SIS PROJECT SUMMARY

Solid Insulated Bus Systems (SIS)

PROJECT RATING

24	6000
VOLTAGE CLASS (kV)	CURRENT RATING (A)

INDUSTRY: Industrial, steelworks
APPLICATION: MV Switchgear Coupling
RATING: 24kV / 6000A per phase

BACKGROUND: steelworks completing facility and production increases, requirement for switchgear updates for load (capacity increase)

Characteristics	Standard/ Norm	Type SIS	Type SISES
Corrosion protection class	DIN EN ISO 12944	C1	C3
Earth acceleration (siesmic)		not applicable for design	
Wind load	DIN 1055-4:2005-03	Zone 2: 25m/s (56mph)	
Halogen-free	IEC 60754-1	no	yes
Height (altitude)	IEC 60137	≤ 1000m above sea level	
Pollution level	IEC 60815	9mm per kV	31mm per kV
Humidity		95%	100%
Surface (uncoated)		shrink tubing	stainless steel
Grounding shield		$8mm^2$ CU	
Ground wire		$50mm^2$ CU	

PROJECT DELIVERABLES

Implement new MV service into existing building with lowest facility impact
Highest capacity (current rating) per phase
Custom design thru interactive project development
Scheduling coordination with other time accelerated facility projects
On-site construction supervision

SIS BUS BAR RATINGS and DIMENSIONS

Rated voltage: 24kV, 50Hz, PFWV 50kV, 1.2/50us 125kV (lightning impulse)
Rated current: 6000A, $I_{THERMAL}SC$ 40kA for 1s, $I_{DYNAMIC}SC$ 100kA
CU conductor, power dissipation 195W/m/phase
WEIGHT 53kg/m, phase center spacing 600mm, OD 189mm

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SIS SYSTEM CAPABILITIES	
40.5	8000
VOLTAGE CLASS (kV)	CURRENT RATING (A)

GENERAL SIS RATING INFORMATION

Solid Insulated Bus Systems (SIS)

RIP technology has been in use in the electrical industry for medium to high voltage and EHV applications for over 50 years--mainly in the manufacture of high current RIP transformer bushings.

General Specifications and Operating Requirements

- RESIN IMPREGNATED PAPER (RIP) technology
- Maximum system voltage and current
- Ambient temperature
- Routing and clearance
- Equipment connections and non SIS bus interconnections
- Indoor vs Outdoor installations
- Support structures to include seismic compliance

Once the bus bar segments are manufactured according to proven RIP processes for vacuum impregnation and resin curing, each bus bar segment and connection sleeve is individually tested according to IEC 60137, Insulated Bushings for Alternating Voltages above 1000V (comparable to ANSI / IEEE C57.19.00 and IEEE C57.19.01) to ensure acceptable test levels for power frequency, partial discharge, capacitance and loss factors. The test criterion is the essential element of verifying a void free insulation structure that will lead to a partial discharge free operation.

All RITZ SIS Bus Bar voltage class designs and current capacity ratings have been verified through type testing procedures also covered under IEC 60137 according to the following test regimen:

1. Power frequency test and PD measurements
2. Impulse voltage test
3. Power frequency test and PD measurements repeated
4. Temperature rise test
5. Temperature cycling
6. Power frequency test and PD measurements repeated

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