EASY ENERGY
CONSULTING & TECHNOLOGY

Easy Energy Companies & Consulting SA
Via Industria 18 CH–6814 Lamone
phone: +41 91 993 17 52
web: www.eecc.swiss / mail: info@eecc.swiss

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Abstract

The document describes the technical specifications and conditions of a power transformer manufactured by Transformadores e Serviços de Energia das Américas S/A, which is ready for sale, never used, and currently stored by the manufacturer. The power transformer is an advanced unit designed for industrial and power distribution applications, with a nominal capacity of 199/264/330 MVA and a primary voltage of 345 kV. This three-phase, oil-cooled transformer (ONAN/ONAF/ONAF) ensures high reliability and optimal performance. The transformer is specified for operation at altitudes less than 1000 meters and a design ambient temperature of 30°C.

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1. Introduction

Three phase transformer available for sale, this document describes the various characteristics and its current status. The subject of the opportunity is as follows:

General Data	
Manufacturer	Transformadores e Serviços de Energia das Américas S/A
Serial No.	A23010
Quantity	1
Available from	August 2024
Country	Brazil

Technical Data	
Condition	New
Year of construction	2024
Rated Voltage	HV 345 kVp LV 34.5 kVp
Rated Power 65°C	199,264,330 MVA
Rated frequency	60 Hz

2. Description of Supply

2.1 MV/HV Step-Up Power Transformer 199/264/330 MVA kV 345/34.5kV

The MV/HV Step-Up Power Transformer is a robust and advanced unit specifically designed for industrial and power distribution applications. This transformer is engineered to provide high reliability and efficiency, making it ideal for demanding operational environments.

The transformer has a rated power of 199/264/330 MVA, a primary voltage (HV) of 345 kV, a secondary voltage (LV) of 34.5 kV, and a tertiary voltage of 13.8 kV. It features a cooling class of ONAN/ONAF/ONAF2 (Oil Natural Air Natural/Oil Natural Air Forced) and operates at a frequency of 60 Hz.

In terms of construction and dimensions, the total transformer weight (including oil) is 305,000 kg, with a shipping weight of 194,000 kg. The dimensions of the transformer are 12.83 x 7.49 x 8.69 meters (LxWxH).

The transformer is equipped with a winding hot spot temperature detector (RTD) and a winding hot spot temperature indicator relay. Field services include offloading, assembly and oil filling, as well as field inspections and testing.

The spare parts provided include a complete set of gaskets, one gallon of touch-up paint, one high voltage line bushing, one low voltage line bushing, one neutral bushing (each type), one sudden pressure relay, and one lot of breather desiccant.

This transformer adheres to several reference standards including international standards ANSI-IEEE, EGP.EEC.S.24.US.X.00000.16.101.00, ANSI C2 (National Electrical Safety

Code), ASTM standards for liquid-immersed power transformers, IEEE C57 Series for insulating oils and materials, and other standards such as NEMA and ASME.

This transformer has undergone extensive and rigorous testing to ensure it meets all relevant international standards, guaranteeing optimal performance and longevity. It is a reliable and efficient solution for industrial and power distribution applications.

2.2 Technical data

Parameter	Value
Model	345/34.5/13.8 kV 199/264/330 MVA
Manufacturer	Transformadores e Serviços de Energia das Américas S/A
Application	Industrial and Power Distribution
Transformer Specifications	
Rated Power	199/264/330 MVA
Primary Voltage (HV)	345 kV
Secondary Voltage (LV)	34.5 kV
Tertiary Voltage	13.8 kV
Cooling Class	ONAN/ONAF/ONAF2
Frequency	60 Hz
Construction and dimensions	
Total Transformer Weight (Including Oil)	305,000 kg
Shipping weight	194,000 kg
Dimension (LxWxH)	12.83x7.49x8.69 m
Accessories	
Winding Hot Spot Temperature Detector (RTD)	Yes
Winding Hot Spot Temperature Indicator Relay	Yes
Field Services	
- Offload	Yes
- Assembly and Oil Filling	Yes
- Field Inspections and Testing	Yes
Spare Parts	
- Complete Set of Gaskets	Yes
- One Gallon of Touch-Up Paint	Yes
- One High Voltage Line Bushing	Yes
- One Low Voltage Line Bushing	Yes
- One Neutral Bushing (Each Type)	Yes

- One Sudden Pressure Relay	Yes
- One Lot Breather Desiccant	Yes
Reference Standards	
International Standards	ANSI-IEEE, EGP.EEC.S.24.US.X.00000.16.101.00
ANSI C2	National Electrical Safety Code
ASTM Standards	Standards for liquid-immersed power transformers
IEEE C57 Series	Insulating oils and materials
Other Standards	NEMA, ASME

3. Tests performed

All tests were conducted by the manufacturer during the transformer's commissioning phase. Below is the list of tests performed, with detailed results available in the attached documents.

- **Insulating Level Tests:**
  - Basic Lightning Impulse Insulation Level
  - Low Frequency Voltage Insulation Level
- **Performance Data Tests:**
  - Performance based on 20 degrees Celsius reference temperature (no load loss)
  - Performance based on 85 degrees Celsius reference temperature (load loss)
  - Losses and Exciting Current Regulating kVA
  - Excitation (% Ex I)
  - No Load Loss (NLL)
  - Total Loss
  - Power Factor
  - Regulation
- **Auxiliary Losses:**
  - Auxiliary Losses for different kVA classes
- **Efficiency Tests:**
  - Efficiency measurements at various load levels (100%, 75%, 50%, 25%)
- **Impedance Tests:**
  - Percent Impedance Volts (%IZ) between kVA levels

4. Storage status

Figure 1: Storage status 1

Figure 2: Storage status 2

5. Scope of Supply

Position	Quantity	Description
1000	1	MV/HV Step-up Power Transformer 345/34.5/13.8 kV 199/264/330 MVA

Table 1: scope of supply.

5.1 Exclusions

Scope not explicitly listed in the Scope of Supply (Table 1) is excluded.
The following items are explicitly excluded:

Mechanical
Modification of any existing systems not explicitly cited.
Missing parts and components.
Electrical
Modification of existing systems not explicitly cited.
Civil
Land preparation
Temporary accesses and final accessing roads
Security plan and hardware.
Temporary accommodation
Finishing and fencing
First aid station and ambulances
Waste disposal facility

Table 2: exclusions from the Scope of Supply.

Project Management
Attainability of installation, commissioning and operation permits, or any other permit.
Assessment and acceptance of safety relevant issues.
Any study, engineering, documentation, or other service.
Additional works resulting from changes in laws or any other reasons, for which EECC is not responsible.
Building of Site Facilities of any kind (lights, water supply and treatment, heating, power supply, etc.).

Custom duties and taxes.
Engineering
Design and detailed engineering of existing equipment.

Table 3: exclusions from scope of Services.

5.2 Technical documentation

Following documents are part of the technical documentation (list is preliminary):

Pos.	Document	Available
1	General	
1.1	Document & drawing list	yes
1.2	Technical data sheet	yes
1.3	Component manuals	yes
1.4	Quality documentation	yes

Table 4: technical documentation