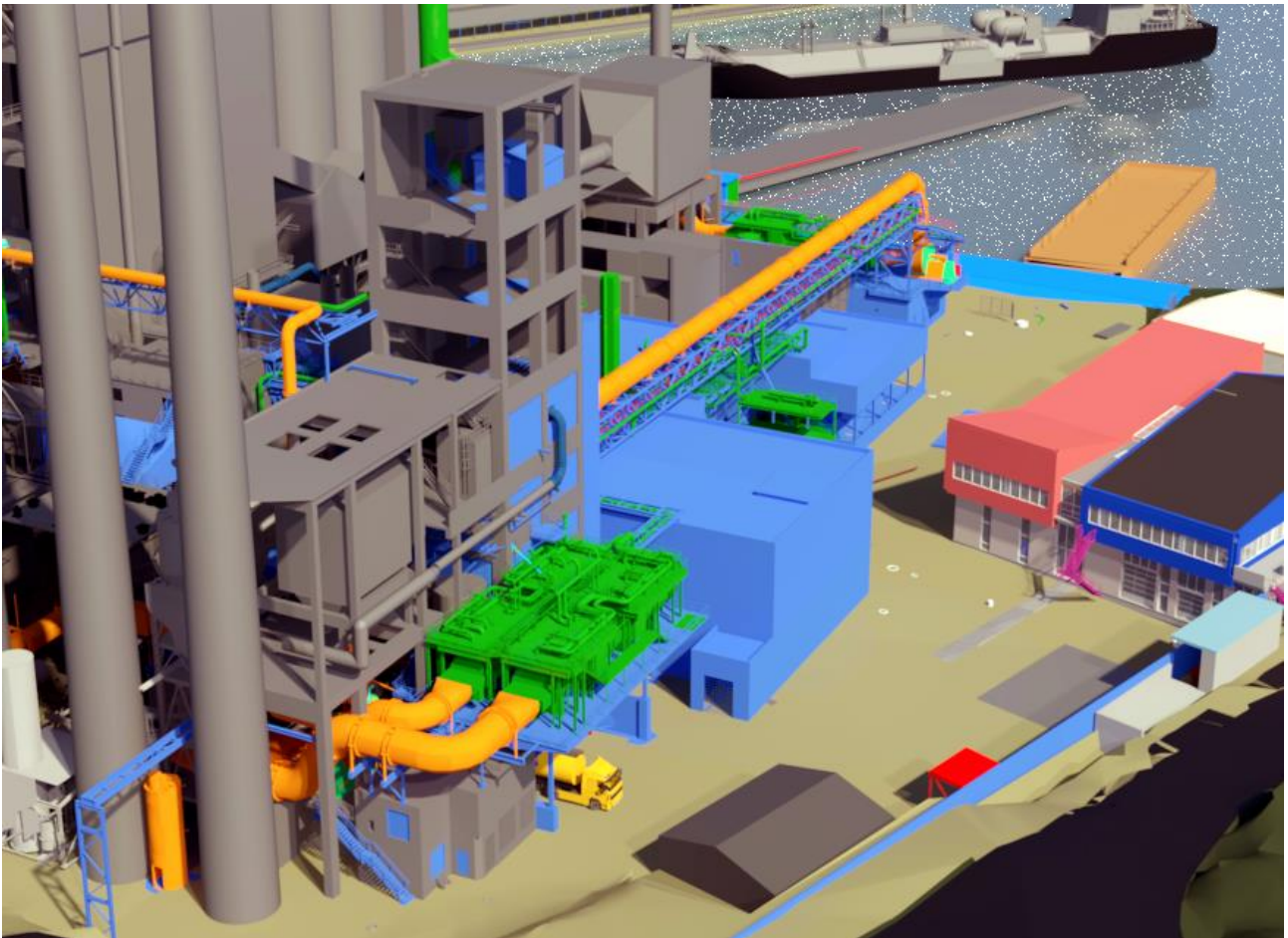


TECHNICAL SPECIFICATION FOR TRANSFORMER CO₂ COMPRESSOR BREVIK CCS



NORCEM AS BREVIK

1. PURPOSE

This specification contains requirement for a new 22/11 kV transformer at the new CCS plant at Norcem Brevik. The transformer shall deliver electric power to the Co2 Compressor of the new plant.

New CCS plant are planned to be finished Q2-Q3 2024.

2. MAIN ITEMS TRANSFORMER

- Data Co2 Compressor
 - Shaft MW: 9,48
 - Motor Size MW: 10,4
 - Type motor: Asynchronous motor, single speed
 - Rated speed [rpm]: 1491
- One 12 MVA Oil Natural Air Natural 22/11 kV transformer ONAN
 - IEC 60076 class 5
 - Environmental class: C4 Outdoor
 - Option: C5-1 Outdoor
 - IPX5
 - Connection symbol: YND5
- With on load tap changer +/- 8 x 1,5 %
 - Vacuum switching technology
- Auxiliaries
 - Standard transformer protection as e.g.: all as HW signals
 - Buckholtz with
 - Oil level
 - Gas
 - Pressure
 - Winding temperatures
- Three phase oil filled with copper windings
- Transformer losses with compliance 548/ 2014 on Eco design
 - Short-circuit impedance, principal tap needs to be in offer
 - No-load current at rated voltage and frequency needs to be in offer
- Tests
 - FAT (Factory acceptance test) including routine test IEC 60076
 - Customer shall have opportunity to participate at FAT
 - Options: alternative test to be offer and explained

- Option 1

- Cooling oil forced water as OFAF
 - 2 x 100% capacity
 - Automatic start of stand by unit
 - One cooler shall / can be taken out of service while the other is in normal operation
 - Water pipes shall be stainless steel and insulated to avoid condensation.
 - All sealings shall be flat gasket type
- Auxiliaries
 - If optional OFAF
 - Oil temperature
 - Cooling water temperature
 - Pressure relief device
 - Oil sampling valves

3. DATA OF MOTOR CO₂ COMPRESSOR

Load Type: Centrifugal compressor

Starting method: Direct via LRS (Liquid Starter)

Coupling: Direct via LRS (Liquid Starter)

Motor Output: 10,4 MW

Rated Voltage: 11kV Connection Y

Rated Current: 616A

Rotor Voltage: 2700V Connection Y

Rotor Current: 2291A

4. NATIONAL AND STANDARDS

- EN 60076 Series Power Transformers
- IEC 60529 Degree of protection provided by enclosures.
- NS-EN ISO 1461:2009 Hot dip galvanized coatings on fabricated iron and steel articles
- EN 60214-1 and IEC 601214 Series Tap-changers
- IEC 60296 Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear
- NS-EN ISO 12944-2: 2017 Paint and varnishes – corrosion protection of steel structures by protective paint systems – Part 2: Classification of environments

5. **ATTACHMENTS**

- SLD HV (Attachment 1)
- Layout Placement Transformer from BIM Model (Attachment 2)
 - With L x W mm (5000mm x 6000mm)
 - Assumed weight design transformer are 25.0000 kg
 - Approximate mass needs to be in the offer

6. **OFFER**

The offer shall include total costs, stated delivery time, guarantee, declaration of conformity, technical tender data and other documentation needs to be delivered in offer. The Products shall be delivered DDP (Incoterms 2020) at Setrevegen 2, 3950 Brevik, Norway.

7. **PREFERRED DELIVERY**

Preferred delivery: Q2 -2023