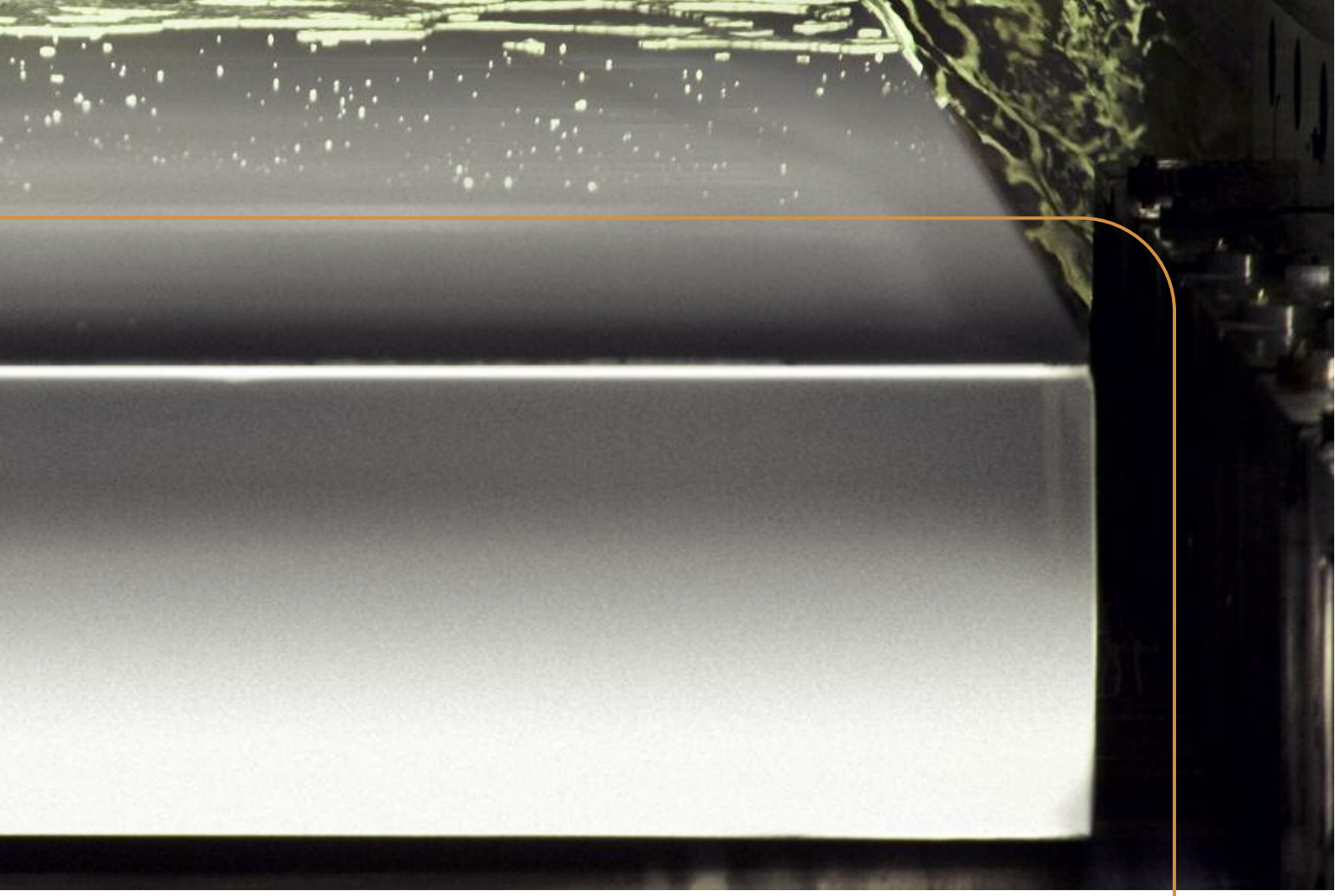
With these converters, we cover the entire range of low-voltage converters in our plants.

For aluminum rolling mills, low voltage converters will be used for:

- the drives for roller tables or coil circulation
- all material-guiding roller drives
- the converters for the pump motors of the utility systems

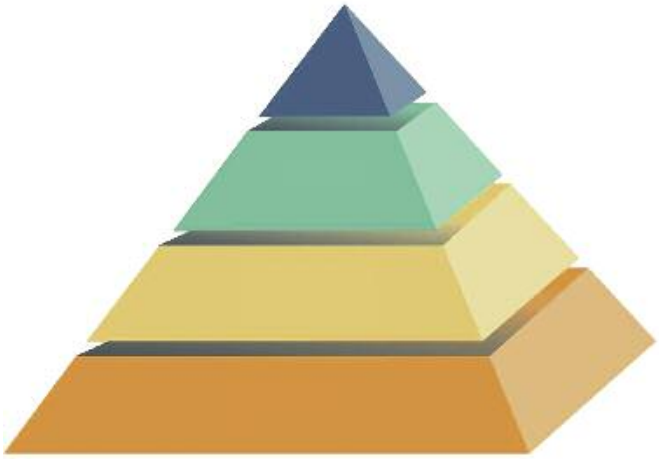
VACON's long-standing experience in manufacturing ensures a consistently high quality for the converters. Short delivery times are guaranteed thanks to serial production of the power element cabinets. The availability of our drives is ensured by our worldwide service network, experienced service staff and access to our spare parts stores.

In addition to these features, the converters are an interesting alternative for our customers in the field of low-voltage drives in terms of investment and operating costs.



## YOUR BENEFITS AT A GLANCE

- Power supply tailor-made to suit the needs of the rolling process
- Flexible selection of drive components and reduced stock-keeping of spare parts
- Low investment, operating and maintenance costs
- Cost-efficient production thanks to optimum design of the integrated drive solution
- Many years of international experience in manufacturing
- Innovative solutions using our own electrical and automation systems
- Installation supervision and commissioning by experienced experts
- Worldwide service and availability of spare parts
- Electrical systems, mechanical equipment and know-how – all from one source with SMS group



**Level 3** Production planning systems

**Level 2** Technological process models, process sequencing and reporting

**Level 1** Process automation and control systems

**Level 0** Power distribution and drive systems, sensors and measuring devices

**SMS group GmbH**
Electrical and Automation Systems Division

Wiesenstrasse 30
57271 Hilchenbach, Germany

Phone: +49 2733 29-5895
Telefax: +49 2733 29-775895

Ivo-Beucker-Strasse 43
40237 Düsseldorf, Germany

Phone: +49 211 881-5895
Telefax: +49 211 881-775895

E-mail: Automation@sms-group.com
Internet: www.sms-group.com

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