Presential Workshop "SUBSTATIONS EQUIPMENT: low-cost DESIGN, TESTS, TECHNICAL STANDARDS, INNOVATIONS & R&D: market opportunities on Europe, Asia + Mena, Africa & South America. 3 events to end in 2025 my electrical engineering career - looking for local sponsors (one per region). Lecturer: Eng. Sergio Feitoza Costa, M. Sc. Read first the CV: https://www.cognitor.com.br/HelpedToDo.pdf

## 1. TARGET AUDIENCE AND SCOPE

Here is Sergio Feitoza Costa writing. At my almost 71 years old, I got a rare experience in the world-wide high-power electric industry. This year I will stop most of my engineering activities, except the "Design Reviews" of electric panels (Ref [13]).

My goal with these 3 events is to say goodbye while highlighting the key opportunities I believe will shape the electric industry over the next decade, if the Planet survive to the wars.

**TARGET AUDIENCE:** manufacturers, power utilities and R&D companies that need to understand and discuss what is happening around the world in the areas of projects, tests, technical standards and business opportunities related to lower-cost designs. **SCOPE:** participants will be able to understand not only the engineering concepts needed to produce lower-cost, more efficient equipment or even a complete substation (Ref [1]), but also what has been happening in recent decades.

We will address various aspects, from the impacts caused by the increasingly reduced availability of testing laboratories to where the best opportunities are for developing equipment, lower-cost substations and high-impact R&D projects.

The latter include everything from the use of techniques to develop more efficient and lower-cost equipment with testing simulations to the implementation of small/medium laboratories for real testing.

This workshop is NOT the specific training for manufacturers described at <u>https://www.cognitor.com.br/trainingENG.pdf</u>

## 2. **PROGRAM** (duration from 1 PN in the first day + 8:00AM to 5PM in the second day)

Α.	History of the electrical industry from the 80s to today. Is there anyone planning where we want to go to succeed in the
	electrical industry market?
В.	Design aspects leading to lower cost substations and equipment (about BIDs specifications and standards for tests like
	temperature rise, internal arcing, short circuit, interruption and dielectrics)
C.	National technical standards can be improved by moving away from being merely time-consuming translations of IEC
	standards. Advantages and Disadvantages. Examples include urban overhead distribution lines with transformers and
	fuses and test simulations to replace some laboratory tests.
D.	Example of a good (R.O.I.) return of investment opportunity in developing countries I (implementation of a small /
	medium-sized high-power testing laboratory)
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E. Examples of R&D project opportunities in the electrical industry focusing on reduced material use and climate change mitigation

## 3. REGISTRATION, LOCATION AND DATE

Price of participation: Eur 490,00 per participant (or Eur300,00 if more than 4 participants per company) We are still contacting companies interested in sponsoring the place of the events. Just after this is defined, we will start the pre-registering. Interested people in pre-registering may write to the email <u>sergiofeitozacosta@gmail.com</u> Please inform names and/or number of participants. Contact: Sergio Feitoza Costa, Cell (21) 988874600 <u>www.cognitor.com.br</u>

## 3. REFERENCES

[1] CIGRÈ Brochure 740 (2018) "CONTEMPORARY SOLUTIONS FOR LOW-COST SUBSTATIONS". (Sérgio is coauthor)

[2] Article **"ELECTRIC PANELS DESIGN USING LESS MATERIALS"** https://www.cognitor.com.br/trainingweek1.pdf

[3] FREE BOOK "SWITCHGEAR, BUSWAYS & ISOLATORS: about T&D SUBSTATIONS & LINES EQUIPMENT" https://www.cognitor.com.br/Book SE SW 2013 ENG.pdf

[4] Article ELECTRICAL TESTING LABORATORY: GOOD OPPORTUNITY FOR PRIVATE INVESTMENT in BRAZIL <a href="https://www.cognitor.com.br/hplENG.pdf">https://www.cognitor.com.br/hplENG.pdf</a>

[5] Article "UNDERSTANDING WHY SAVING COPPER, ALUMINUM & INSULATORS MITIGATES CLIMATE CHANGE AND COMPANIES CAN PROFIT FROM THIS" https://www.cognitor.com.br/certificate.pdf

[6] Free Book "TEMPERATURE RISE LIMITS used in I E C / IEEE SWITCHGEAR TECHNICAL STANDARDS" https://www.cognitor.com.br/TemperatureRiseLimits.pdf

Adding ideas to IEC TR 60943:1998 - Guidance concerning the permissible temperature rise for parts of electrical equipment, in particular for terminals. Issued by IEC Technical Committee TC 32

[7] LV CIRCUIT BREAKERS DEVELOPMENT. WHY HAVING A LOWER POWER DISSIPATION IS BETTER. https://www.cognitor.com.br/LVcircuitBreakerDevelopment.pdf https://www.cognitor.com.br/DevelopingCircuitBreakers.pdf

[8] IEC 62271-307 – EXTENSION OF THE VALIDITY OF TYPE TESTS TO AVOID TESTS REPETITIONS. UNDERSTANDING THE CONCEPTS AND OPPORTUNITIES. Sergio is coauthor of IEC62271-307 https://www.cognitor.com.br/IEC62271307ENG.pdf

Brochures CIGRÈ in which Sergio Feitoza Costa is coauthor.

[9] CIGRÈ BROCHURE 830 (2021) – "SIMULATIONS FOR TEMPERATURE RISE CALCULATION".
[10] CIGRÈ BROCHURE 740 (2018) Contemporary design of low-cost substations in developing countries.
[11] CIGRÈ BROCHURE 602 (2014) Tools for Simulation of The Effects of the Internal Arc in T&D Switchgear,

[12] Other reference articles free downloads https://www.cognitor.com.br/Downloads1.html

[13] A (unique in the World) TRAINING FOR SWITCHGEAR / ELECTRIC PANELS DEVELOPERS: https://www.cognitor.com.br/trainingENG.pdf

[14] Design Review for LV + HV Switchgear and Controlgear <a href="https://www.cognitor.com.br/proposal.pdf">https://www.cognitor.com.br/proposal.pdf</a>

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C.V.: <u>https://www.cognitor.com.br/HelpedToDo.pdf</u>

This article: <u>https://www.cognitor.com.br/hplENGfinal3events.pdf</u>