

# Paris Session 2022



## A case study on challenges posed by non-standardized transformer bushings

A2 PS3 Q4: What are the advantages and  
drawbacks of standardization for both users  
and manufacturers?

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## Eskom Background

- A significant portion of the Eskom transformer fleet was sourced while the country was under sanctions, resulting in non-standardized units, including major components (bushings and tap changers).
- Different sizes of bushings of the same voltages are found on transformers all over the network.
- Deteriorated condition and technology upgrade compels for bushing replacement
- The replacement bushings (new technology) were in accordance with the new specification, with standardized sizes.
- The standardization on bushings came with some challenges when replacing the old bushings on transformers in service.

Group Discussion Meeting

# Challenges and advantages of standardization

Challenges	Advantages
<p>Dimensions compatibility – existing bushing drawings available</p> <ul style="list-style-type: none"><li>• Remanufacturing of adaptor flanges</li><li>• Remanufacturing of conductors</li><li>• Turret modifications</li></ul>	<p>Compatibility, time and cost saving</p>
<p>Long outages</p> <ul style="list-style-type: none"><li>• Actual measurements (where drawings are not available, or unclear)</li><li>• Bushings failure and standard bushings in storage cannot be modified (CT extension diameter, longer oil side length, turret design)</li></ul>	<p>Time saving, increased plant availability, interchangeability</p>