



UNIDADE DE GESTÃO DE PROJECTOS ESPECIAIS

CABO VERDE RENEWABLE ENERGY AND IMPROVED UTILITY PERFORMANCE PROJECT

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CLARIFICATION # 6

Country: Cabo Verde

Name of Project: Renewable Energy and Improved Utility Performance Project

Contract Title: Request for Bidding - Procurement of Plant, Design, Supply, and Installation for four (4) Energy Storage Systems in FOGO Island, SANTO ANTÃO Island, SÃO NICOLAU Island and MAIO Island, Cabo Verde.

Loan No IBRD-92980

RFB Reference No.: 016/REIUP/UGPE

Question N° 30:

While working on the technical specifications in the Annex 10A to 10D, Tab Transformer, Section D, we observed all transformers are rated 2 MVA.

However, the general system specification (Employer_Requirements_VI.1_Scope_of_Work.pdf, p.23), requires:

The PCS units shall be composed of IGBT-based AC/DC bi-directional Converter line-ups with full 4-quadrant functionality, preferably made from modular inverter units, complete with AC line filters, and required surge protection. The PCS total capacity should be at minimum:

- Fogo: 2 500 kVA.
- Santo Antão : 1 600 kVA.
- São Nicolau & Maio: 630 kVA.

The ESS is expected to operate at a power factor of 0.9.

The PCS should be capable of providing:

- Fogo : 2 500 kvar.
- Santo Antão : 1 600 kvar.
- São Nicolau & Maio: 630 kvar.

That means that the Fogo project may have scenarios in which its transformer will be over 100% loading. The other three will be oversized, but we don't know if that is a mistake or a deliberate reserve of power for future augmentation.

A third approach would be to consider the AC requirement for the Energy system and the 0.9 power factor, so Fogo will require a PCS of $2.08/0.9 = 2311$ kVAr transformer. We understand the extra 189 kVAr may be a requirement from you to ensure reactive power management. However, with a MV skid that may also be managed by cheaper capacitor banks.



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Please:

- *Confirm the final rating requirement for the transformer.*
- *Confirm if the reactive power requirement needs to be done purely with the PCS*

Answer N° 30:

- **Please consider the following power capacities as rating requirements:**
 - **Fogo : 2500 kVA**
 - **Santa Antão : 1600 kVA**
 - **São Nicolau and Maio : 630 kVA**
- **In accordance with ITB 13.4, alternative technical solutions shall not be permitted.**

November, 24 2023