FULLY INSULATED BUS BAR SYSTEM SIS®

FOR INDOOR AND OUTDOOR APPLICATIONS UP TO 40.5 KV / 8000 A

RITZ

Empowering Our Electrical Future

EXPERT ADVICE

INDIVIDUALLY TAILORED CUSTOMER SOLUTIONS

HIGH QUALITY

COMPLIANCE WITH AND EXCEEDING THE TECHNICAL GUIDELINES

FLEXIBLE AND CUSTOMER-ORIENTED

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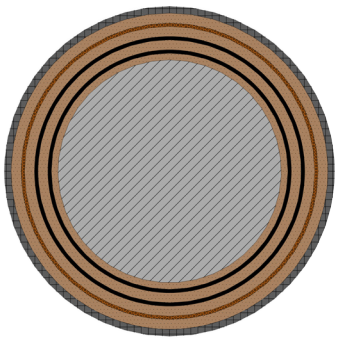
1.0 CONSTRUCTION AND PROPERTIES

CONSTRUCTION AND PROPERTIES

The fully insulated bus bar system SIS* provides touch safe, reliable connections between medium voltage equipment.

Clients use RITZ SIS bus bars between capital-intensive equipment where high current transmission and/or limited space are critical factors, such as:

- Generators
- IPBs
- Transformers
- Generator circuit breakers
- Reactors
- Switchgear Panels



ELECTRICAL PARAMETERS

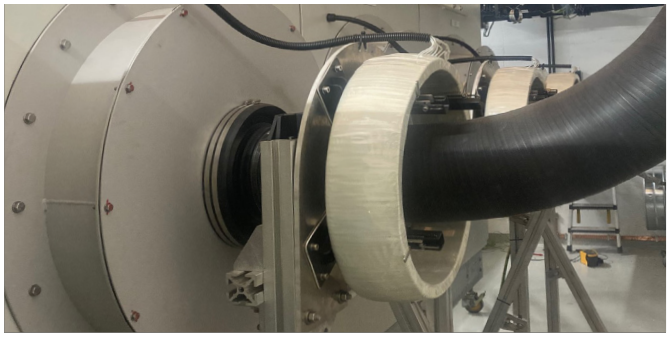
- System voltage up to 40.5 kV
- Currents up to 8000 A, others on request
- No partial discharge acc. to IEC 60137

The bus bars are insulated by a composite insulation comprising ERIP (epoxy resin impregnated paper) with capacitive grading and embedded earthing layer. The epoxy resin is cast under vacuum and cured at an elevated temperature.
Systems are available for ambient temperature ranges from -60°C to +55°C. Depending on the requirement, we can deliver systems for indoor, outdoor or combined applications.

CONNECTION OPTIONS

There are various ways to connect bus bars or other components.
The following versions are available for connection to the equipment or system components:

- Flat terminals according to DIN 42 206
- Round bolt terminals
- Standardised and customised connector types
- Customised terminals



** SIS = Solid Insulated Bus Bar System*

2.0 CONNECTOR TYPES

PLUG TYPES

SIEMENS
8DA/B
up to 2500 A

SIEMENS
8DA/B
3150 A

SIEMENS
NXPLUS
up to 2000 A

NKT - 50 - C2/F
up to 2500 A

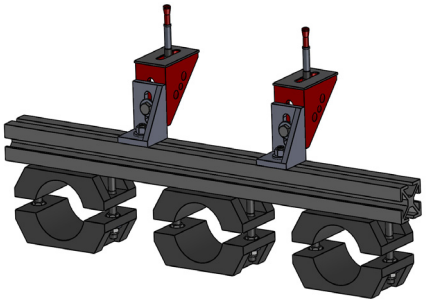
NKT - 32 - C2
up to 1250 A

ABB
ZX2
up to 3150A

INNER CONE
CONNECTION TYPE 3
up to 1600 A

INNER CONE
CONNECTION TYPE 4
up to 2500 A

3.0 FIXING SYSTEM



FIXING SYSTEM

A versatile modular system is available for fixing the bus bars.

THE RAIL FIXING SYSTEM COMPRISES

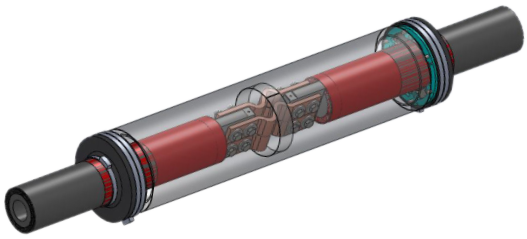
- Aluminium C-profile
- Aluminium angles
- Hammerhead screws and other fixing materials
- Fixing clamps made of glass fibre reinforced plastic

THE FOLLOWING DESIGN CRITERIA ARE TAKEN INTO ACCOUNT:

- Short circuit forces
- Natural frequency/harmonic to avoid resonances
- System mass
- Straightforward installation

The positions of the supports are recalculated individually for each project according to the given parameters. These can also be slightly adjusted on site.

4.0 CONNECTION SLEEVES



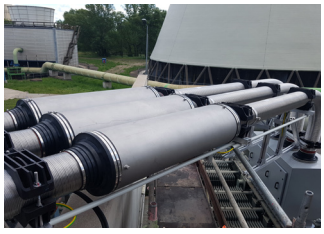
CONNECTION SLEEVES

With longer bus bar systems, due to the following:

- Thermal expansion
- Transport dimension limits
- On-site installation requirements
- Ease of handling
- Maximum production lengths

these must be composed of sections.

In order to guarantee continuous, touch safe bus bar routing, a connection sleeve is mounted between the sections, to cover the current-carrying connection area so that it is safe to touch.
The connection of two bus bar sections inside a connection sleeve is provided by expansion straps that compensate for low length tolerances during installation, as well as the thermal expansion of the bus bars during operation.
The insulation of the connection sleeve corresponds in its construction and manufacturing to the design of the bus bar and can also be supplied as an indoor and outdoor version.



5.0 WHY SIS®?

WHY SIS ?

We build long-term customer relationships and develop the best solution for your project together with you. Our experienced team guides you from the conceptual planning stage through to the commissioning of the SIS bus bar connections.

BENEFITS

- Very low life cycle costs
- Safe and reliable connections
- Maintenance free
- Space saving due to very small bending radii and compact design
- No active cooling required
- Low power losses (I^2R)
- Flexible connection options

SAFETY FEATURES

- Touch safe
- Highest impact resistance (IK10)
- High operational safety due to routine testing in the factory
- Partial discharge free acc. to IEC 60137
- Phase to phase short circuit improbable
- High thermal and dynamic short-circuit strength

RITZ SERVICE MADE IN GERMANY

- Design of bus bar systems to customer requirements
- Turn key support available at early project stages
- 3D site measurement
- Manufacture and test of solid insulated bus bars
- Installation of the bus bar system or provision of an experienced supervisor (SCC certified)
- Testing of installed systems (for example VLF HV test)

RITZ is only satisfied when you are satisfied.

6.0 REFERENCE PROJECTS

SCA

SCA HELIOS

PROBLEM STATEMENT:

- Extremely confined space conditions
- Expansion of capacity without new build or conversion of premises
- Accessibility of the premises maintained
- Reduction of power losses
- Extremely high power transmission – 12 kV/8000 A per phase

SOLUTION:

- On-site visits for close consultations
- Constant coordination with the client based on a 3D model
- SIS 12 with 8000 A (135 MW) per phase in copper conductors
- Interface coordination through weekly meetings with the customer, manufacturers of other components and other trades
- Supervision of installation

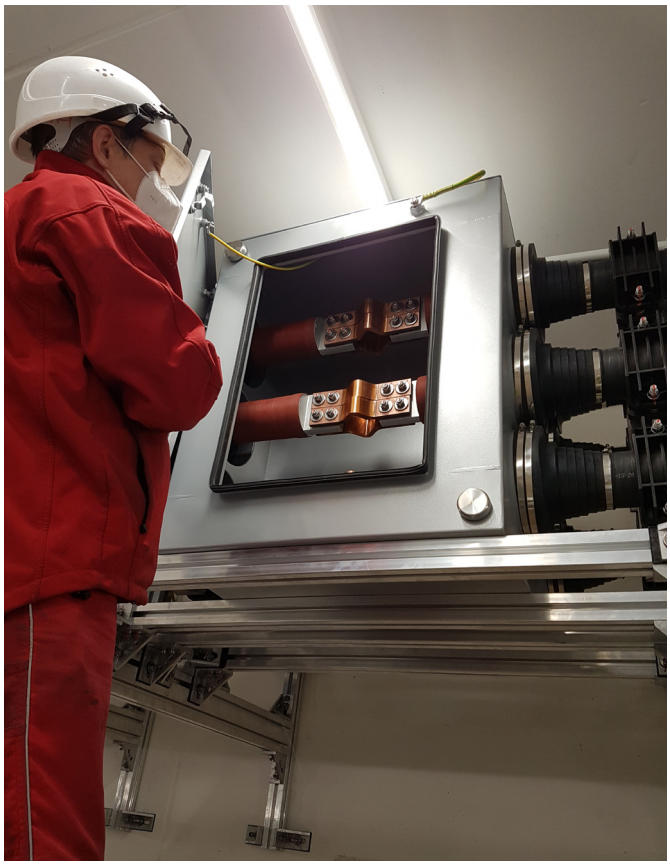
6.0 REFERENCE PROJECTS

STADTWERKE LINGEN

STADTWERKE LINGEN – SCHÜTTORFER STRASSE
PROBLEM STATEMENT:
The two rows of switchgear should be able to be electrically separated from each other quickly and easily if required, thereby enabling continued partial operation of the system.

SCOPE:
From planning to design, production to installation by RITZ personnel.
12 kV/2500 A per phase, double bus bar (DSS) – connection between gas-insulated ZX2 systems from ABB.

SOLUTION:
Separation of the individual phases in a connection box through insertion of temporary insulating plates via side service aperture, ensuring safe and quick decoupling of the systems.



6.0 REFERENCE PROJECTS

ELATEC POWER DISTRIBUTION BSW

ELATEC – PROJECT BSW: COUPLING MAIN SWITCHGEAR

PROBLEM:

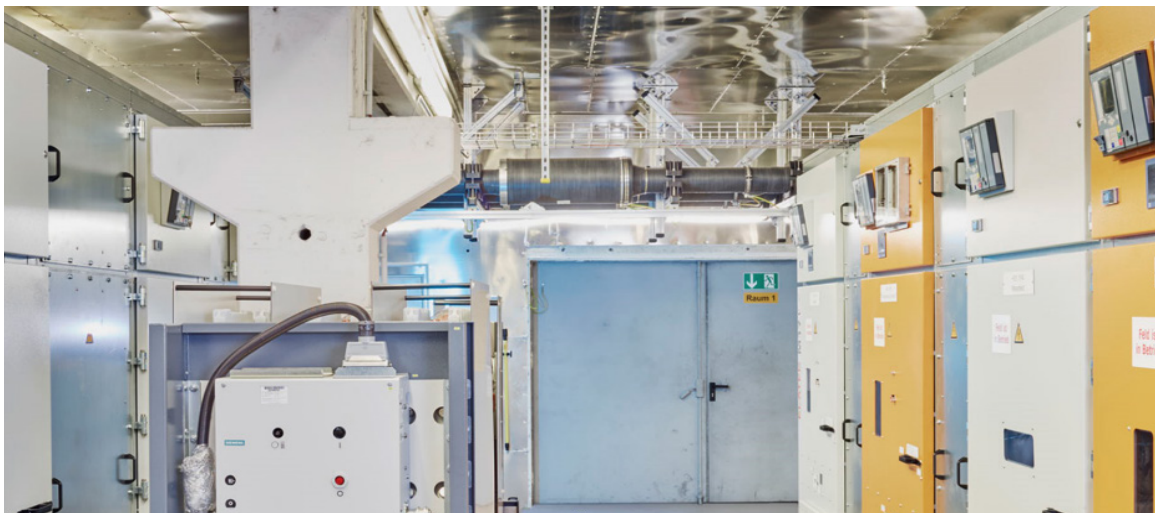
- Extremely limited space
- Highest performance values of a switchgear to date Coupler (24kV / 6000A)
- Very short time slot for assembly Ensuring contact safety

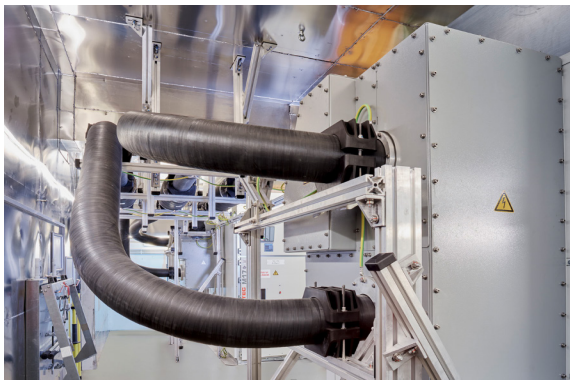
SOLUTION:

- Feasibility study prior to ordering
- On-site 3D survey of the premises
- Close and continuous exchange with all parties involved Supervision of assembly work
- Junction boxes on the side of the new M17 system by Elatec

Initial Situation:

Result:





ORDER INFORMATION & CONTACT PERSONS

ORDER INFORMATION

To be able to offer you a professional solution, we need the following information:

- Rated voltage and rated current
- Short circuit currents thermal I_{th}, dynamic I_{dyn}
- Rated frequency
- Rated temperature (working environment)
- Installation altitude
- Conductor material (Al/Cu), if specifically requested
- Required route of the bus bar connection and/or the available installation corridor
- Building drawings with indication of position of components (CAD drawing(s) in 2D or 3D, if possible)
- Dimensional drawings of the components to be connected (CAD drawing(s) in 2D or 3D, if possible)
- Further specifications to be considered

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We are the leading specialist for instrument transformers, cast resin parts and bus bars with cast resin insulation.

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