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ANNEX C - TECHNICAL FORM

This form is used for evaluating the offer in the tender process and also for the technical data validation during the homologation, certification and approval procedure.

Flag here the use of this form:

- Offer in the Tender
 Tech Data validation

IMPORTANT

This document has to be used for checking the compliance of the transformer during the tender process.

Deviations are in principle not acceptable.

Possible deviations have to be clearly reported in the following form for specific deviations.

The acceptance of this document for the next tender stage does not mean the acceptance of any deviation to the technical specification if such deviations are not clearly reported in the form for specific deviations.

RATINGS Part 1 of 5

| RATINGS | Data Declared (if relevant, otherwise indicate "--") | Notes (add remarks, if necessary) |
|---|---|--------------------------------------|
| GS TYPE CODE | to indicate | |
| Country | to indicate | |
| Country Code | to indicate | |
| Transformer (TR) or auto-transformer (ATR) | to indicate | |
| N. of phases | to indicate | |
| Rated frequency fr (Hz) | to indicate | |
| Number of windings | to indicate | |
| Connection Symbol | to indicate | |
| Rated Power S_r (MVA) - for each cooling system and more MV | to indicate | |
| Cooling System | to indicate | |
| Installation | indoor/outdoor | |
| Service conditions 60076-1 | normal/special | |
| Ref. Temp. 60076-2; Table 1,2 (K) | oil/winding/hot-spot | |
| Rated HV U_r (kV) | to indicate | |
| HV insul. levels - U_m / SI / LI / LIC / AC (kV) | to indicate | |

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|--|--------------------------|--|
| HV neutral (inside/outside) | to indicate | |
| HV neutral (Insulation levels) (kV) | to indicate | |
| HV Volt. Reg. Type (OLTC-DETC-NO) | to indicate | |
| HV Volt. Reg. (n. of steps, value %) | to indicate | |
| MV Rated Voltage U_r (kV) | to indicate | |
| MV insulation levels (Um-LI-AC) | to indicate | |
| MV Neutral (inside-outside) | to indicate | |
| MV Neutral insulation levels | to indicate | |
| MV Volt. Reg. Type (DETC-intank bars-NO) | to indicate | |
| MV Voltage regulation (n°step, value%) | to indicate | |
| MV2 Rated Voltage U_r (kV) | to indicate | |
| MV2 insulation (Um-LI-AC) | to indicate | |
| MV2 Neutral (inside-outside) | to indicate | |
| MV2 Neutral (insulation levels) | to indicate | |
| MV2 Volt. reg type (DETC-intank bars-NO) | to indicate | |
| MV2 Volt reg (n. of steps, value%) | to indicate | |
| Tertiary for compensation (description) | to indicate | |
| Z_{sc} HV-MV (% rif. S_r) | to indicate | |
| Z_{sc} HV-MV2 (% rif. S_r) | to indicate | |
| Z_{sc} MV-MV2 (% rif. S_r) | to indicate | |
| Load Loss HV-MV (kW) | to indicate | |
| No Load Loss HV-MV (kW) | to indicate | |
| Load Loss HV-MV2 (kW) | to indicate | |
| No Load Loss HV-MV2 (kW) | to indicate | |
| Sound level (dB) (to specify if values ref. to power or pressure as requested) | to indicate | |
| | | |
| Overall dimensions (cm) | to indicate | |
| Dimensional drawings to be attached | Indicate the ref. Number | |
| Transport drawings to be attached | Indicate the ref. Number | |
| Total Weights (Kg) | to indicate | |
| | | |
| Other parameters to be specified | | |
| to indicate | to indicate | |
| to indicate | | |
| to indicate | | |

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MAIN COMPONENTS - Part 2 of 5

| MAIN COMPONENTS | Data Declared (if relevant, otherwise indicate "--") | Notes (add remarks, if necessary) |
|--|---|--------------------------------------|
| HV BUSHINGS | Phase - Neutral | |
| Supplier | to indicate | |
| Type | to indicate | |
| U_r (kV) | to indicate | |
| I_r (A) | to indicate | |
| Creepage distance (mm) | to indicate | |
| hollow insulator type | polymeric, ceramic | |
| $T_g \delta$ | to indicate | |
| Capacitive plug | yes/no | |
| | | |
| MV BUSHINGS | Phase - Neutral | |
| Supplier | to indicate | |
| Type | to indicate | |
| U_r (kV) | to indicate | |
| I_r (A) | to indicate | |
| Creepage distance (mm) | to indicate | |
| hollow insulator Type | polymeric, ceramic | |
| $T_g \delta$ | to indicate | |
| | | |
| TAP CHANGER | | |
| ON LOAD / DE ENERGIZED | to indicate | |
| Supplier | to indicate | |
| Model and type | to indicate | |
| Number of steps | to indicate | |
| Rated step voltage (V) | to indicate | |
| Rated operating current (A) | to indicate | |
| Commutation resistance (W) | to indicate | |
| Rated maximum current - I_{um} (A) | to indicate | |
| Highest voltage for equipment - U_m (kV) | to indicate | |
| | | |
| VOLTAGE LEVEL CHANGE | | |
| DOUBLE VOLTAGE | yes/no | |
| Y-D | yes/no | |
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MAIN ACCESSORIES - Part 3 of 5

| MAIN ACCESSORIES | Data Declared (if relevant, otherwise indicate "--") | Notes (add remarks, if necessary) |
|---|---|--------------------------------------|
| RADIATORS | | |
| Supplier | to indicate | |
| Type | to indicate | |
| Numbers of radiators | to indicate | |
| Total dispersive surface (m ² all radiators) | to indicate | |
| Radiators thickness (mm) | to indicate | |
| Painting Cycle | to indicate | |
| Standard reference | to indicate | |
| | | |
| BUTTERFLY VALVES | | |
| Supplier | to indicate | |
| Type | to indicate | |
| Standard reference | to indicate | |
| | | |
| FANS | | |
| Supplier | to indicate | |
| Type | to indicate | |
| Number | to indicate | |
| Standard reference | to indicate | |
| | | |
| OIL | | |
| Supplier | to indicate | |
| Type | to indicate | |
| Standard reference | to indicate | |
| Inhibitors or antioxidant additives | yes/no | |
| Same transformer oil used for OLTC | yes/no | |
| | | |
| Buchholz | to indicate (Supplier/type) | |
| Oil Level Indicator | to indicate (Supplier/type/number) | |
| Silica gel or Dehydrating breather | to indicate (Supplier/type/number) | |
| Overpressure valve | to indicate (Supplier/type/number) | |
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DESIGN DATA - Part 4 of 5

| DESIGN DATA | Data Declared (if relevant, otherwise indicate "--") | Notes (add remarks, if necessary) |
|---|---|--------------------------------------|
| CORE | | |
| Thin core sheets type (e.g. 30M0H) | to indicate | |
| Induction (T) at rated voltage | to indicate | |
| Core Supplier | to indicate | |
| Core joint type (e.g. Step-Lap/6 layers/2 sheets per layer) | to indicate | |
| Oil channels (number and dimensions, if any) | to indicate | |
| Minimum insulation thickness for both faces | to indicate | |
| Maximum permissible rough edge of sheet | to indicate | |
| Core weight | to indicate | |
| Magnetic losses of core sheets 1 (Epstein Test) (W/kg) | to indicate | |
| Type of insulation of the core sheets | to indicate | |
| FRAME | | |
| Type (brief descriptions of the topology) | to indicate | |
| Material of the frame | to indicate | |
| Contact typology (e.g. turn opened/closed) | to indicate | |
| Frame vs. core insulating material | to indicate | |
| Number of press-limb elements per phase | to indicate | |
| Windings tightening torque type (e.g. rigid/elastic) | to indicate | |
| Weight | to indicate | |
| Final Windings tightening torque (kN) | to indicate | |
| WINDINGS | Primary - Secondary | |
| Windings type (e.g. interleaved, helical etc) | to indicate | |
| Type of conductors (e.g. strand, CTC etc) | to indicate | |
| Weight of the copper (kg) | to indicate | |
| Current density at S_r and U_r (A/mm^2) | to indicate | |
| Single conductor | to indicate | |
| thickness (mm) | to indicate | |
| height (mm) | to indicate | |
| insulation (mm) | to indicate | |
| Hardening degree σ 0,2 (N/mm^2) | to indicate | |
| Axial cooling channels thickness (mm) | to indicate | |
| Radial cooling channels thickness (mm) | to indicate | |
| Radial dimension of the winding (mm) | to indicate | |
| Axial dimension of the winding (mm) | to indicate | |
| Conductors Supplier | to indicate | |

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| Other windings | 2 nd Secondary - Tertiary | |
|--|--------------------------------------|--|
| Windings type (e.g. interleaved, helical etc) | to indicate | |
| Type of conductors (e.g. strand, CTC etc) | to indicate | |
| Weight of the copper (kg) | to indicate | |
| Current density at S _r and Un (A/mm ²) | to indicate | |
| Single conductor | to indicate | |
| Thickness (mm) | to indicate | |
| Height (mm) | to indicate | |
| Insulation (mm) | to indicate | |
| Hardening degree σ 0,2 (N/mm ²) | to indicate | |
| Axial cooling channels thickness (mm) | to indicate | |
| Radial cooling channels thickness (mm) | to indicate | |
| Radial dimension of the winding (mm) | to indicate | |
| Axial dimension of the winding (mm) | to indicate | |
| Conductors Supplier | to indicate | |
| MAGNETIC SHIELDS (if any) | | |
| Material type | to indicate | |
| Blocks thickness | to indicate | |
| Number per phase | to indicate | |
| Possible solution to prevent the tank heating due to zero-sequence current (description) | to indicate | |
| INSULATING STRUCTURES/MATERIALS | | |
| Insulating paper type | to indicate | |
| Insulating paper weight (kg) | to indicate | |
| Insulating paper Supplier | to indicate | |
| Type of insulating of mounted winding (es. cylinders stanches) | to indicate | |
| Supplier of insulating of mounted windings | to indicate | |
| Type of extremities supports (insulating rings) | to indicate | |
| Ends of windings supports Suppliers | to indicate | |
| Type of supports for the connections | to indicate | |
| Supplier of he supports for the connections | to indicate | |
| TANK | | |
| Type of iron sheet used | to indicate | |
| Tank weight (kg) | to indicate | |
| Tank Supplier | to indicate | |
| ACTIVE PART TREATMENT | | |
| Type (product code) | to indicate | |
| Scheduled duration | to indicate | |
| Final check - extracted water quantity (l) | to indicate | |

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|---|-------------|--|
| PAINTING CYCLE | | |
| Layers (e.g. bottom + intermediate + final) | to indicate | |
| Thickness (single layers and total) | to indicate | |
| Supplier | to indicate | |
| Type (product code) | to indicate | |
| WEIGHTS (kg) | | |
| Copper | to indicate | |
| Core (magnetic steel) | to indicate | |
| Other Iron parts (frame, tank etc) | to indicate | |
| Paper insulating material | to indicate | |
| Oil (as in operation) | to indicate | |
| Active part | to indicate | |
| Total | to indicate | |
| Total in transport configuration | to indicate | |
| | | |
| Other relevant data | | |
| to indicate | to indicate | |

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FORM FOR SPECIFIC DEVIATIONS – Part 5 of 5

Each specific deviation shall be reported and explained here below (to be indicated with progressive number)

NO DEVIATIONS

(to flag in case of no deviations from the technical specification - Global Standard)

DEVIATION 1

To indicate possible Deviation

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DEVIATION 2

To indicate possible Deviation

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DEVIATION

To indicate possible Deviation

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With reference to all the 5 parts of this form, add here:

Date _____

Sign _____