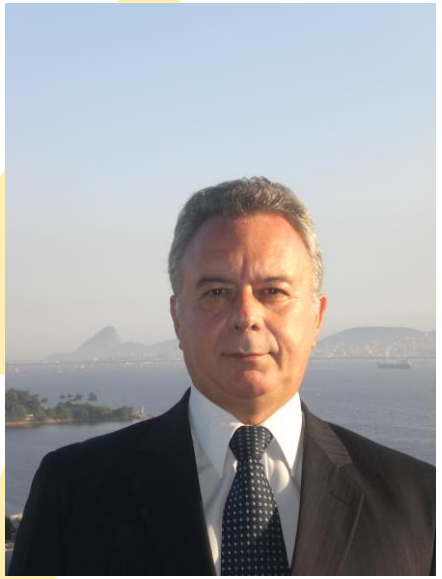
DESIGN CONCEPTS + software SwitchgearDesign

for SWITCHGEAR, SWITCHBOARDS, BUSDUCTS & SUBSTATIONS"



Item 3:

Introduction to the use of the Software Switchgear_Design

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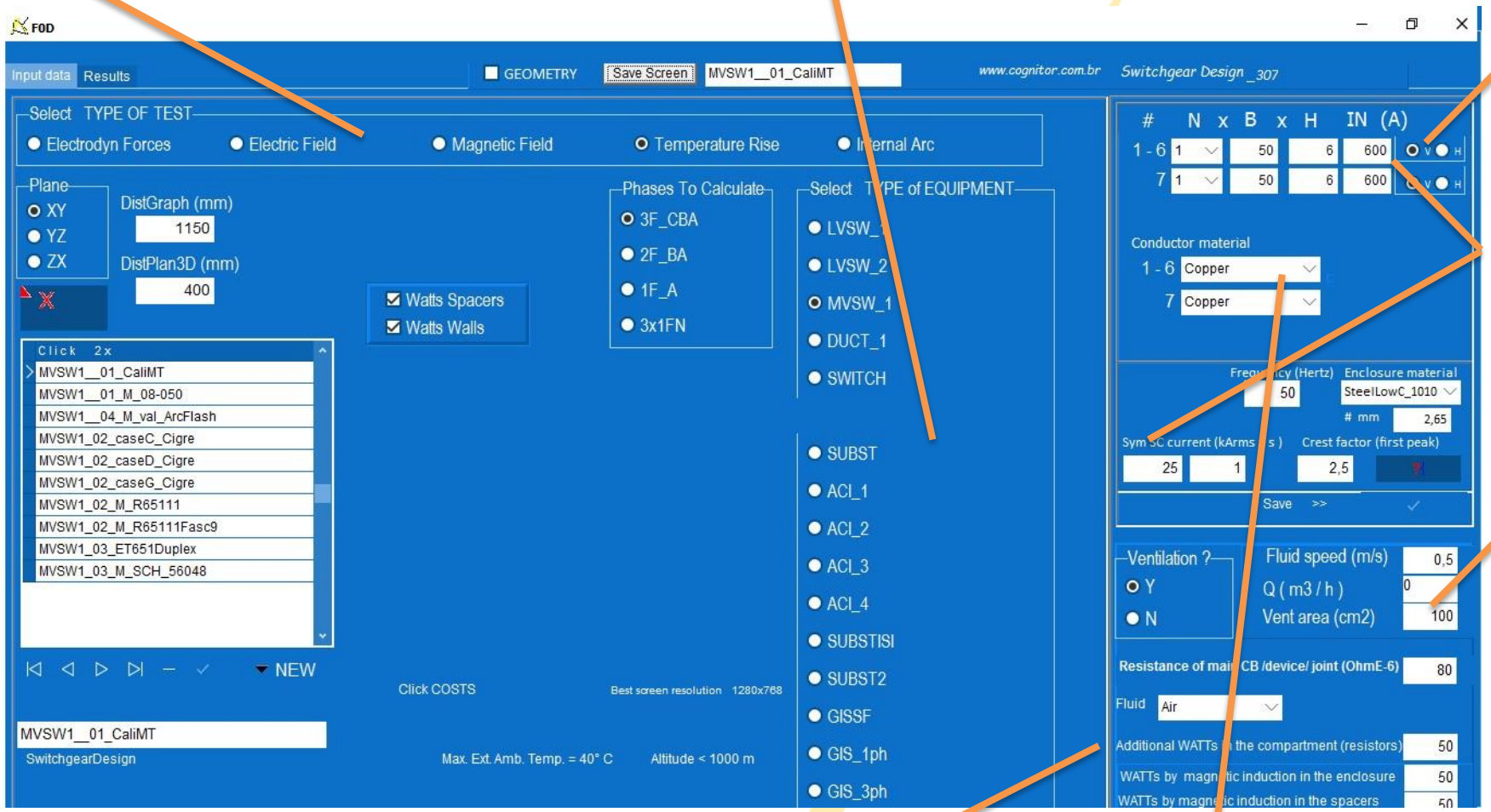
In this video

- Applications and capabilities of the software SwitchgearDesign.
    - Software for the development of switchgear, switchboards, bus ducts , … with less laboratory tests by use the simulations
- The main screens, the input variables and how to obtain them.
- The screens with the main results
- Complete training : units employed, conditions of use, validation of results, concepts and how to use and interpret results.

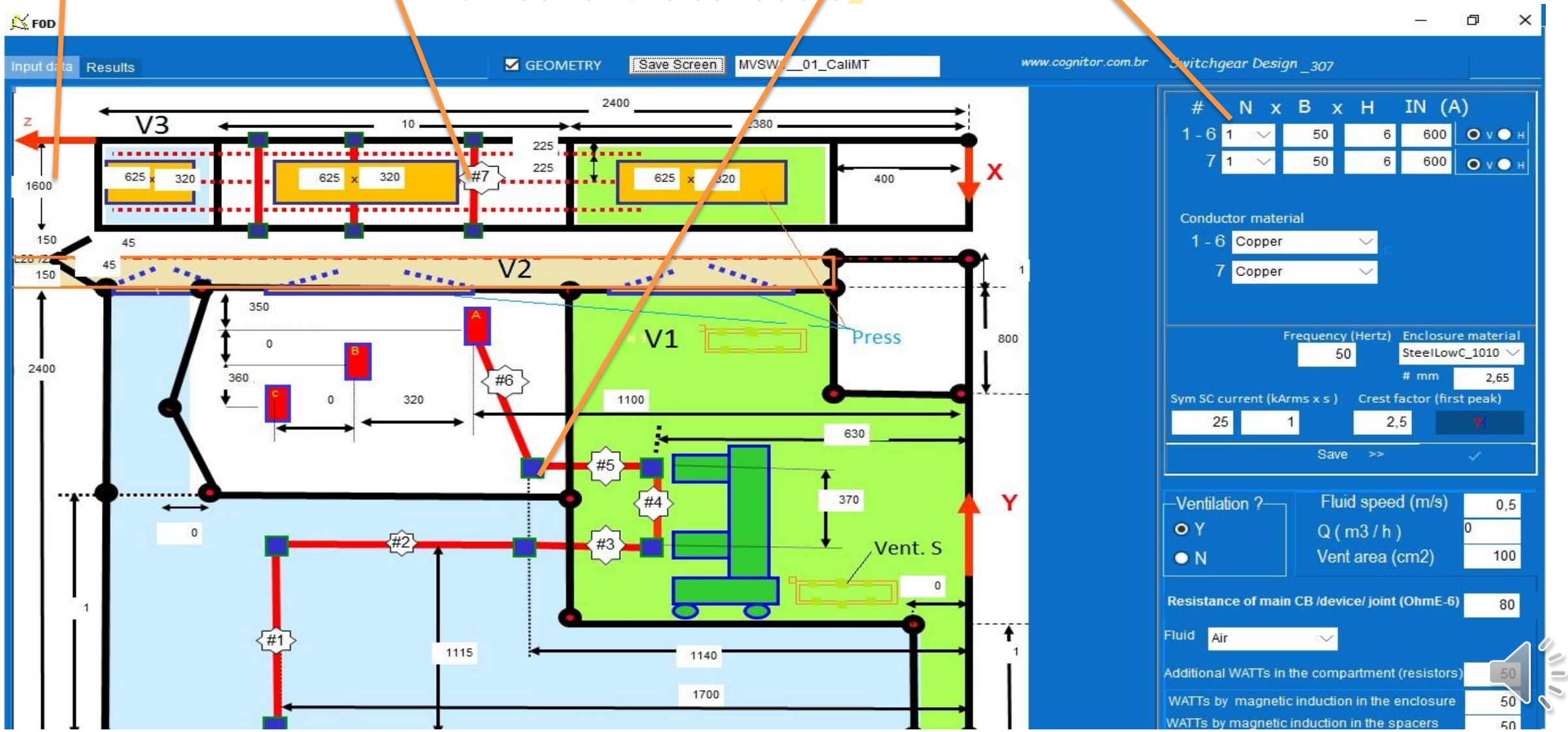
Initial screen with input data

- Types of tests to simulate
- Types of equipment possible to simulate
- Position of bars (vertical, horizontal)
- Rated current and short circuit current
- Ventilation area
- Velocity / flow of fans
- Areas ventilation & depressurization
- Additional Watts (for bus bars and connections are automatically calculated)
- Materials of conductors, plates and fluid (air, SF6)



Initial Screen with input data for simulations

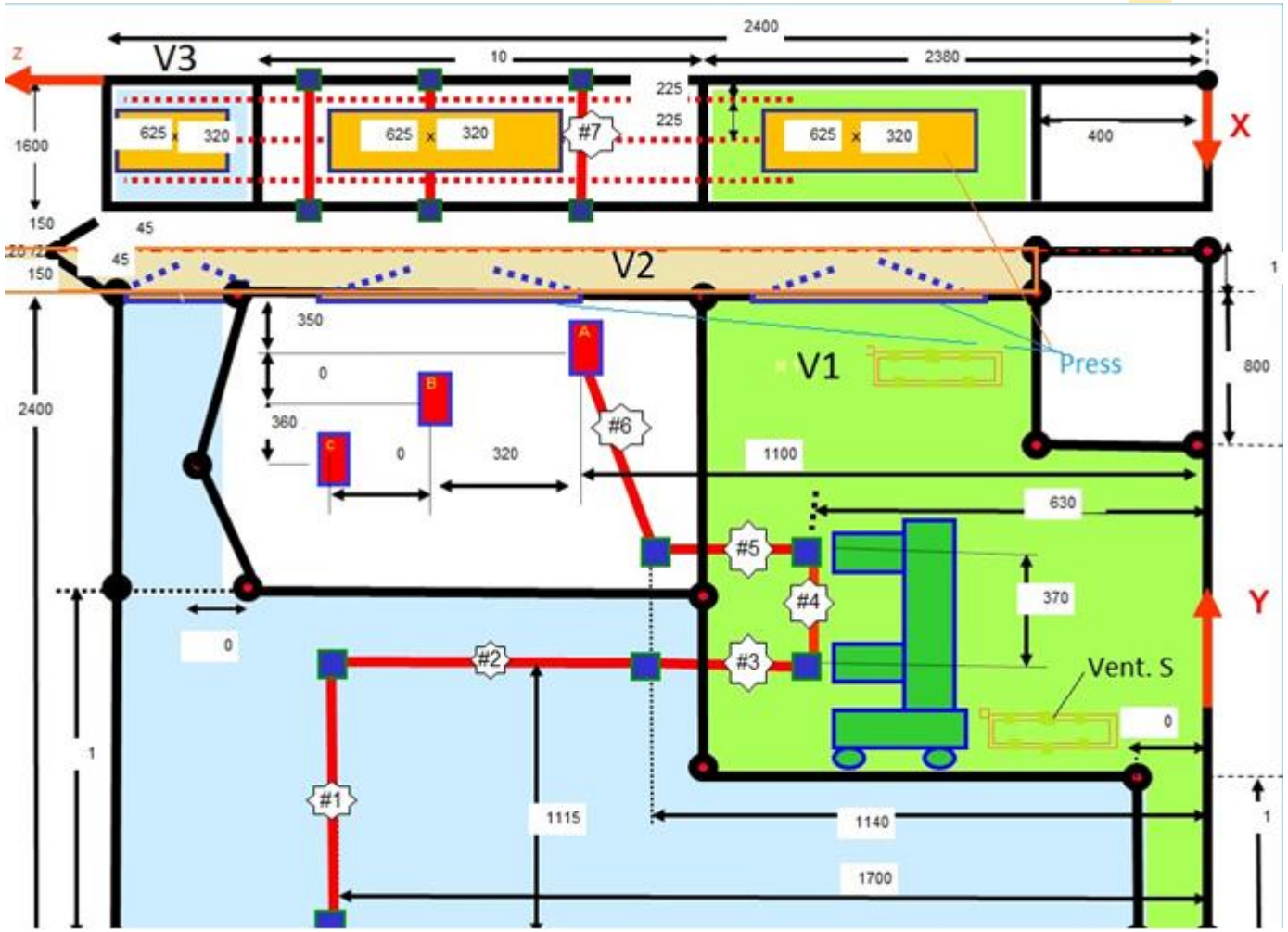
- Geometry, dimensions, positions and number of supports
  - Number of the conductor

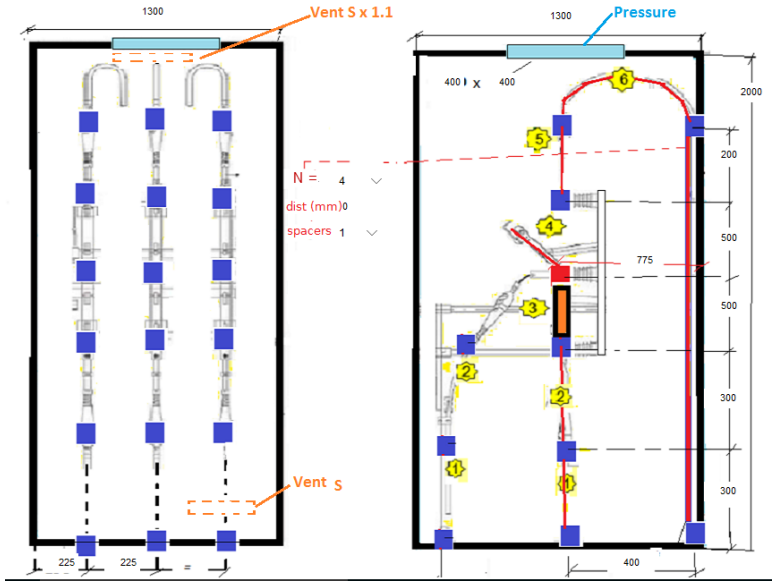


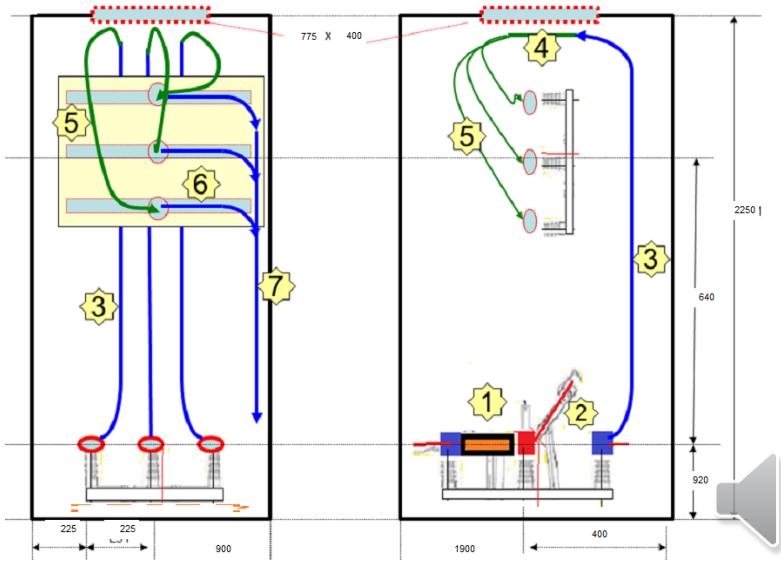
Types of equipment which can be simulated

MVSW_1
ACI_1 e ACI_2

Medium voltage – AIS



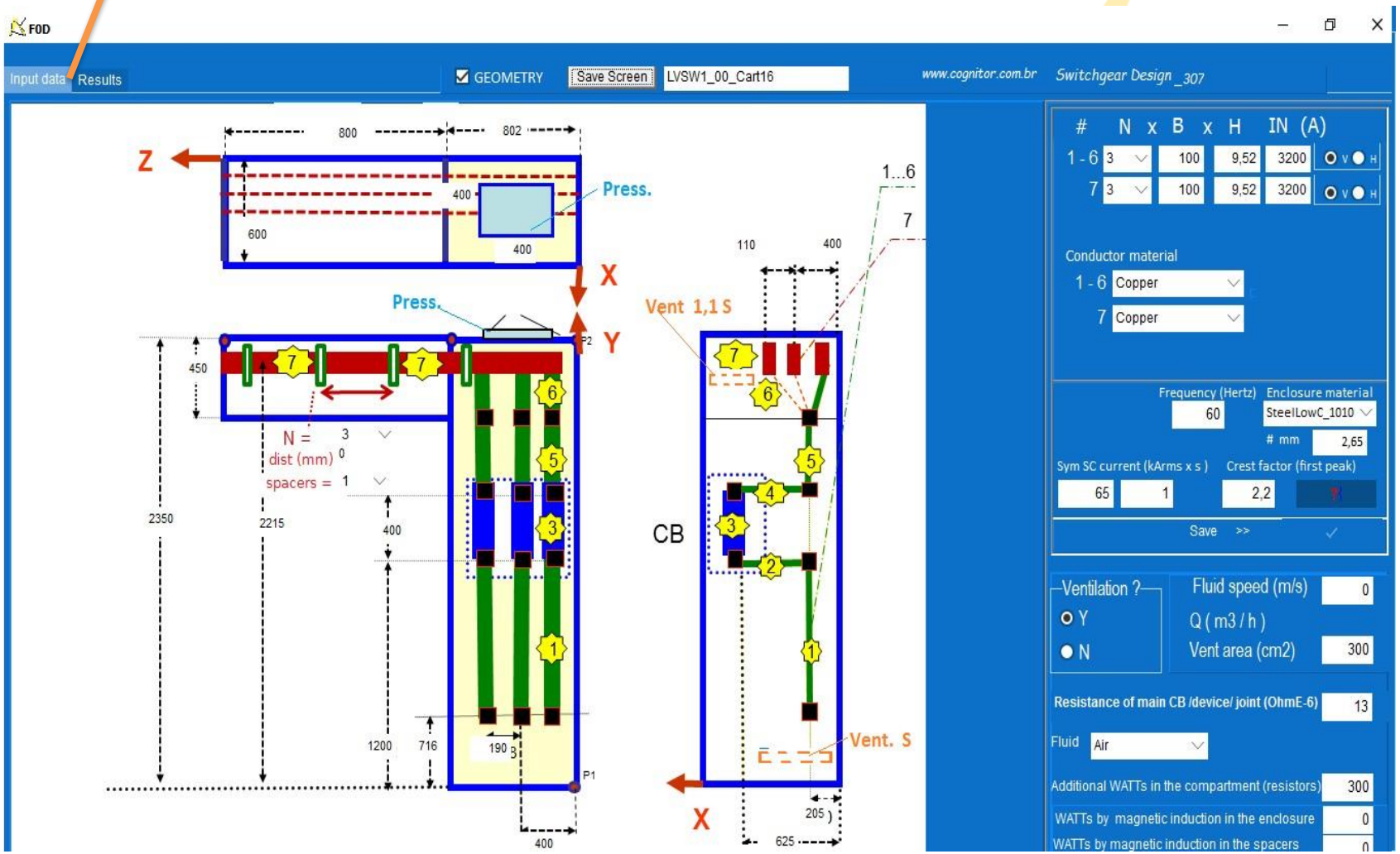


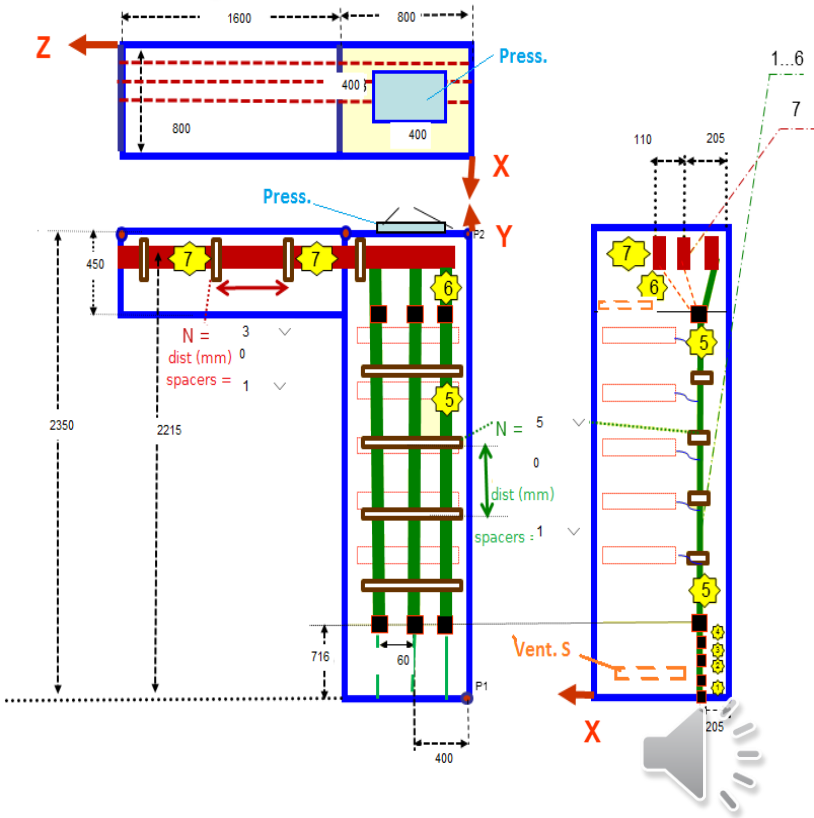


Types of equipment which can be simulated

LVSW_1 : Low voltage AIS – circuit breaker compartment

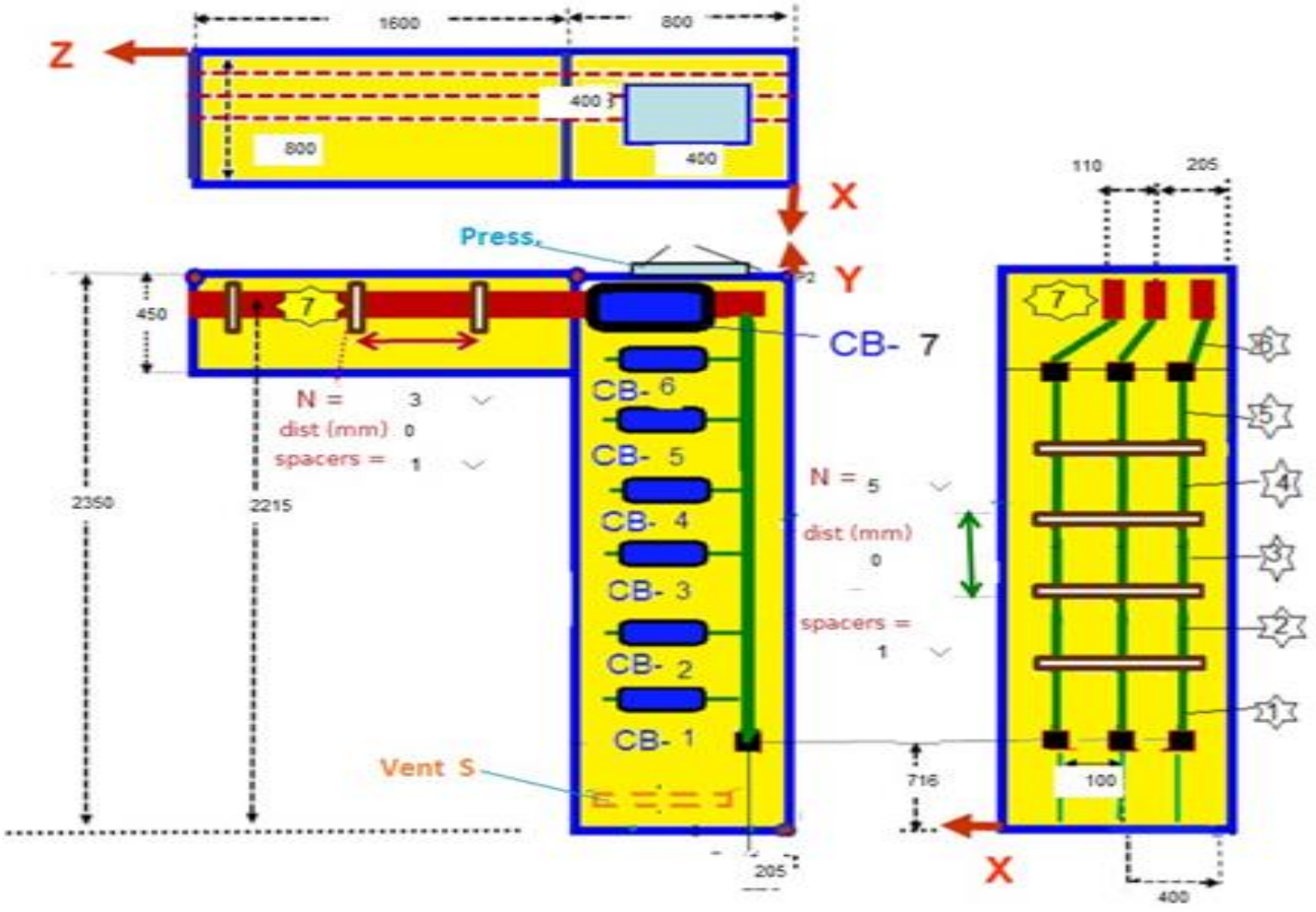
LVSW_2: MCC drawers



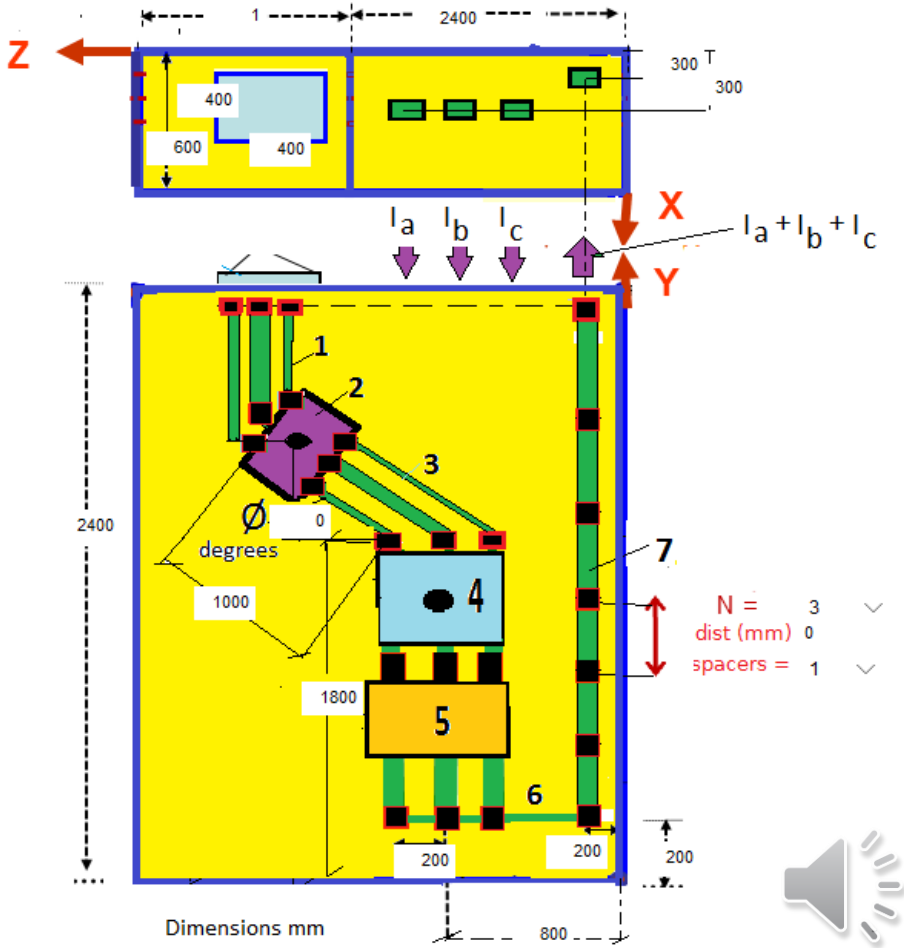


Types of equipment which can be simulated

ACI_3 - Low voltage AIS

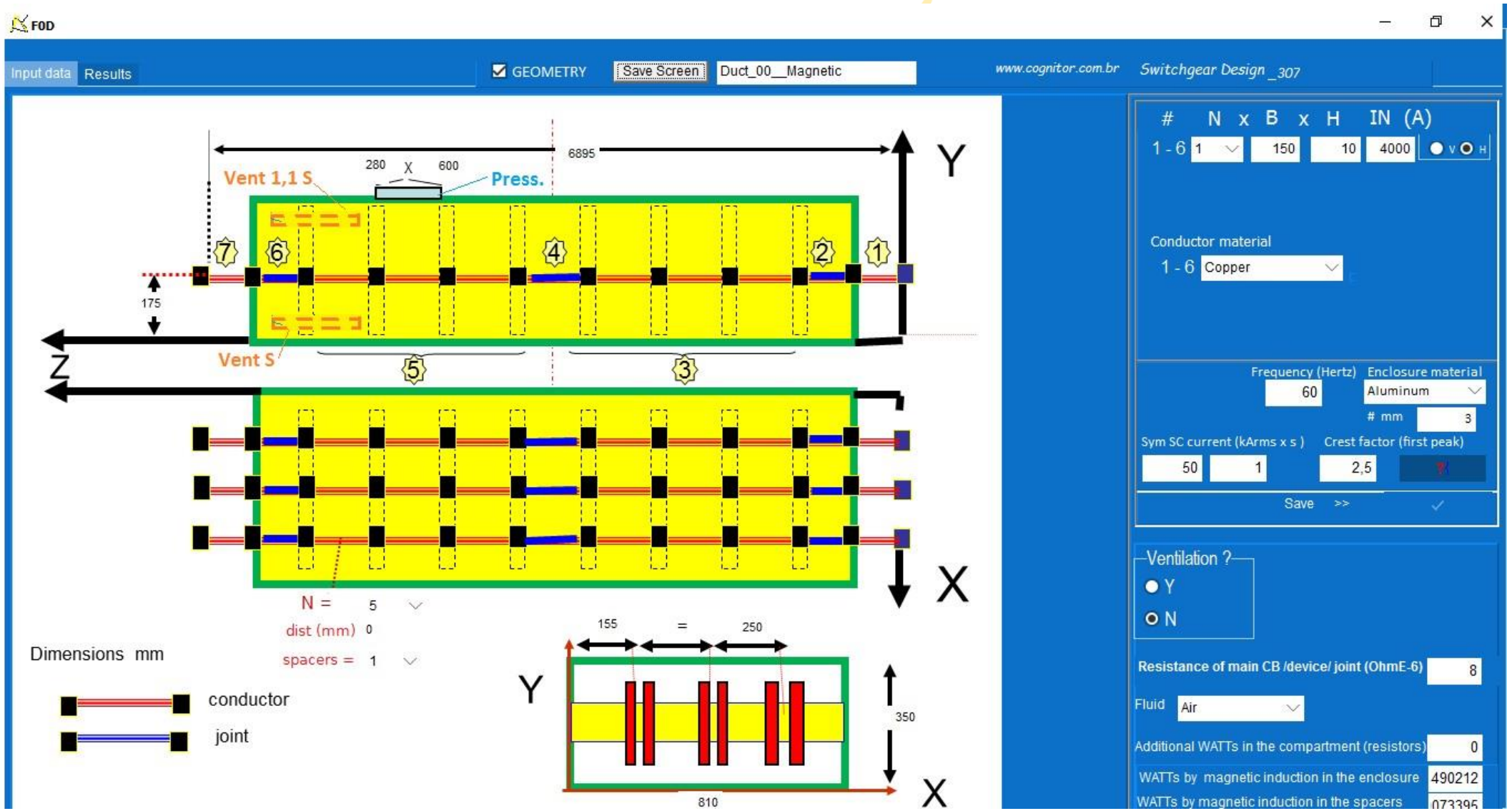


ACI_4 - Special Low voltage AIS



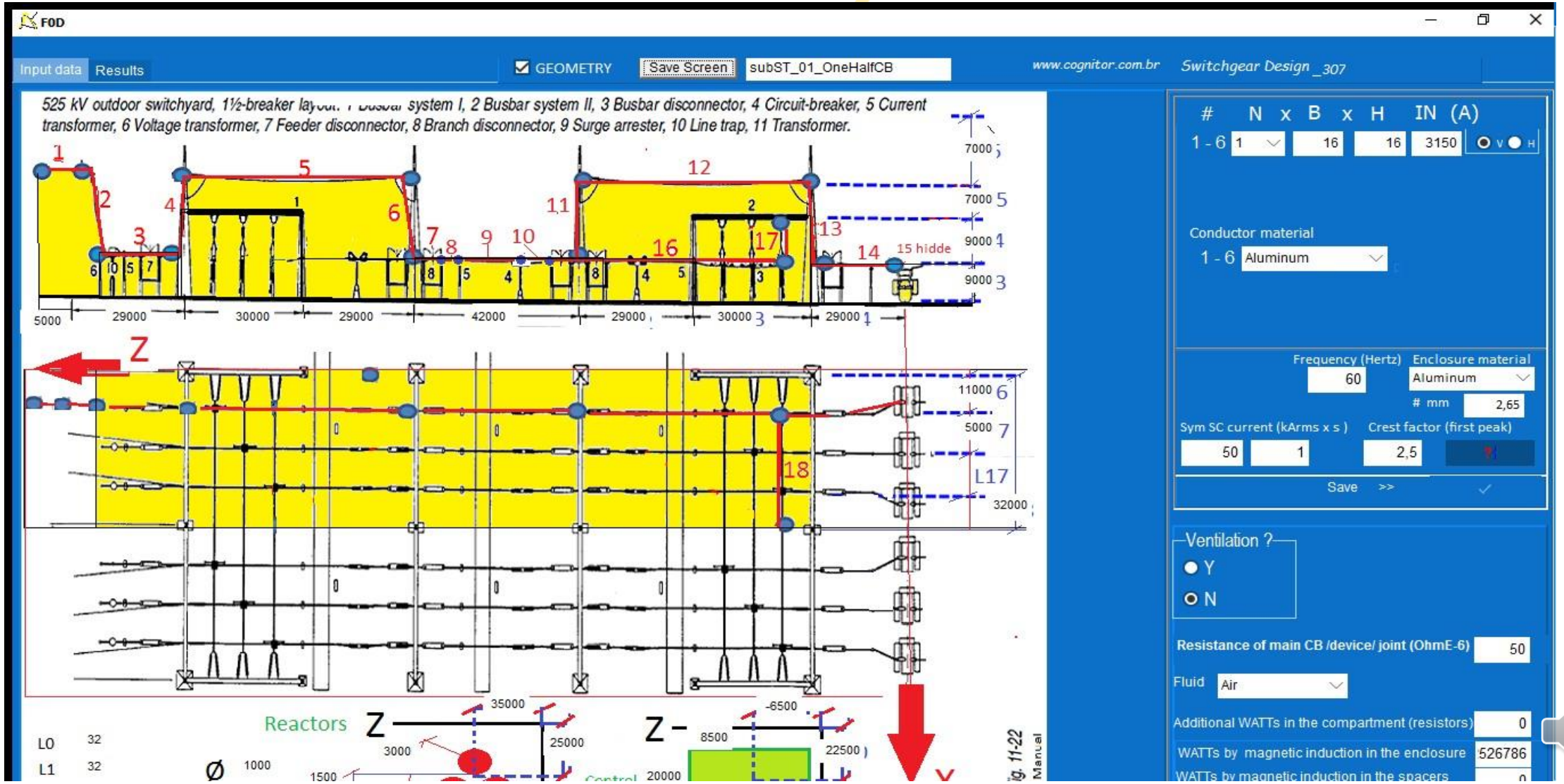
Types of equipment which can be simulated

DUCT_1: Busway



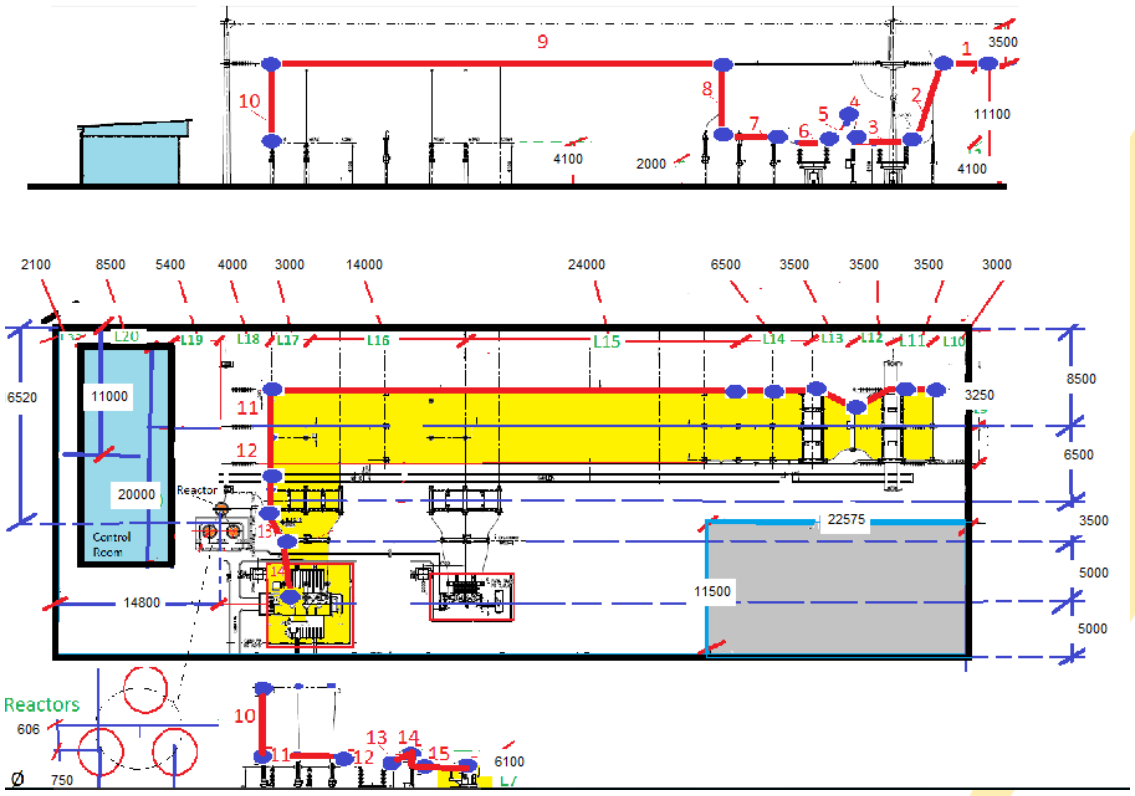
Types of equipment which can be simulated

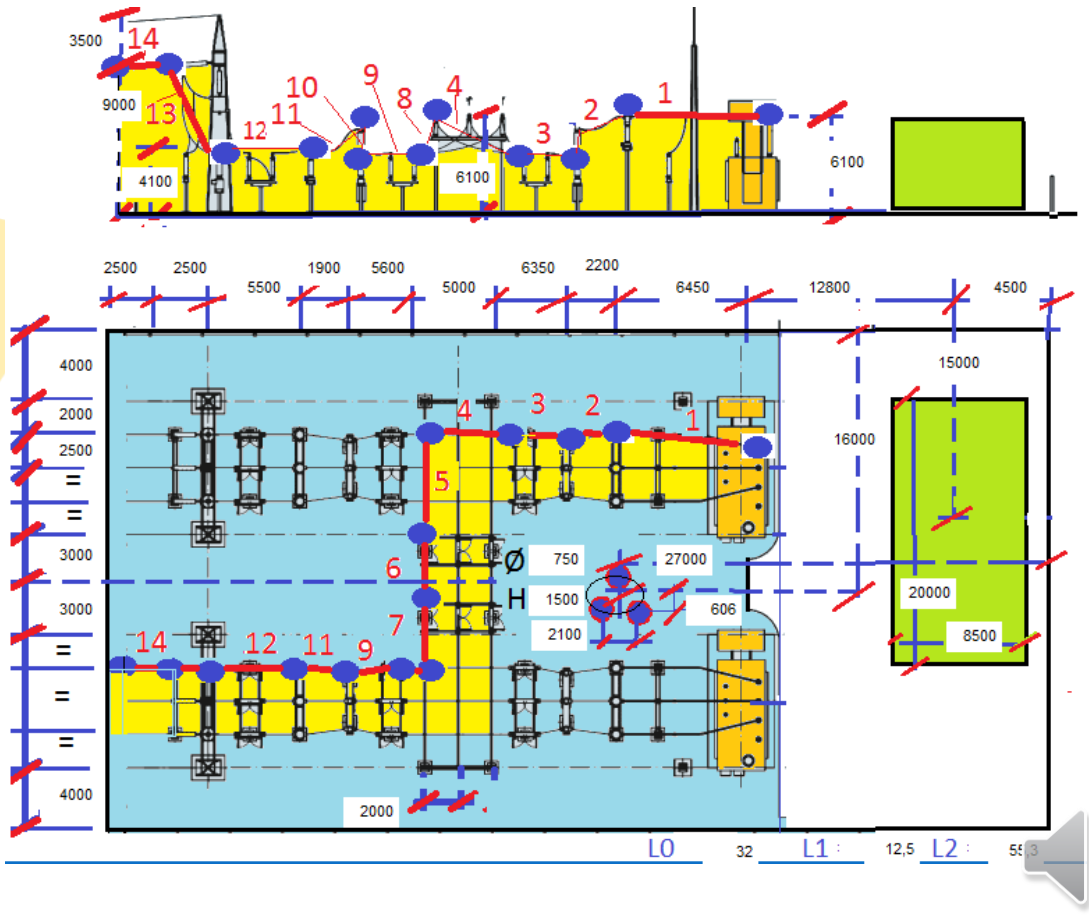
Subst – Substation arrangements



Types of equipment which can be simulated

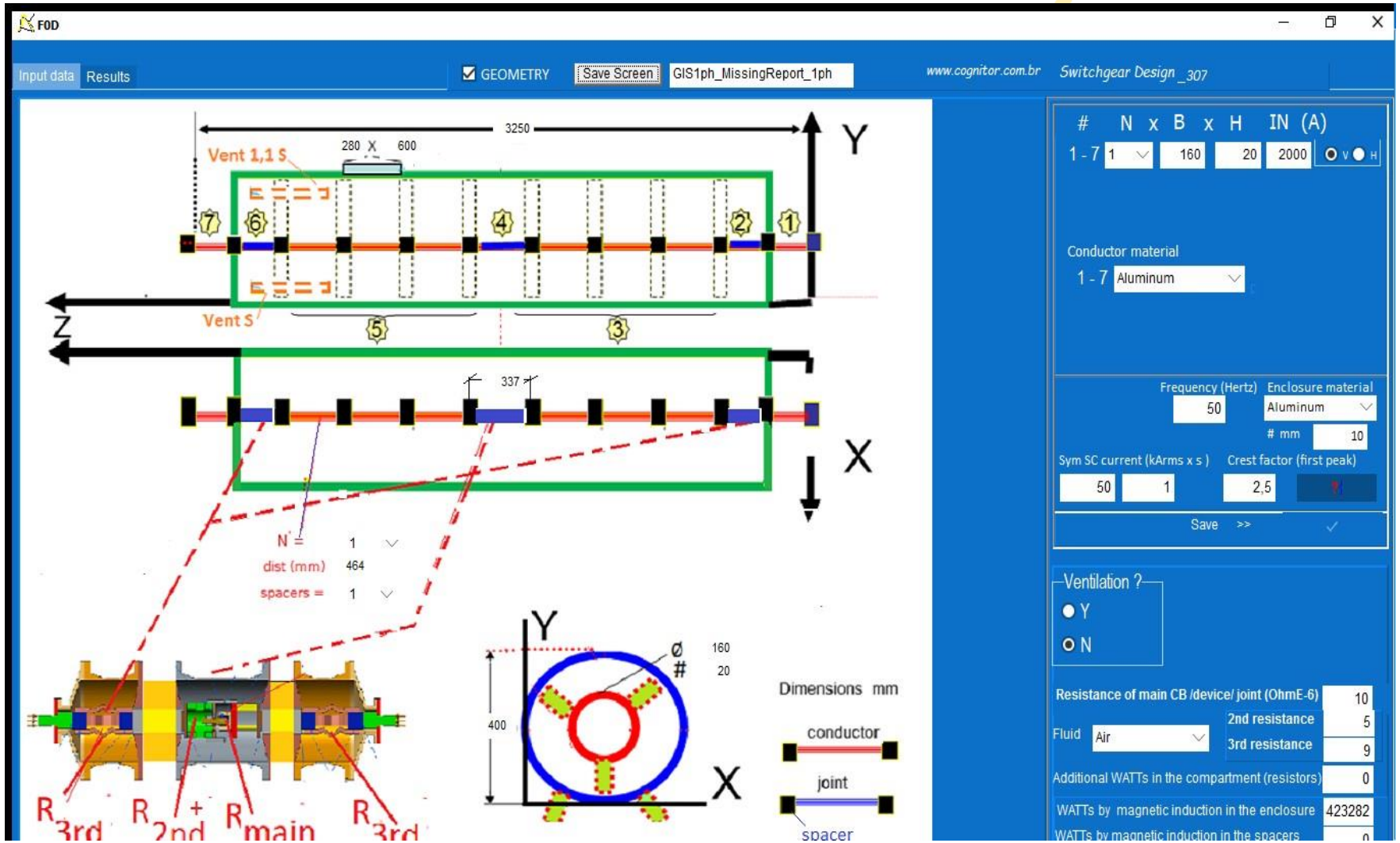
SubstISI, Subst2 – Substation arrangements



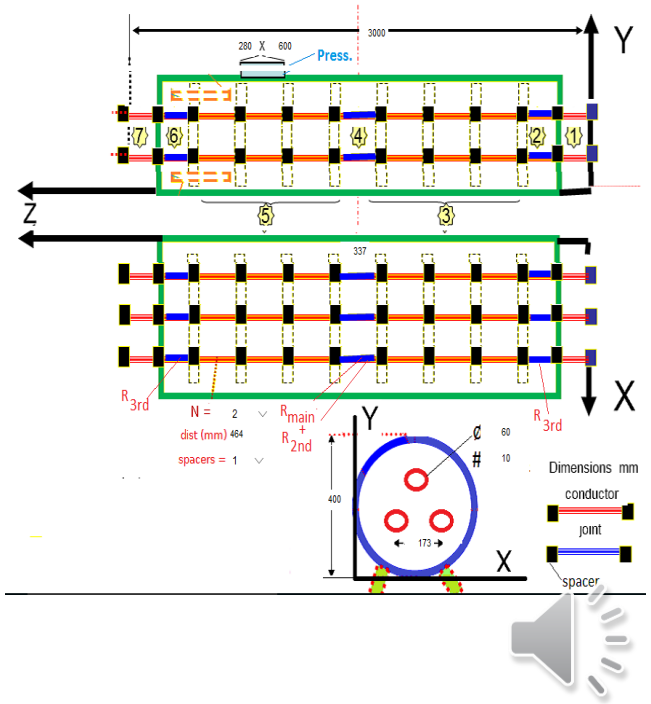


Types of equipment which can be simulated

- GIS_1ph - GIS single phase



- GIS_3ph - GIS Three phase

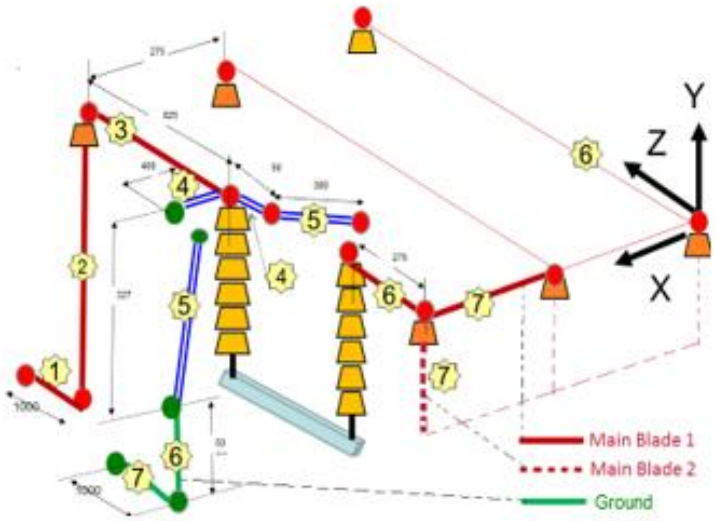


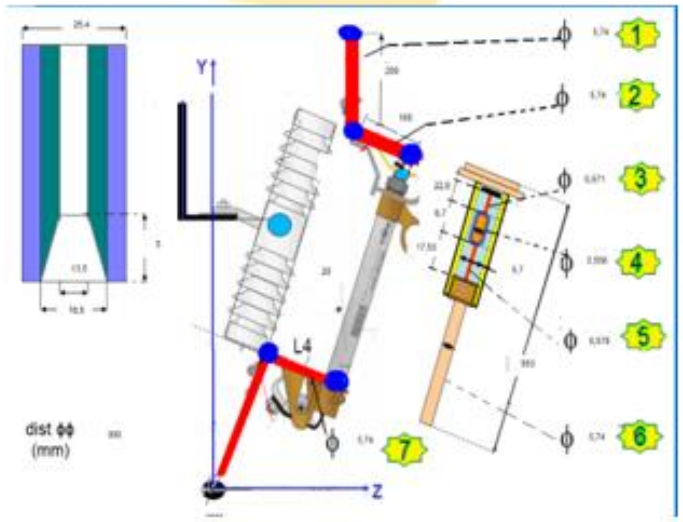
Types of equipment which can be simulated

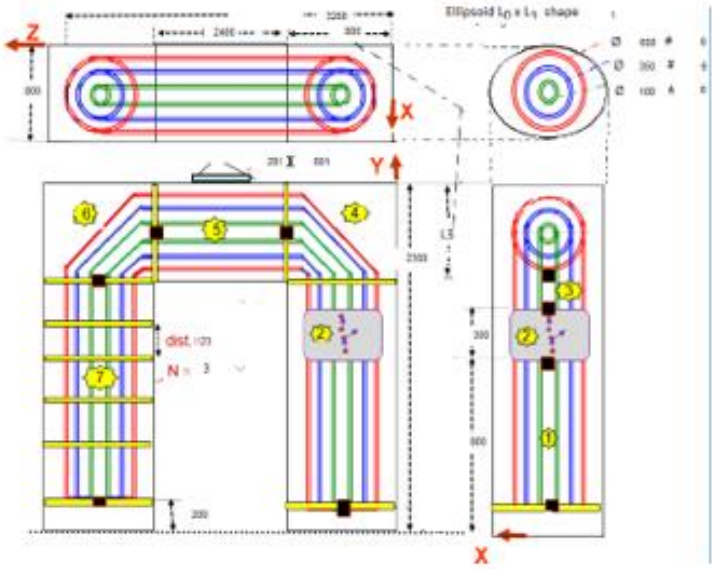
~~FUSE_1: Fuse~~

~~SWITCH: Isolator~~

~~GISSF (busway tri axial)~~



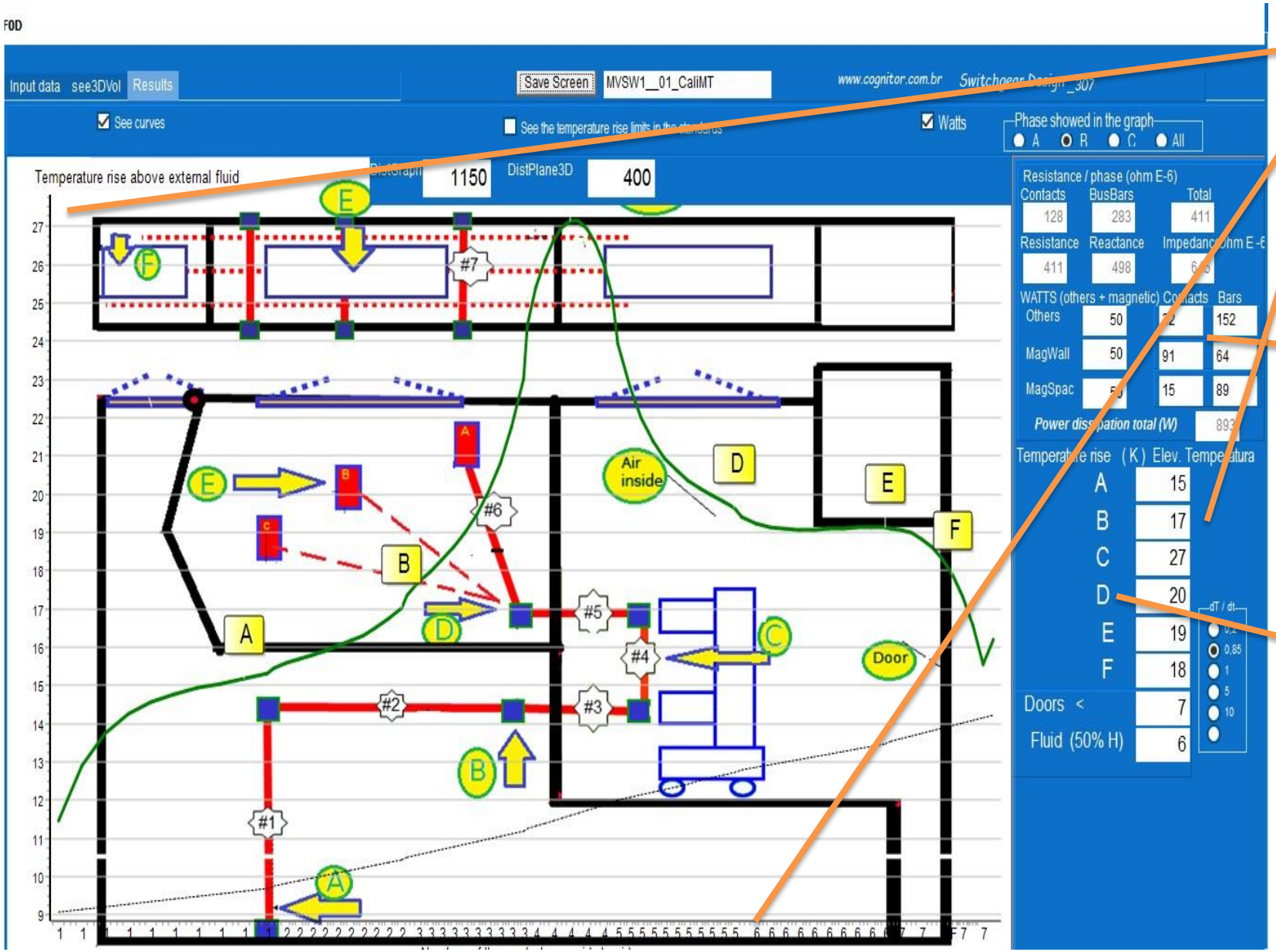




Types of tests which can be simulated

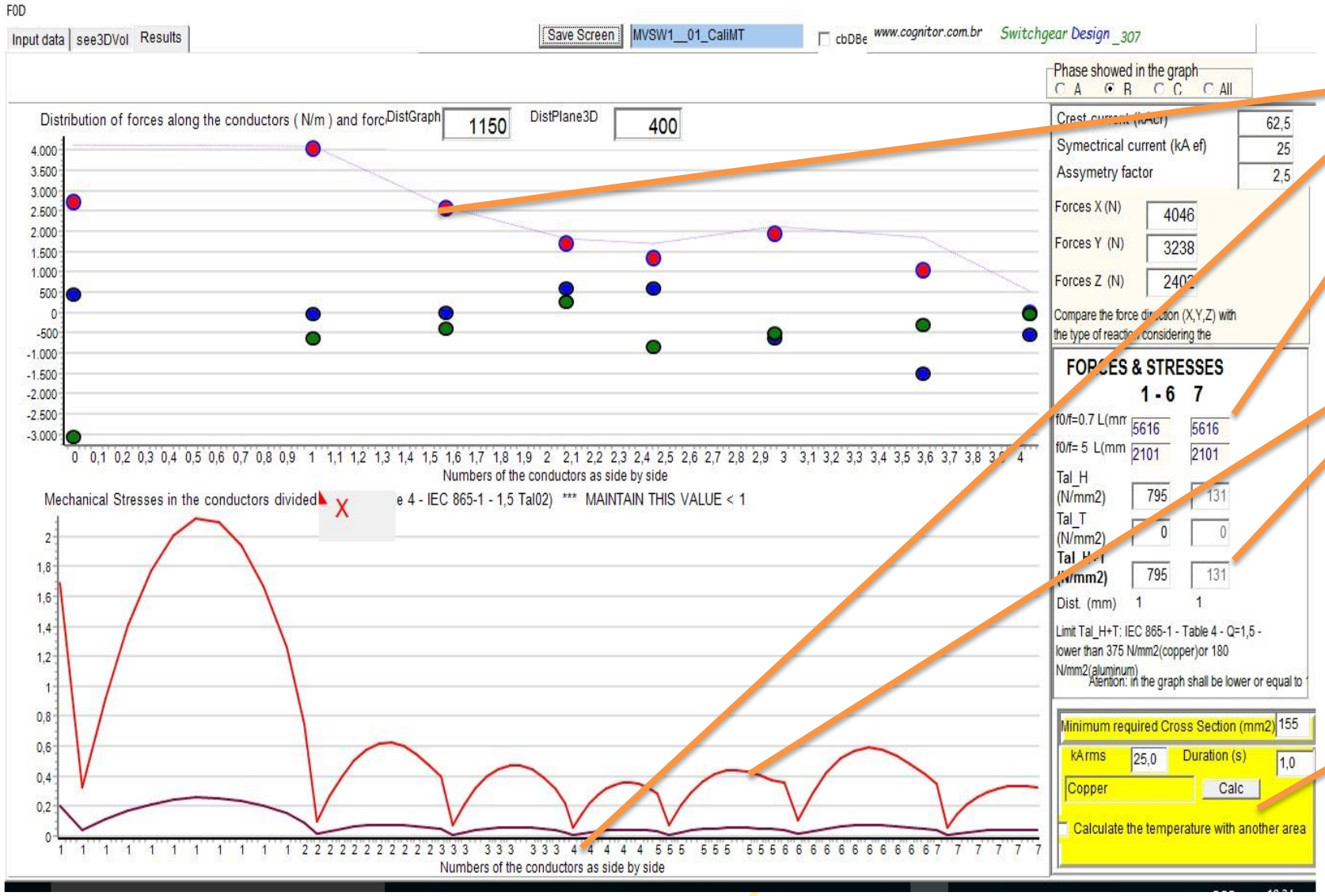
- Electrodynamic forces & thermal stresses during short circuits (short time and crest current tests)
- Temperature rise of conductors and insulating parts during temperature rise tests.
- Effects of overpressures due to internal arcs (switchgear, busways, ...)
- Mapping of electrical fields inside equipment and inside complete substations (attending values of health and work legislation)
- Mapping of magnetic fields inside equipment

Screen with the results of temperature rise tests



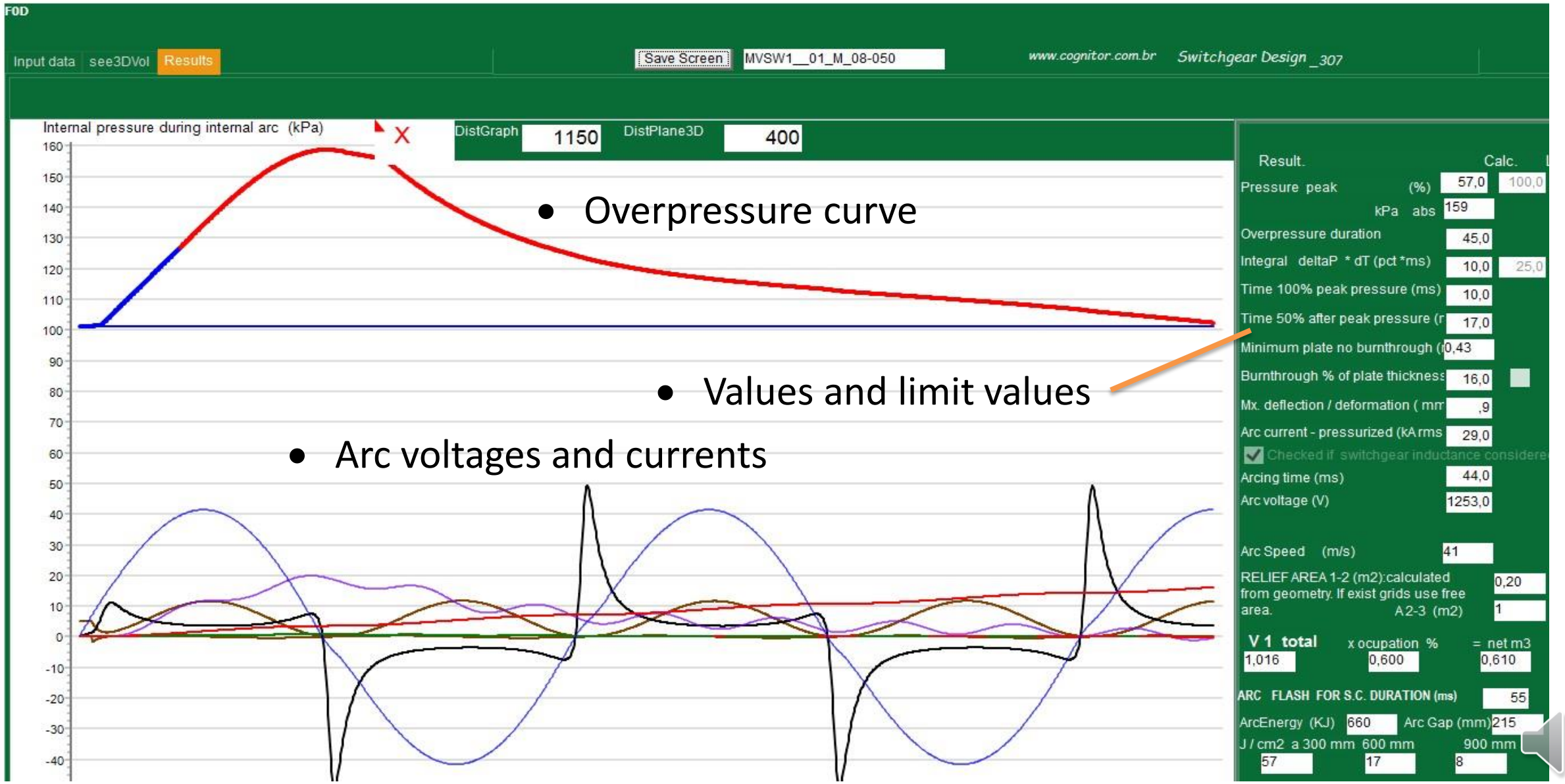
- Temperature rise along conductors (1 to 7)
- Watts in the groups of components
- Points A, B, ... E, F are the ones prescribed in technical standards

Screen with the results of electrodynamic forces and stresses



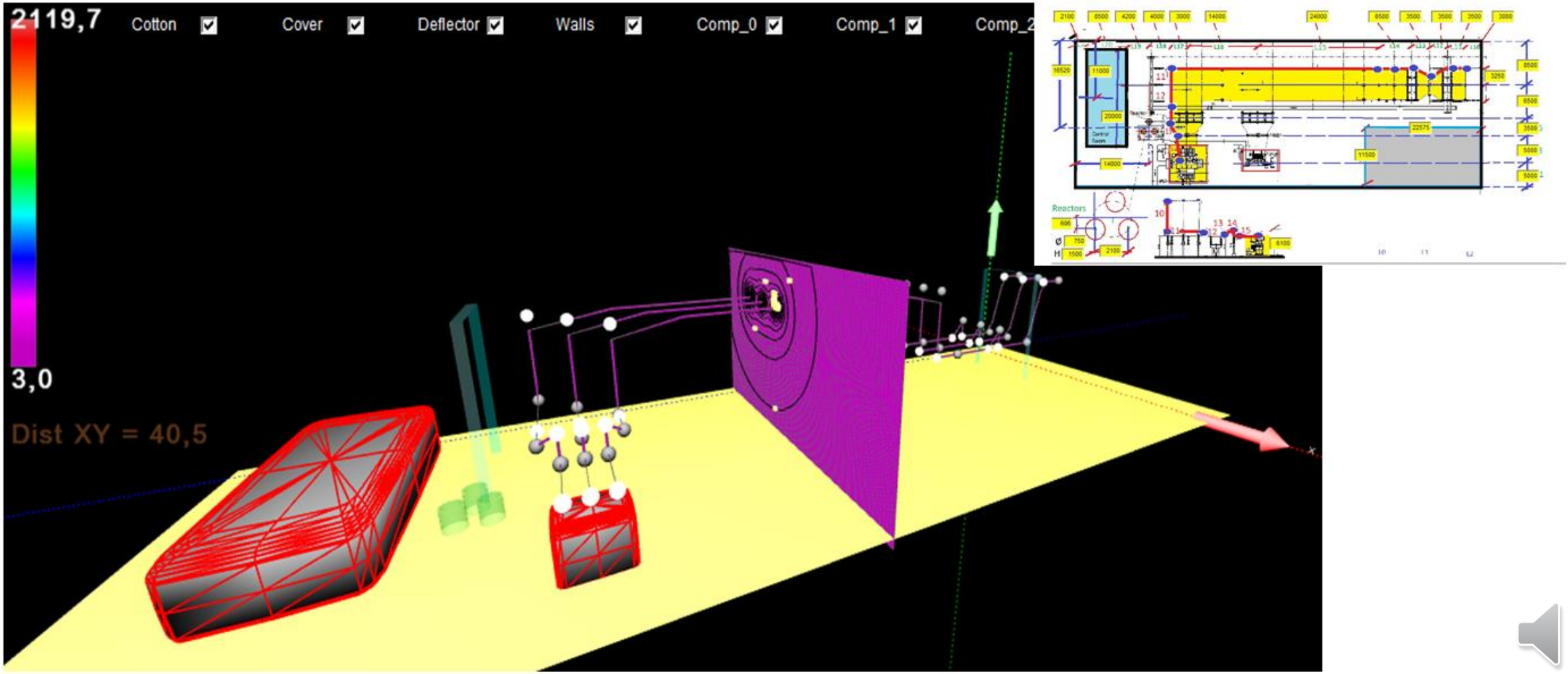
- Forces in insulators and supports
- Values and limit values
- Mechanical stresses which can bend conductors
- Minimum cross-section to avoid thermal annealing

Screen with the results of overpressures during internal arc tests

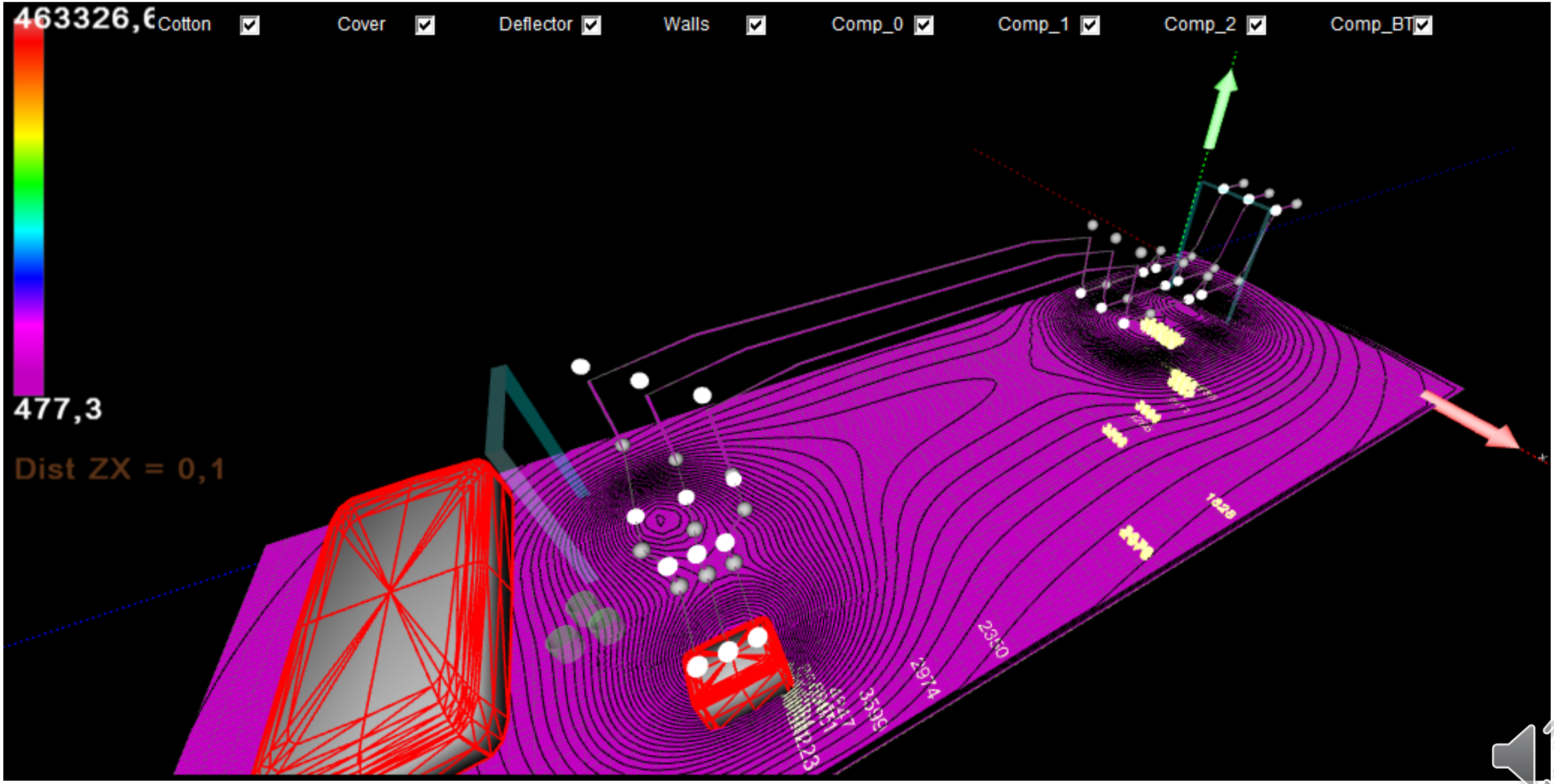


- Overpressure curve
- Values and limit values
- Arc voltages and currents

Screen with the results of magnetic fields

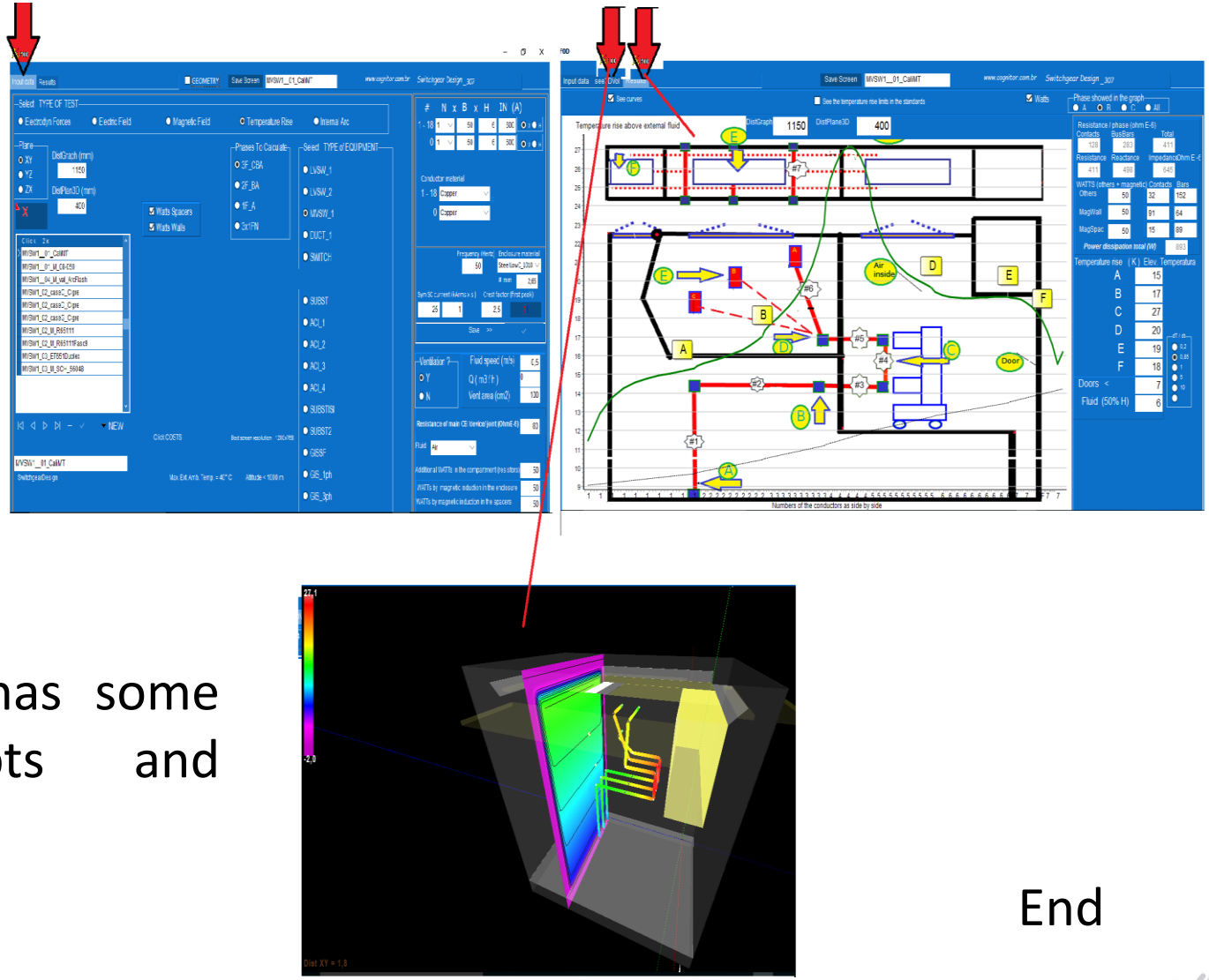


Screen with the results of electric fields



Sequence for entering input data and getting results

After setting up the input data for calculation click on the RESULTS tab and a new screen will open. From the analysis of the results it can be verified whether the equipment will or not be successful in the type of test.



It is necessary that the designer has some knowledge of design concepts and supportability of materials.

The training focus on this.

End