Sergio Feitoza Costa, 70 Years old, activities in January. 2025

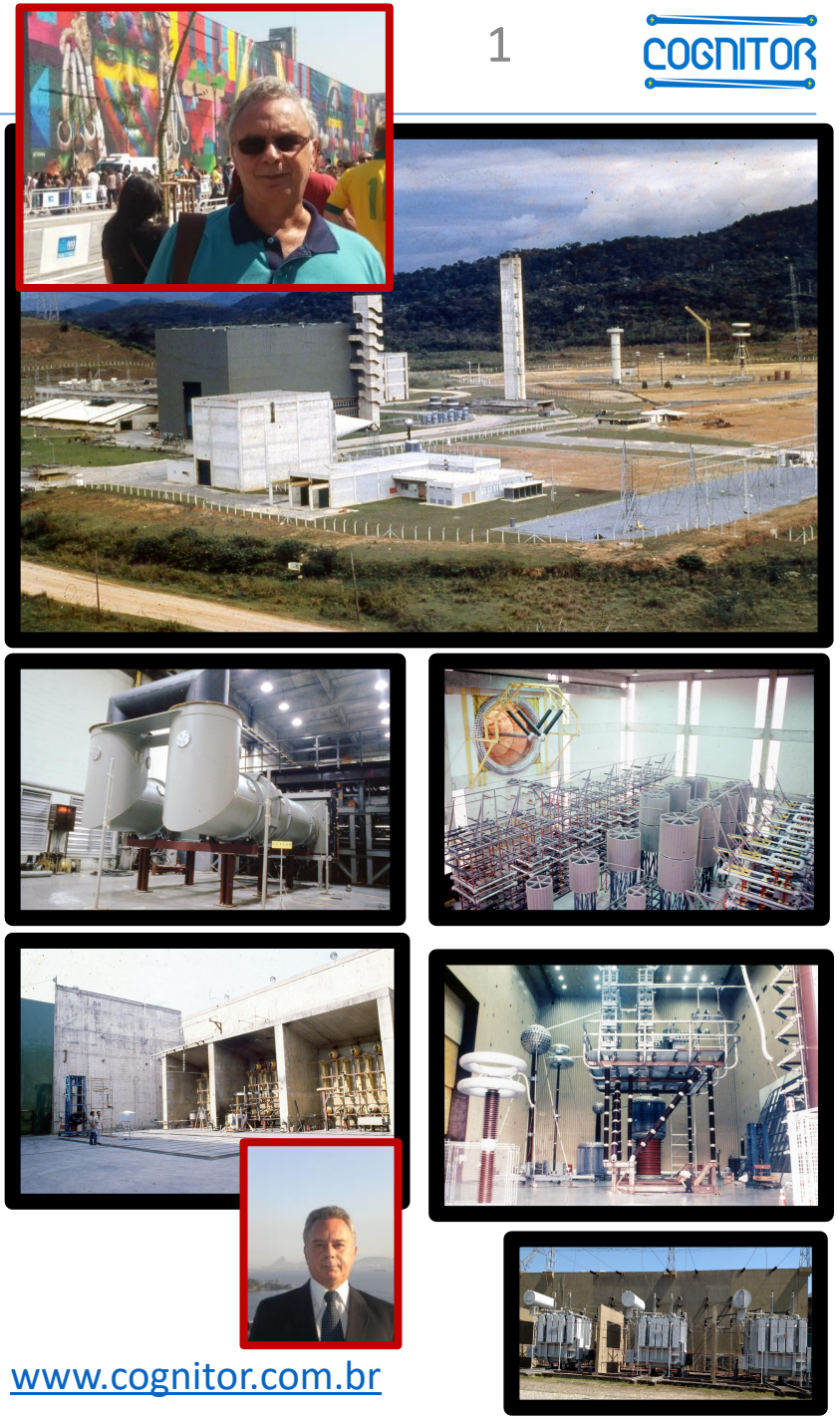
COGNITOR

- Design Review & 3-rd part "Extension of Validity of Test Reports by IEC62271-307"
- Develop patents & innovative products for manufacturers of switchgear/switchboards

  (high-level knowledge on specification, tests & technical standards,).
- Training on substations & lines equipment ;
- Design of electric testing laboratories.
- Writing of fiction books and songs composer

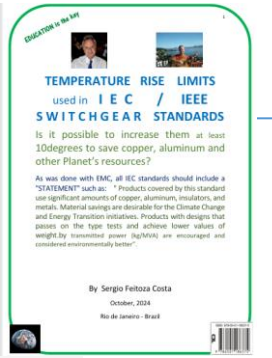
LinkedIn 31K+ followers: https://www.linkedin.com/in/sergiofeitozacosta/

C.V. https://www.cognitor.com.br/Curriculum.html



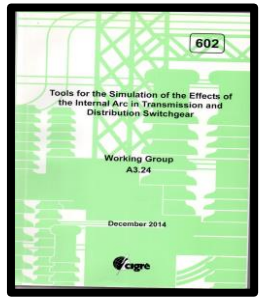
By Sergio Feitoza Costa – Cognitor, R&D, Consultancy & Training sergiofeitozacosta@gmail.com www.cognitor.com.br

Publications in which Sergio is author or coauthor



[1] Free **book (2014)** : **TEMPERATURE RISE LIMITS used in I E C / IEEE Switchgear Standards.** I s it possible to increase them at least 10degrees to save copper, aluminum and other Planet's resources?
https://www.cognitor.com.br/TemperatureRiseLimits.pdf (author)

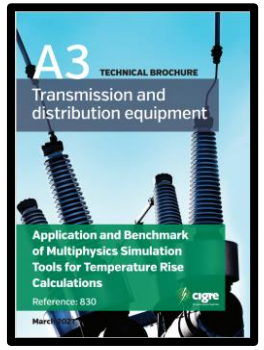
[2] **CIGRÈ BROCHURE 602 (2014)** Tools for Simulation of The Effects of the Internal Arc in T&D Switchgear, (coauthor)



[3] **CIGRÈ BROCHURE 830 (2021)** – "SIMULATIONS FOR TEMPERATURE RISE CALCULATION". (co-author)

[4] **CIGRÈ BROCHURE 740 (2018)** Contemporary design of **low-cost** substations in developing countries. (co-author)

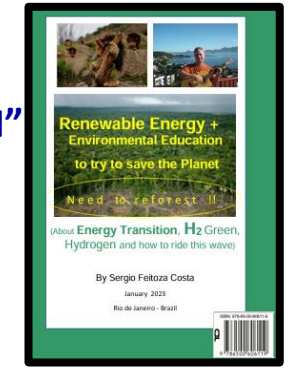
[4] **IEC62271-307 (2015) -** High-voltage switchgear and controlgear - Part 307: Guidance for the **extension of validity of type tests of** AC metal and solid-insulation enclosed **switchgear and controlgear** for rated voltages above 1 kV and up to and including 52 kV. (co-author)

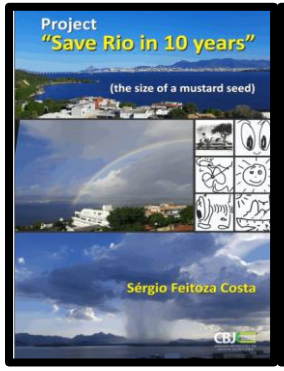


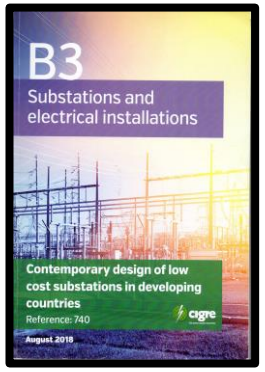
[5] **IEC 60282-2: HIGH-VOLTAGE FUSES - Part 2: EXPULSION FUSES** (version 1989 as chair of IEC Technical Committee TC 32)

[6] Free **book (2012)** : **"SWITCHGEAR, BUSWAYS & ISOLATORS & SUBSTATIONS & LINES EQUIPMENT"**
https://www.cognitor.com.br/Book_SE_SW_2013_ENG.pdf

[7] Free **book (2023)** : **"RENEWABLE ENERGY + ENVIRONMENTAL EDUCATION"**
https://www.cognitor.com.br/educationfortheplanet.pdf (author0

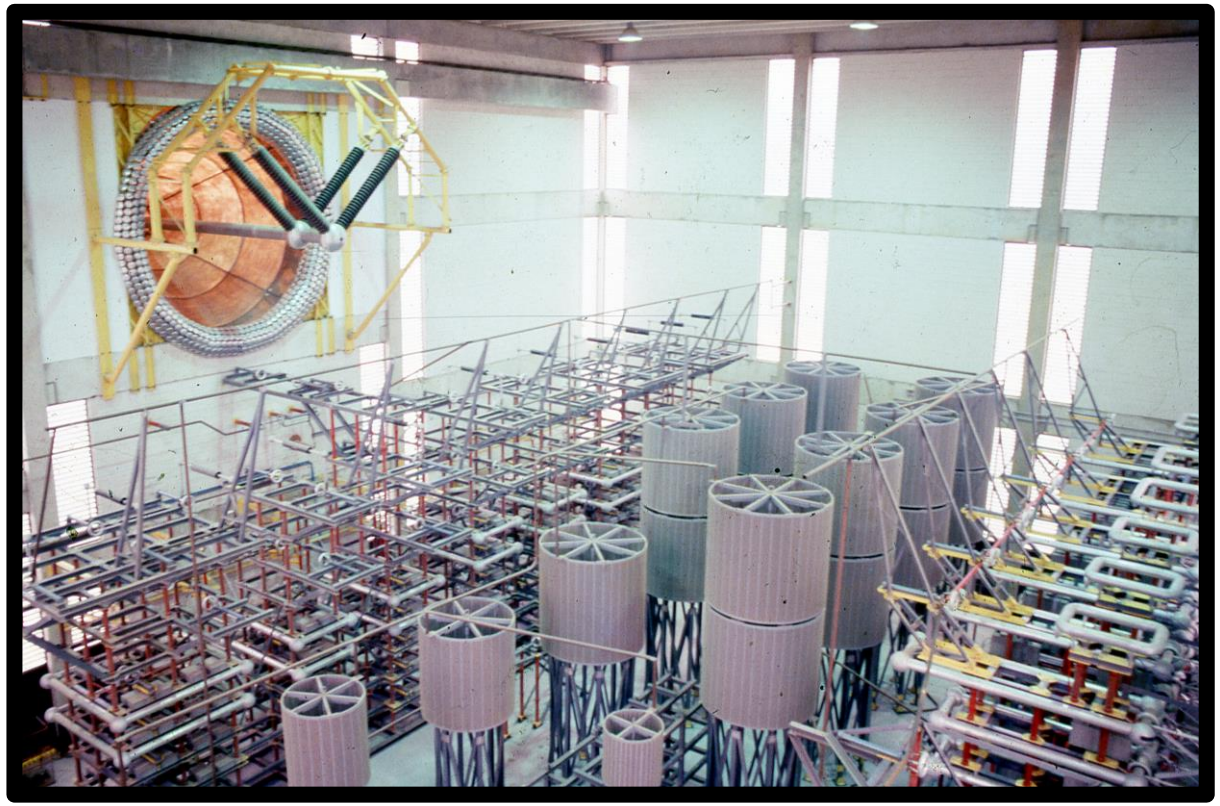






[8] Free **book (2021) " PROJECT SAVE RIO IN 10 YEARS:**
https://www.cognitor.com.br/saverioENG.pdf (author)

- Helped to design/operate/manage big testing labs like CEPEL.
- Help to develop switchgear, switchboards from design to final approval in the tests for dozens of manufacturers.



Synthetic testing of H.V. circuit breakers

High Current lab: 50kArms cont.
Short circuit 300 kA rms / 750 kAcr.

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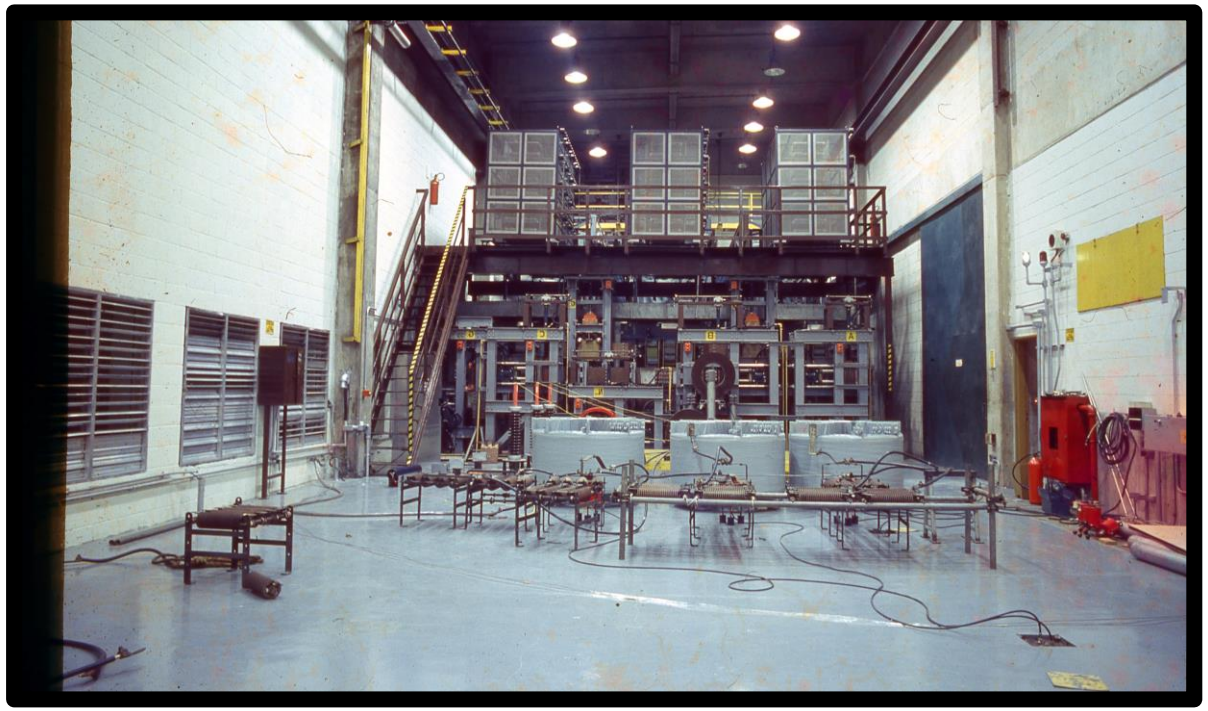
Medium Voltage / Power lab 1340 MVA (750 MVA)

- Helped to design/operate/manage big testing labs.

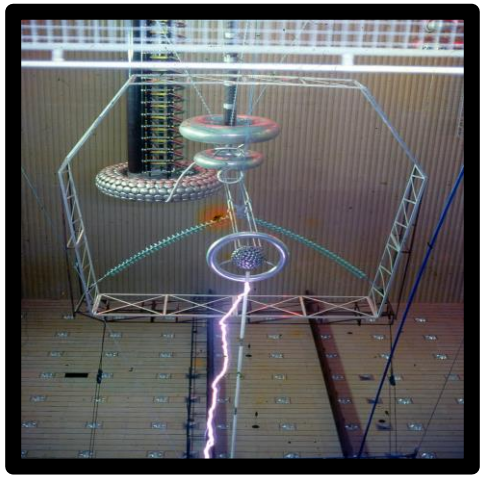
High Current lab: 50kArms cont.
Short circuit 300 kA rms / 750 kAcr.

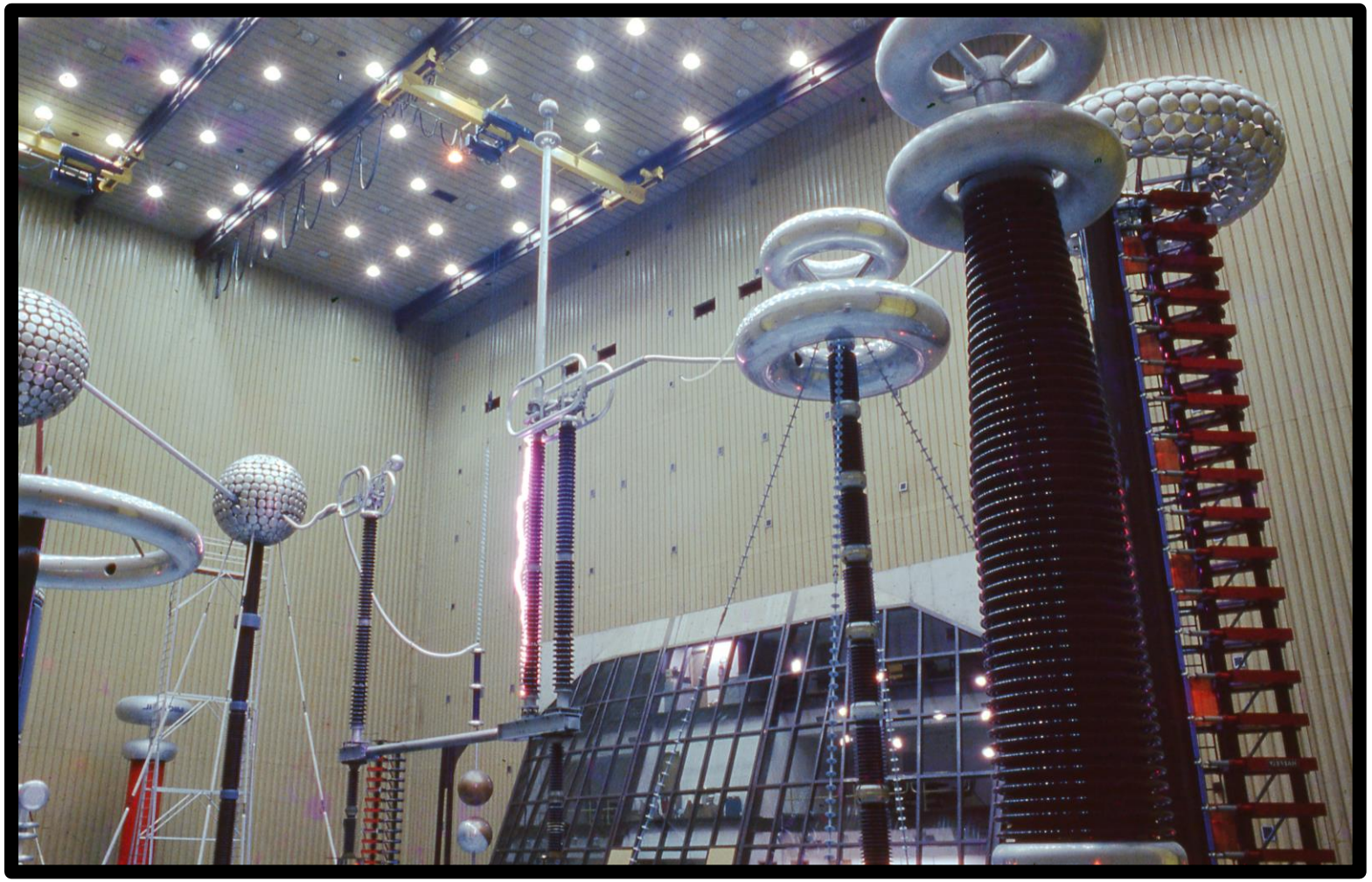


High Voltage Testing Lab
Impulse, AC Applied Voltage, etc…

- Helped to design/operate/manage big testing labs.

High Voltage Testing Lab: Impulse, AC Applied Voltage, etc…





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- Helped to design/operate/manage big testing labs.

Medium Voltage / Power lab
1340 MVA (750 MVA)

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Short circuit 300 kA rms / 750 kAcr.

Medium Voltage / Power lab - 1340 MVA (750 MVA)

- Helped to design/operate/manage big testing labs.

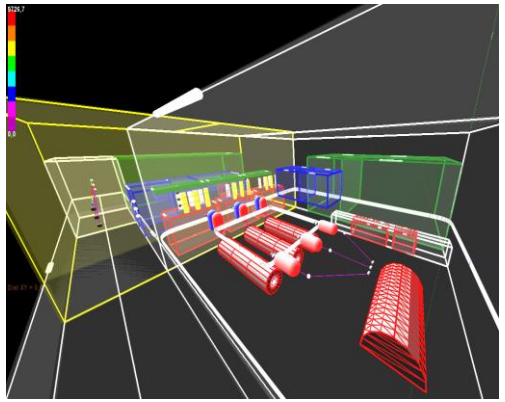
High Current lab: 50kArms cont. – Short circuit 300 kA rms / 750 kAcr.

- Helped to design/operate/manage big testing labs.

Development of a 10 MVA short circuit testing lab for F.A.T.

Use your own small testing lab and simulations to do only a few tests in external expensive labs.

Itajubá testing laboratories : I did the initial feasibility study (High Power 2500MVA + High Voltage class 550kV – Temperature rise 25kA) and collaborated in all the phases of the implementation of the project



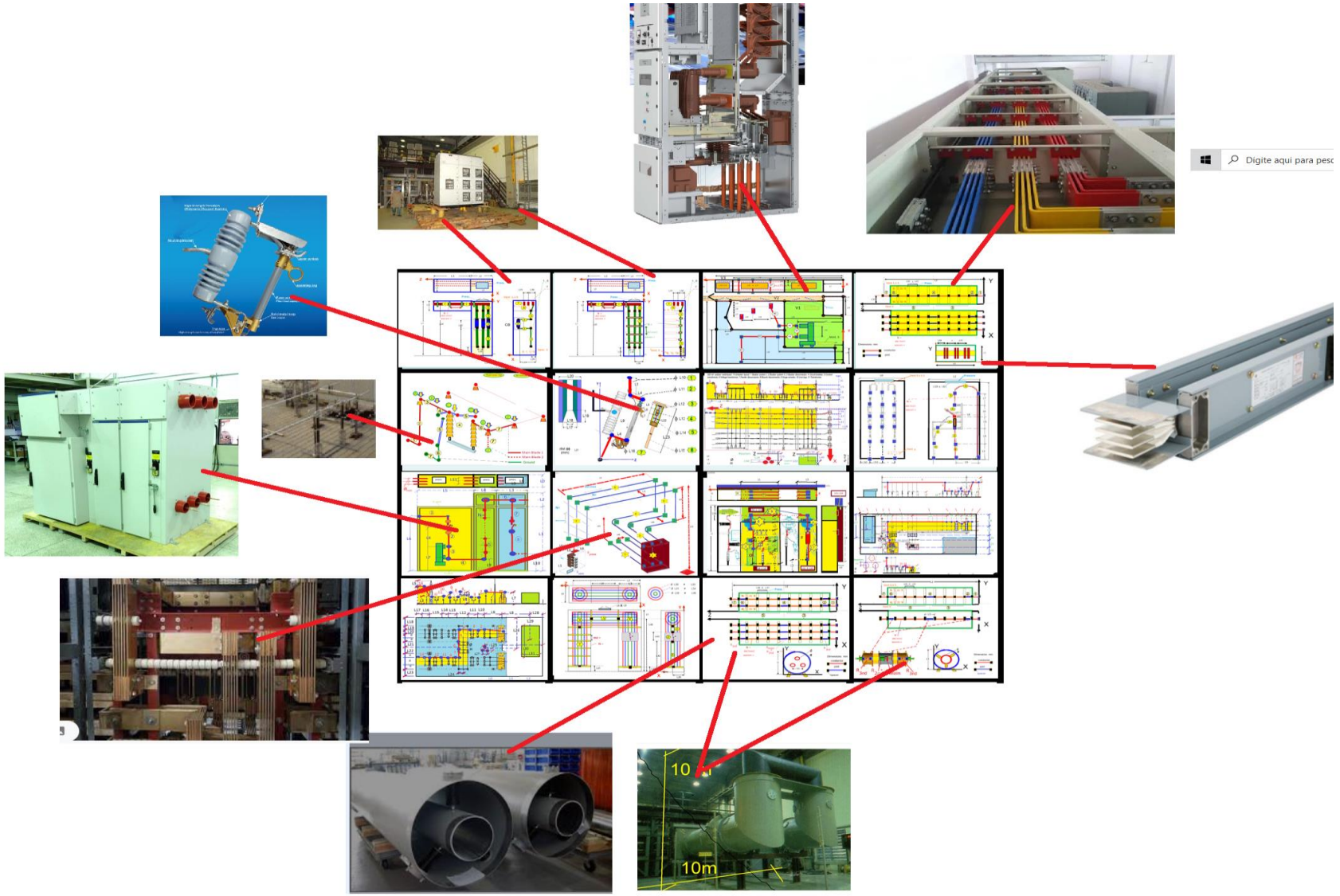
About high-level training: https://www.cognitor.com.br/trainingENG.pdf

Switchgear IEC 62271 / IEC 61439: electric panels, cost from USD 15.000,00 to USD 45.000,00 per unit or set.

It is a great R.O.I. to invest USD15.000,00/yr to train the technical team – just to do more efficient designs.

- Expensive tests are the main barrier for the electric industry to develop innovations
- After 25 years in testing labs, doing, selling expensive tests, and witnessing challenges faced by manufacturers, I created the software SwitchgearDesign. It predicts tests results permitting to adjust the design to pass the lab tests.
- Companies become more competitive by avoiding development tests before the final type tests to get a report used in commercialization.

It is easier to develop **MV/LV electric panels** with the testing simulation software **SwitchgearDesign**.



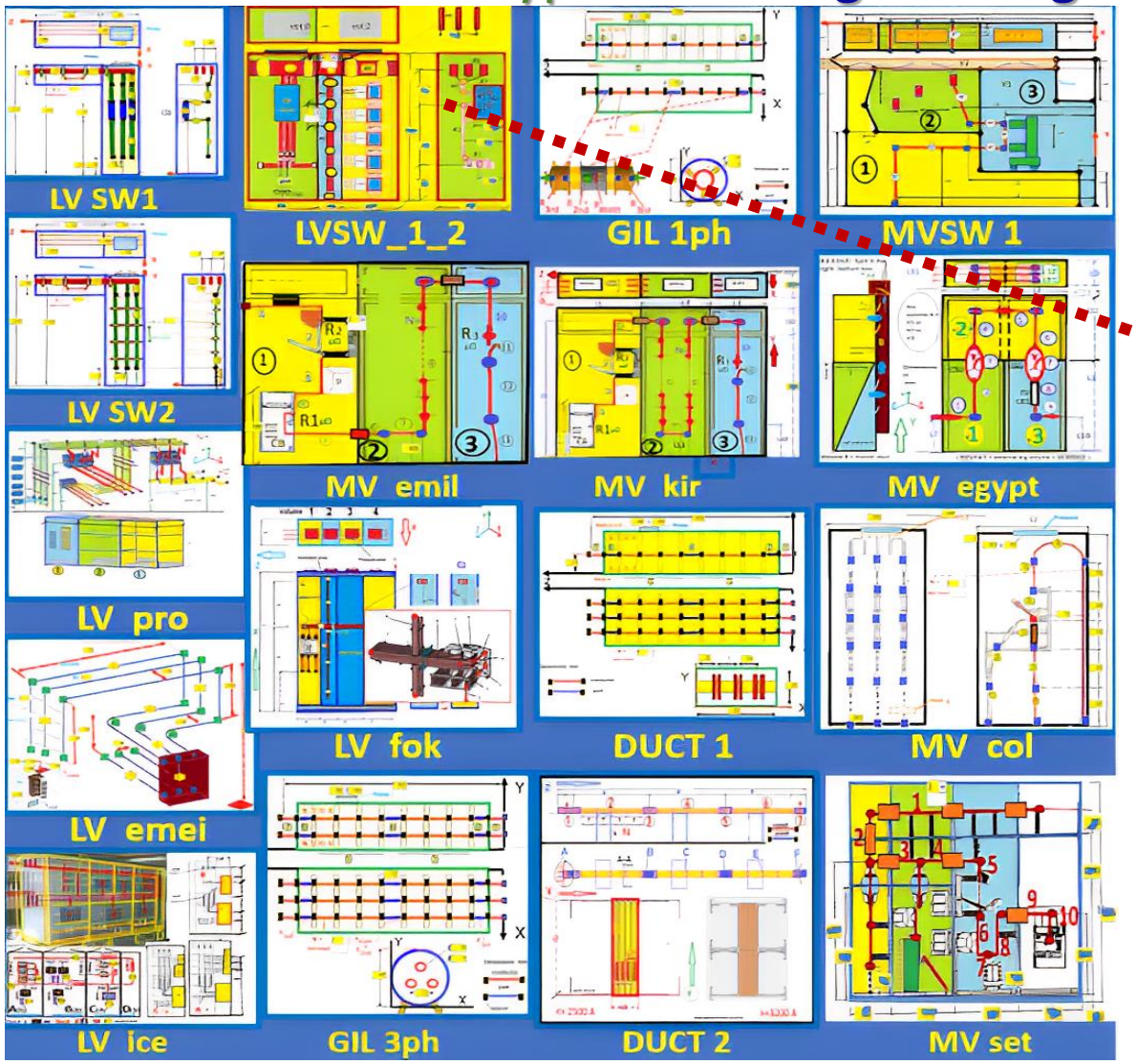
The best feature of a simulation tool is to have a human, experient in real testing, to teach you the first steps and concepts.

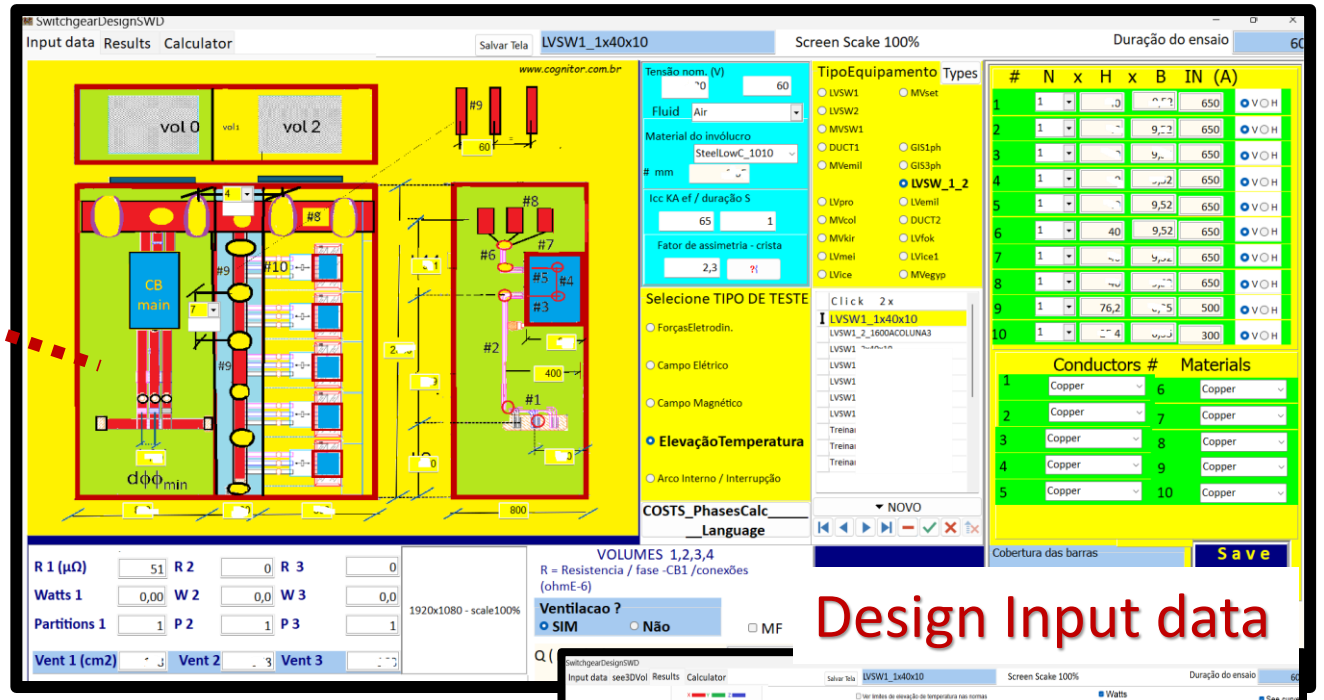
This is rare to find.

Design Review: a good design means to be approved in tests like

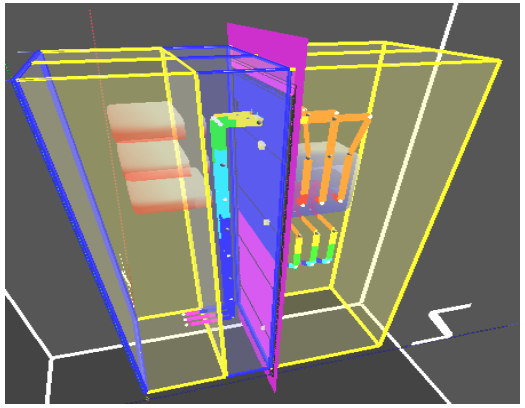
temperature rise, internal arc & short circuit forces

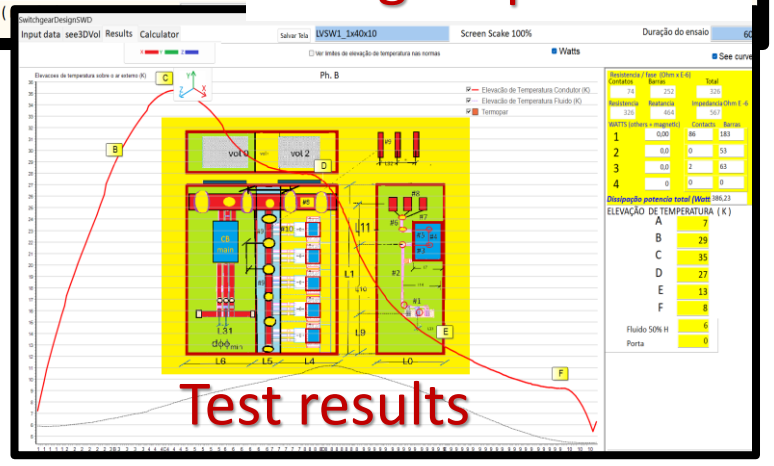
Check the typical SwitchgearDesign models that you can calculate in minutes .





Design Input data





Design Review + Training + SwitchgearDesign

Sequence of the work **for developing a product to submit to tests in high-power labs:** temperature rise + internal arc + short circuit forces.

(a) You send the basic drawings (simple like the models) and I do the design review report including suggestions for improvements

(b) I apply a training to discuss your design based on a SwitchgearDesign model and experience

(c)You learn high-level design concepts and how to use the tool

(d) Receive a copy of SwitchgearDesign to do future design reviews by yourself.

Free reading articles and publications including the book and software validation reports
https://www.cognitor.com.br/Downloads1.html

CV
https://www.cognitor.com.br/Curriculum.html

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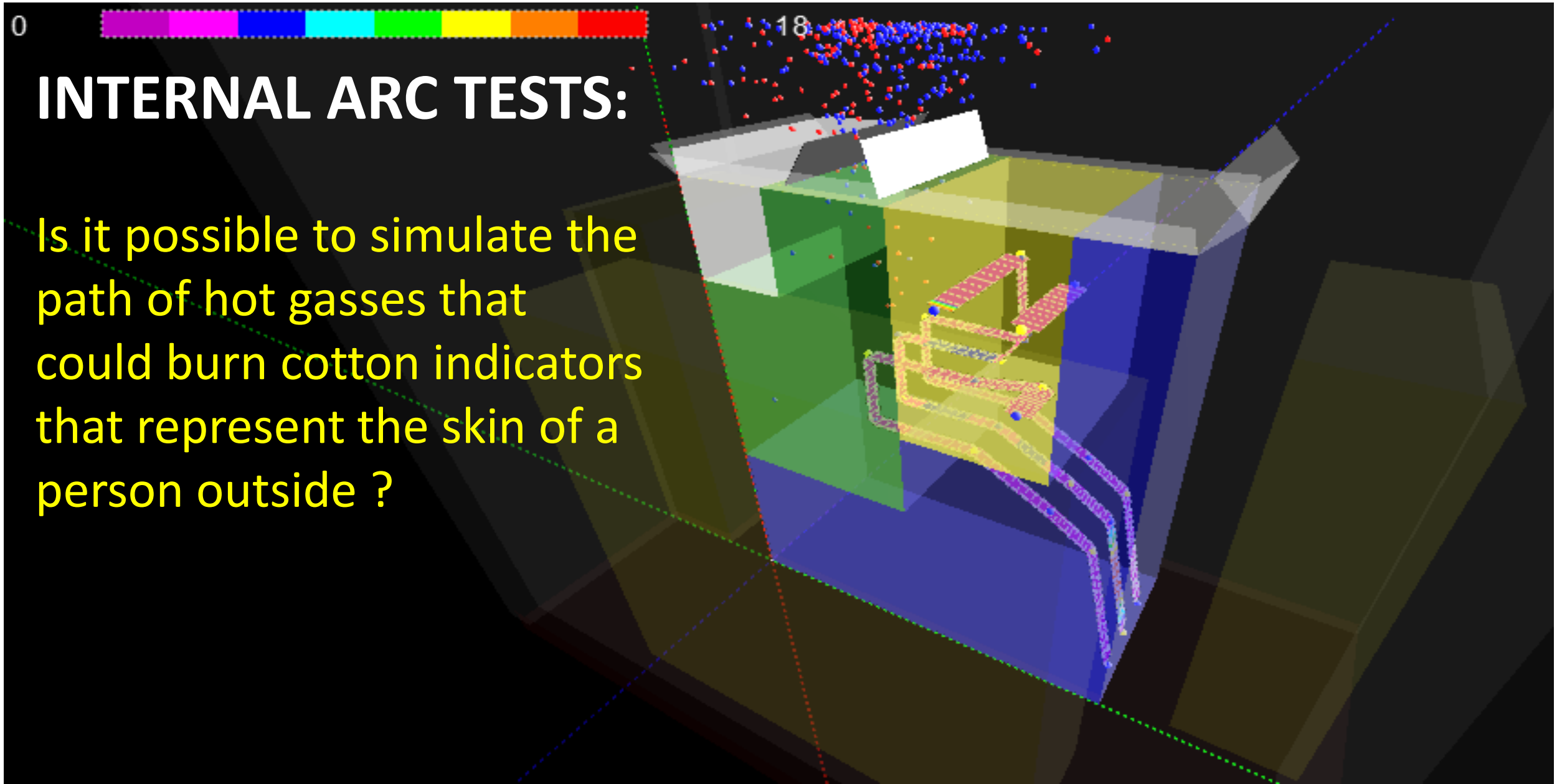
Trying to be useful to the Planet

The End

Hot gasses flowing outside are main cause of failures



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[1] **CIGRÈ BROCHURE 602 (2014)** Tools for Simulation of The Effects of the Internal Arc in T&D Switchgear, (Sergio Feitoza is coauthor)

[2] **CIGRÈ BROCHURE 830 (2021)** – "SIMULATIONS FOR TEMPERATURE RISE CALCULATION". (Sergio Feitoza Costa is co-author)

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[5] **Article "TEMPERATURE RISE LIMITS OF IEC 61439-1 :** unclear values distort the LV switchgear market. (May,12, 2023) - http://www.cognitor.com.br/IEC614391Table6.pdf

[6] **IEC TR 60943:1998** - Guidance concerning the permissible temperature rise for parts of electrical equipment, in particular for terminals. (Issued 1st time by IEC Technical Committee TC 32 when Sergio was the chair of IEC TC32)

[7] **Free book by Sergio "SWITCHGEAR, BUSWAYS & ISOLATORS & SUBSTATIONS & LINES EQUIPMENT"**
https://www.cognitor.com.br/Book_SE_SW_2013_ENG.pdf

[8] **Free book by Sergio 180 POSTS FOR THE ELECTRIC POWER INDUSTRY.**
https://www.cognitor.com.br/180posts.pdf

[9] **Article "METAL FOAM in SWITCHGEAR, switchboards & bus ducts**
http://www.cognitor.com.br/switchgearmetalfoam.pdf

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http://www.cognitor.com.br/demo1certificate.pdf

[11] **SUBSTATIONS & LINES INNOVATIVE PRODUCTS. SMALL R&D CENTRES + TESTING LABORATORY**
https://www.cognitor.com.br/demo2Lab.pdf

[12] **ENVIRONMENTAL EFFICIENCY CERTIFICATE of electrical products (kg/MVA) . Draft of a technical standard**
http://www.cognitor.com.br/EnvironmentalEfficiencyCertificate.pdf

[13] **IMPROVEMENT OF QUALITY OF ELECTRIC SYSTEM INDEXES:**
https://www.cognitor.com.br/IEC602822sugestionstosc32afrombrazil.pdf

[14] **Free book by Sergio "RENEWABLE ENERGY + ENVIRONMENTAL EDUCATION TO TRY TO SAVE THE PLANET"**
https://www.cognitor.com.br/educationfortheplanet.pdf

[15] **Free book by Sergio" PROJECT SAVE RIO IN 10 YEARS:**
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