BRAZIL · 2026 · OLIVAS PSS V7.X · STABLE CHANNEL

OLIVAS

POWER SYSTEM STUDIO

Technical Catalog

Brazilian platform for industrial power-system studies on critical assets.

From the single-line diagram to the auditable report, in a single environment — short-circuit, power flow, coordination, arc-flash (NBR 17227), an AI assistant and study governance.

02 · OVERVIEW & CONTENTS

Industrial power engineering, in a single environment.

The **Olivas Power System Studio (Olivas PSS)** is a Brazilian desktop platform for the analysis of industrial electric power systems. In a single environment, the engineer models the single-line diagram, runs the complete set of studies required in professional practice and generates **traceable reports** — with governance of versions, assumptions and standards references.

Three points set Olivas apart for large plants, with critical assets and complex topology:

(1) native compliance with **NBR 17227:2025**, the Brazilian arc-flash standard; **(2) cryptographic traceability** (SHA-256) with governance of current studies; and **(3)** a **specialized AI assistant** (Olivas Assistant) that supports everything from modeling to interpretation of the results.

Interface, documentation and support in **technical Portuguese (PT-BR)**; Brazilian team and an active development cycle.

IN THIS CATALOG

QUICK FACTS

Platform: Windows desktop · PT-BR UI
Modules: 6 core + Enterprise layer
Standards: IEC · IEEE · ABNT · NFPA
AI: Olivas Assistant integrated
Output: auditable report (HTML/PDF) · SHA-256 seal

03 · THE CHALLENGE

Critical plants, studies that can’t keep up.

In a large industrial operation — dozens of substations, thousands of assets and continuous expansion — the electrical study is usually the slowest and least traceable link in engineering.

01
Outdated studies
Short-circuit, coordination and arc-flash out of date versus plant expansions. Decisions made on an expired technical basis.

02
External dependency
Every study revision becomes a new contract. Know-how leaves the plant with the PDF report — with no in-house editable model.

03
Scattered data
Equipment parameters spread across spreadsheets, PDFs and calculation memos from different vendors, with no standardization or single source.

04
Fragile traceability
Hard to prove which study is current, under which assumptions and signed by whom. Audits and inspections require a trail that often does not exist.

05
Evolving standards
NBR 17227:2025 introduced a new arc-flash method. Keeping dozens of substations compliant means continuously reprocessing studies.

06
Response time
A topology change can take weeks to reflect in the studies — incompatible with the dynamics of a large plant.

days → wks
typical cycle to reflect a topology change in external studies

multiple
study vendors per plant, with no single modeling standard

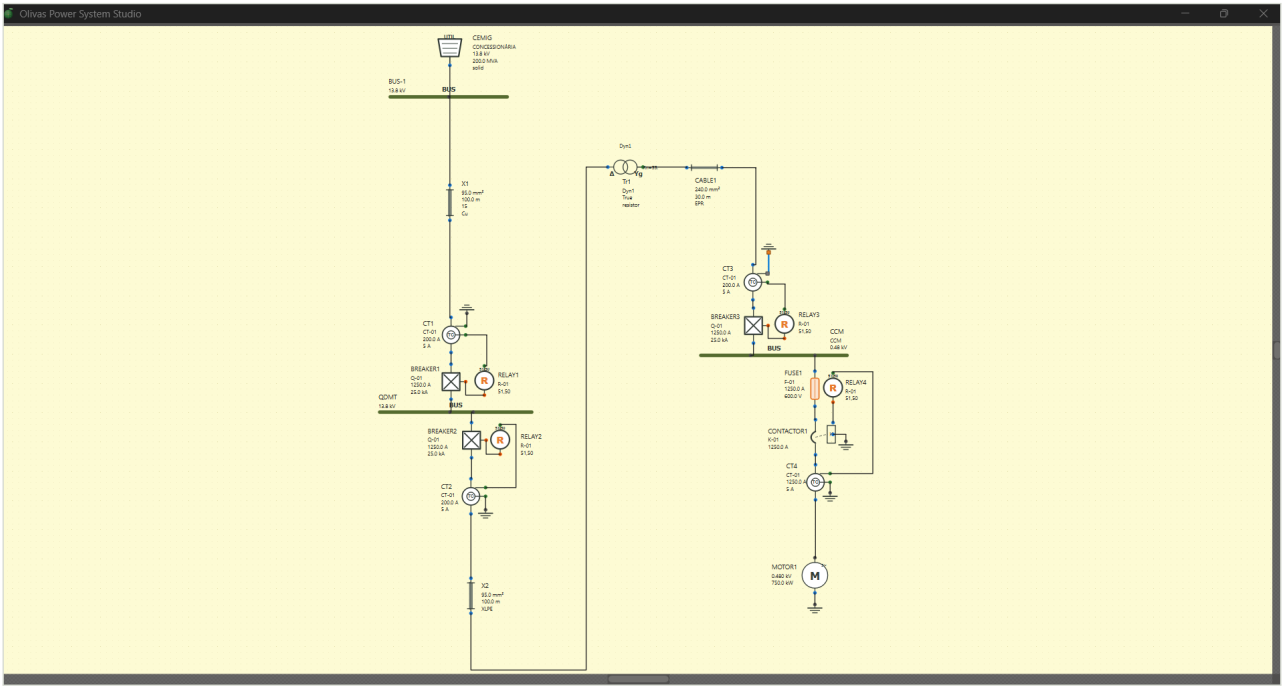
NBR 17227
new arc-flash standard (2025) requires reprocessing the substations

0 → 1
from scattered data to a single source of technical truth

04 · THE SOLUTION

A single environment, from SLD to the auditable report.

Olivas PSS covers the entire electrical-study cycle without exporting to external software: the plant is modeled once and remains a living technical base — versioned, auditable and operated by the team itself.



Reference single-line diagram — 13.8 kV utility, Dyn1 transformer, 0.48 kV MCC and motor, with CTs, relays (51/50), breakers and fuse.

The model stays with the client

Topology, parameters and assumptions live in an editable project file (`.olv`) — not in a static PDF. Each expansion updates the same model.

The plant's "technical brain"

More than calculation software: an intelligent repository of the electrical system, where AI, governance and verifiable reports turn the base into a strategic asset.

One file, the whole study

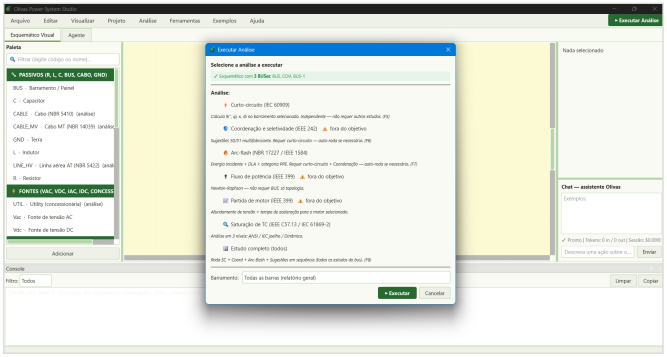
SLD, parameters, assumptions, results and version history coexist in the same project — with no conversions or parallel tools.

05 · STUDY WORKFLOW

From modeling to report, in minutes.

The *Run Analysis* menu automatically resolves dependencies between studies (e.g., arc-flash triggers short-circuit and coordination when needed) and consolidates everything into a single report.

Model SLD → **Validate NBR/IEC** → **Run studies** → **Interpret (AI)** → **Verifiable report** → **Governance**



Selection of analyses to run, with the reference standard for each study.

Execution can be triggered per study or as a **complete busbar study** (F8), which chains short-circuit, coordination, arc-flash and technical consolidation into an auditable report.

Each run records: **assumptions**, **applied standard**, **date/time**, data **checksum** and **status** (current / to re-run) — building the project's governance trail.

The analysis engine automatically flags **undersized equipment** and **miscoordination**, before the report is issued.

06 · MODULES · PART I

Short-circuit, power flow, coordination & arc-flash.

The core of any industrial electrical study — implemented with the established algorithms, validated against IEEE/IEC benchmarks and with arc-flash per the first Brazilian standard, NBR 17227:2025.

Short-circuit

IEC 60909-0:2016

Ik", ip, Ib, Ik and contributing sources; asymmetrical current, factors and breaker withstand (ANSI).

Power flow

IEEE 399 · Stevenson

Voltage profile, losses, loading and the basis for the other industrial studies. Sequence analysis (0/1/2).

Coordination & selectivity

IEEE 242 (Buff Book)

Relays, breakers, fuses, CTs and time-current curves (TCC) in an integrated multi-vendor flow.

Arc-flash · incident energy

NBR 17227:2025 · IEEE 1584

Incident energy, arc-flash boundary, PPE category and safety-label data. Comparison between methods.

Motor starting

IEEE 141 · IEEE 399

Starting voltage dip, inrush, reacceleration (V-dip) and impact on the industrial network.

CT saturation

IEC 61869-2 · IEEE C57.13

Saturation check and class adequacy (e.g., C800) for protection fidelity.

Validation: modules tested against IEEE 14/30/39 benchmarks (power flow) and IEC 60909-0 §8 scenarios (short-circuit). The "Run Analysis" menu automatically resolves dependencies between studies.

07 · MODULES · PART II

Applied studies + the Enterprise layer.

From motor starting to grounding — and, in the corporate layer, studies that usually require dedicated tools: harmonics, DC bank, pre-switching and the digital panel dossier.

Complementary studies

- Ground grid — **IEEE 80-2013**
- Cable ampacity and voltage drop — **NBR 5410** / **14039**
- VFD harmonics and filters — **IEEE 519**
- Frequency sweep / resonance
- Battery bank / DC system — **IEEE 485**

Enterprise layer (Olivas Inside)

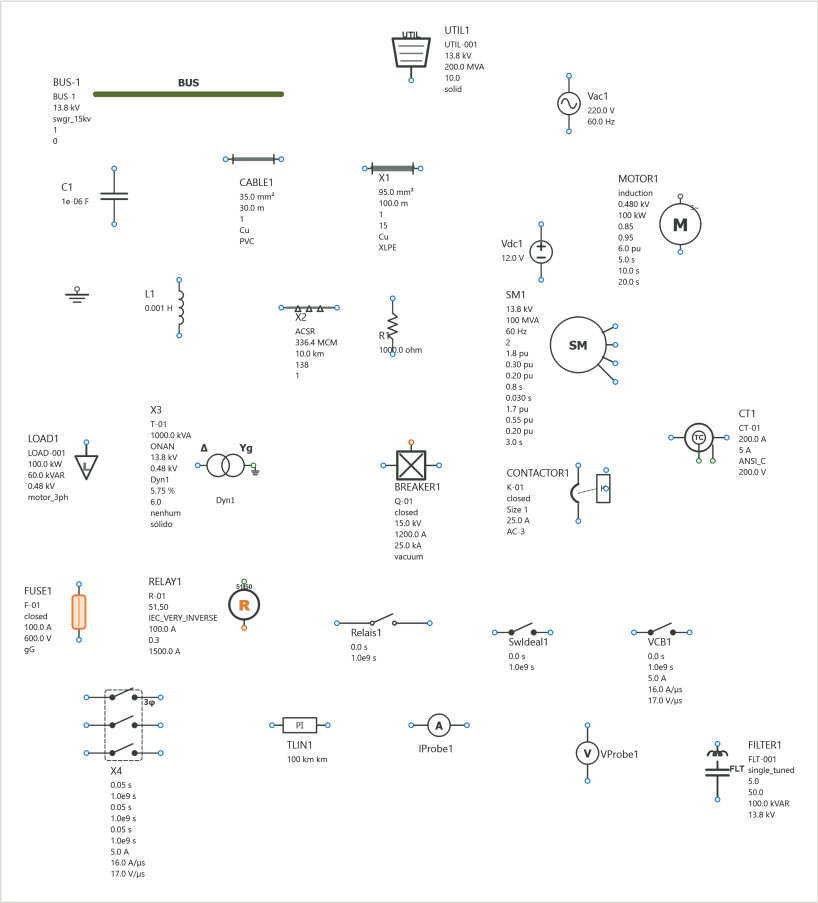
- Pre-switching (energization / de-energization)
- Load-shedding scheme optimization — **evolutionary computation**
- Panel dossier — **IEC 61439** / **FAT-SAT**
- Protection topology — **ANSI C37.2**
- Report authenticity verification

Enterprise menu: advanced analyses, AI report generation and authenticity verification.

08 · SINGLE-LINE DIAGRAM

Model the entire plant in ANSI/IEC symbols.

Native visual editor: busbars, transformers, cables, machines, protection and metering — with standardized nomenclature (NBR / IEC) and per-component editable parameters.



Single-line diagram with power, protection and compensation components.

Component palette

Filter by code or name, organized by families:

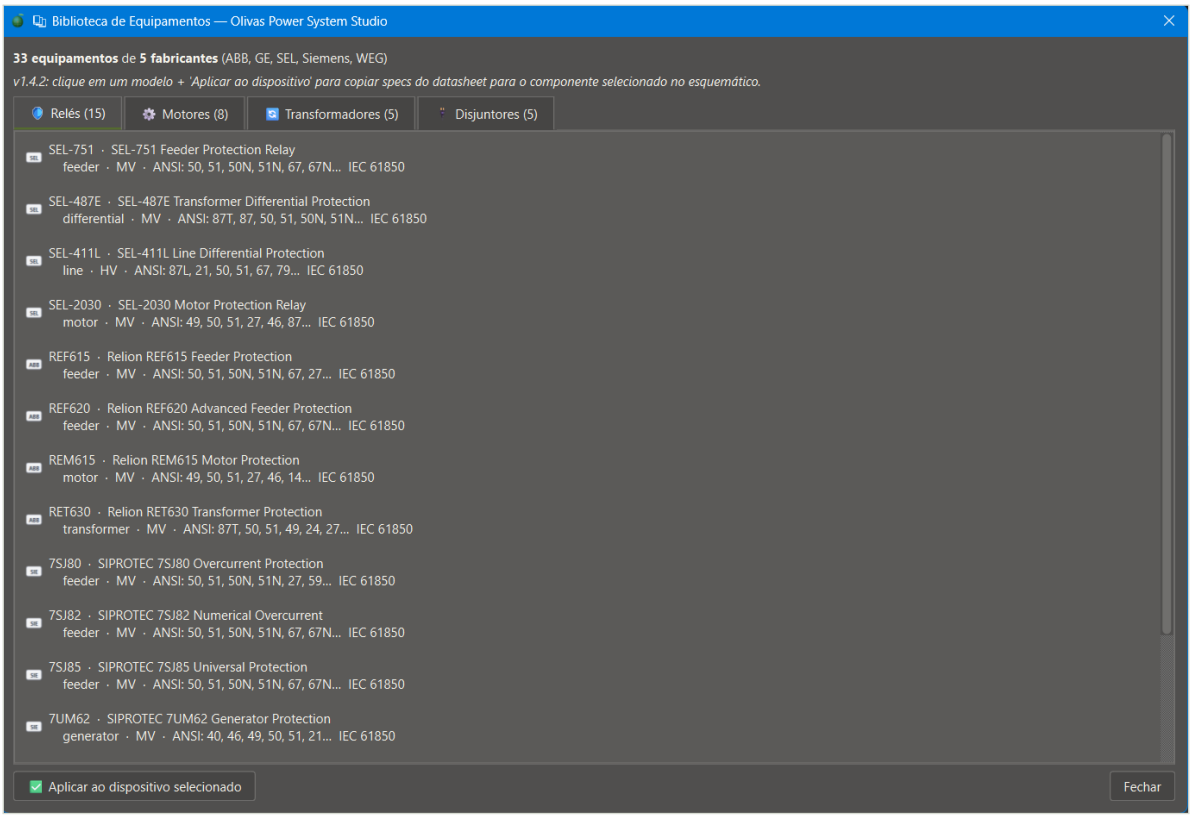
- **Passive:** BUS, R, L, C, cables (NBR 5410 / 14039), overhead line (NBR 5422), ground
- **Sources:** utility (UTIL), VAC/VDC, IAC/IDC
- **Machines, protection & metering:** motors, relays, breakers, fuses, CTs, contactors

Wire mode (W) and Select mode (V); configurable datablocks and an ABNT title block on printing.

09 · LIBRARY

Real equipment, parameterized.

A database of relays, motors, transformers and breakers from real manufacturers — applied to the selected device with one click, standardizing plant modeling.



Equipment Library — relays, motors, transformers and breakers from multiple manufacturers (IEC 61850 compatible).

Coverage

- Protection relays, motors, transformers and breakers
- Reference manufacturers (ABB, GE, SEL, Siemens, WEG)
- Parameters compatible with **IEC 61850**

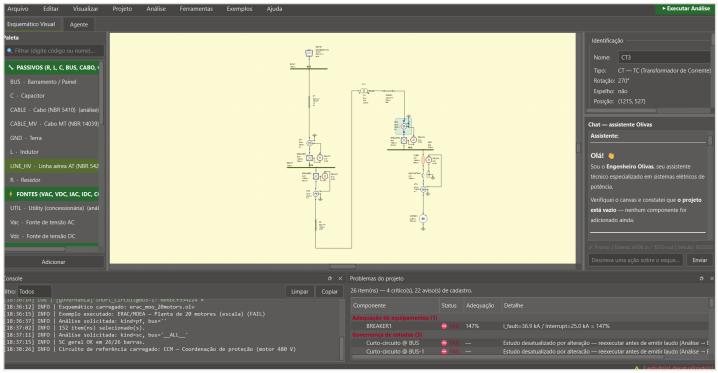
Standardization

- Single source of parameters — no more scattered spreadsheets
- “Apply to selected device” fills the model
- Extensible by the team and by audited plugins

10 · ARTIFICIAL INTELLIGENCE

The Olivas Assistant, an engineering copilot.

An integrated technical assistant that reads the circuit on the canvas, structures the diagnosis and answers questions about the computed report — always citing the standards and preserving the engineer's responsibility.

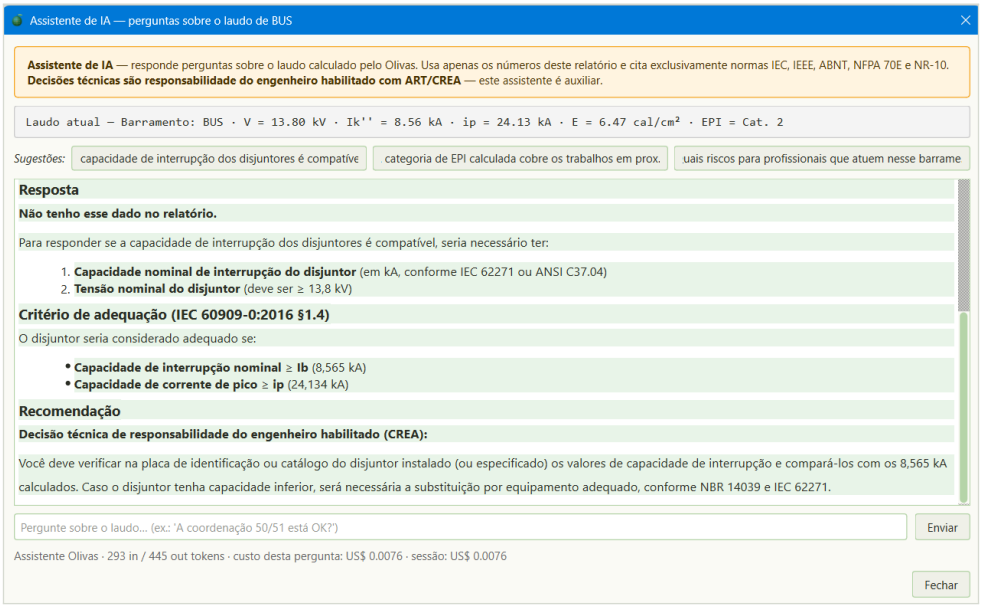


Olivas Assistant with structured circuit analysis and the "Project Issues" panel.

The **Olivas Assistant** identifies source, busbars, transformer and protection chain directly from the SLD; explains short-circuit, arc-flash and equipment-adequacy results; and grounds each answer in **IEC, IEEE, ABNT, NFPA 70E and NR-10**.

Every answer carries the notice that **the technical decision is the responsibility of the licensed engineer (ART/CREA)** — the AI assists, it does not replace.

Consumption is transparent: the interface shows tokens and cost per interaction, keeping operation predictable.



Assistant answer with adequacy criteria (IEC 60909 / IEC 62271) and an auditable technical recommendation.

11 · DEMONSTRATION

See the Olivas Assistant in action.

A real example: from the already-computed report, the engineer asks in natural language and receives a structured answer — with normative criteria, recommendation and a technical-responsibility caveat.

CURRENT REPORT · Busbar BUS V = 13.8 kV · Ik'' = 8.56 kA · ip = 24.13 kA · E = 6.47 cal/cm^2 · PPE Cat. 2

ENGINEER'S QUESTION

"Is the breakers' interrupting capacity adequate for the calculated short-circuit current?"

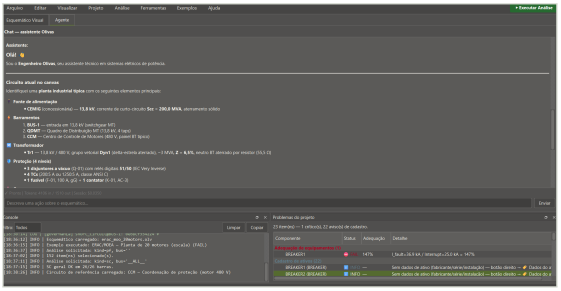
OLIVAS ASSISTANT

Adequacy criteria (IEC 60909-0:2016). The breaker is adequate if the rated interrupting capacity ≥ Ib (8.565 kA) and the rated peak withstand ≥ ip (24.134 kA).

Recommendation. Check the nameplate/catalog interrupting capacity against the calculated 8.565 kA; if lower, replace with adequate equipment (NBR 14039 · IEC 62271).

Caveat. The technical decision is the responsibility of the licensed engineer (ART/CREA) — the AI assists, it does not replace.

Transparent consumption: tokens and cost shown per interaction (e.g., US$ 0.0076 per question).



The Olivas Assistant reads the circuit from the canvas and structures the technical diagnosis (source, busbars, protection).

12 · GOVERNANCE

An auditable report, with a SHA-256 seal.

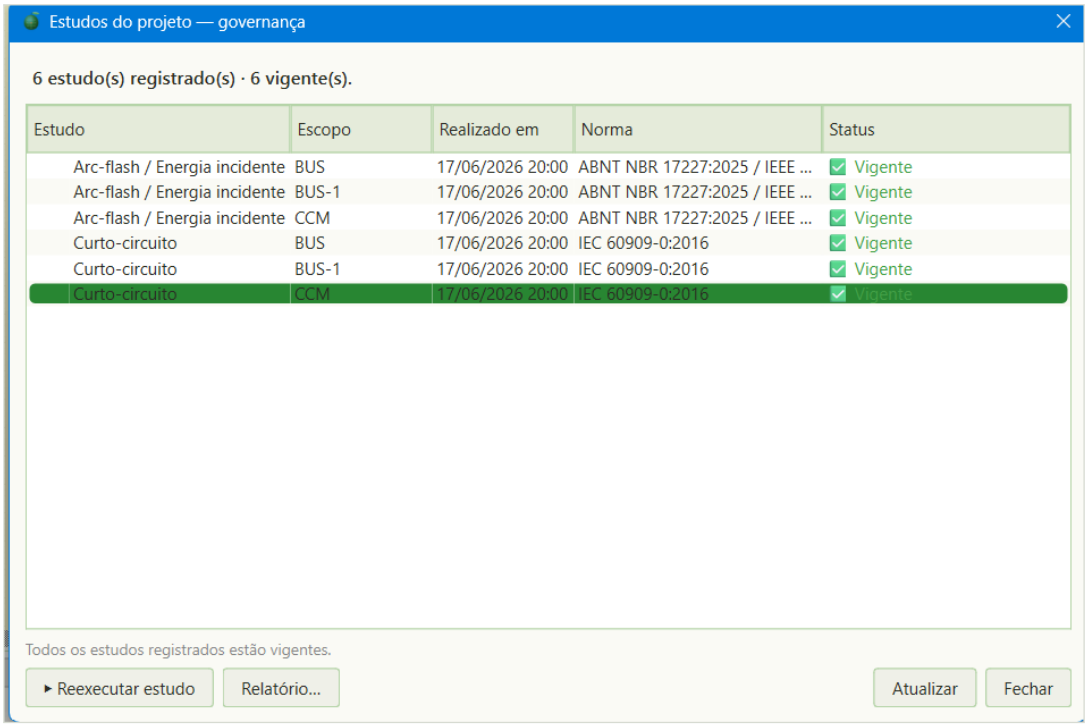
The result is not a loose PDF: it is a consolidated technical report, with applied standards, a cryptographic checksum and fields for the responsible engineer (ART/CREA) — plus a record of current studies per scope.

General Busbar Report — Ik", ip, incident energy, arc-flash boundary and PPE per BUS, with standards and checksum.

Each report records:

- **Applied standards** (IEC 60909-0:2016, NBR 17227:2025, IEEE 1584-2018, IEEE 242-2001, NFPA 70E:2024)
- **SHA-256 checksum** of the input data
- **Software version** and generation date/time
- **Responsible engineer, CREA and ART** (to be completed)

Study governance keeps, per scope (BUS, MCC…), which analysis is **current** and which must be re-run after a change — the trail audits and inspections require.

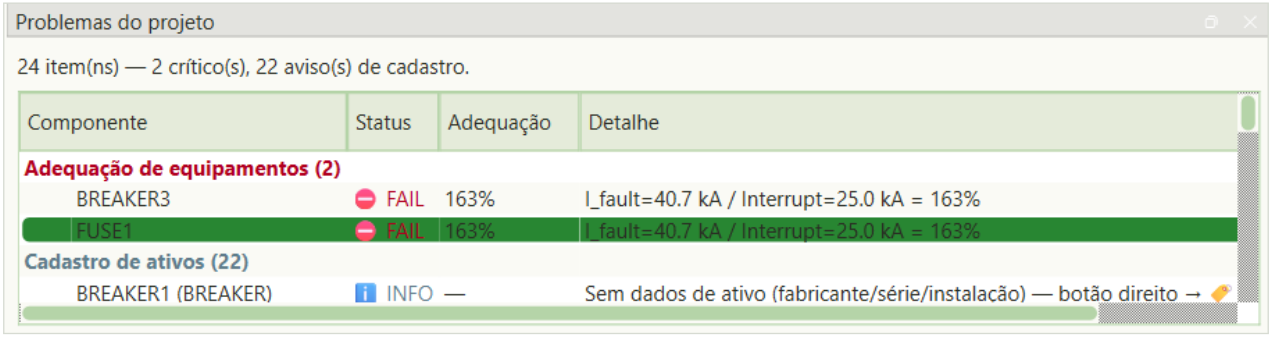


Project study record (governance) — scope, standard and "current" status.

13 · RISK DETECTION

Undersized equipment, before the report.

The “Project Issues” panel checks each equipment against the calculated duty and separates critical failures from registration warnings — with item-by-item traceability.



Adequacy validation: breakers with interrupting capacity below the calculated fault current are flagged as FAIL.

What is checked

- Interrupting capacity **vs.** fault current (e.g., 40.7 kA → 25 kA breaker = FAIL 163%)
- Adequacy of CTs, fuses and contactors
- Coordination and selectivity between devices

How it is presented

- **Critical** items separated from registration **warnings**
- Per-component status: **FAIL** / **INFO** / **OK**
- Numeric detail and standard citation per item

14 · COMPLIANCE

World-class, made in Brazil.

Studies follow the international and Brazilian references, and the software ships with more than 18 validated reference cases (Examples menu) for methodological audit.

Reference standards

- **Short-circuit:** IEC 60909-0:2016 · ANSI C37
- **Power flow:** IEEE 399
- **Coordination:** IEEE 242 (Buff Book) · IEC 60255
- **Arc-flash:** NBR 17227:2025 · IEEE 1584-2018 · NFPA 70E:2024
- **Motor starting:** IEEE 141 (Red Book) · IEEE 399
- **CT saturation:** IEC 61869-2 · IEEE C57.13
- **Cables / grounding:** NBR 5410 · 14039 · 5422 · IEEE 80-2013
- **Harmonics / DC:** IEEE 519 · IEEE 485
- **Panel / safety:** IEC 61439 · NR-10

Reference cases (Examples menu)

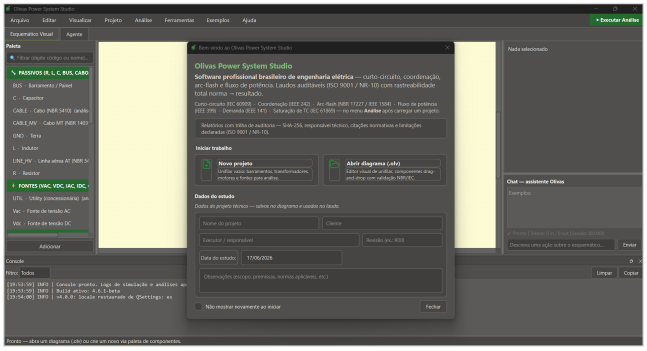
- Stevenson — power flow and asymmetrical faults (0/1/2)
- IEC 60909-0 — Annex C (short-circuit with transformer)
- IEEE 1584 — arc-flash 480 V (VCB)
- NBR 17227 — arc-flash 13.8 kV (switchgear)
- IEEE 399 — motor starting 1500 kW
- IEEE 519 — VFD harmonics (6 vs 12 pulses)
- IEEE 80-2013 — ground grid
- ERAC / MOEA — load-shedding scheme optimization

6 + N	18+	SHA-256	PT-BR
core modules and complementary studies	validated reference cases (Examples menu)	cryptographic seal on every issued report	native interface, standards and technical support

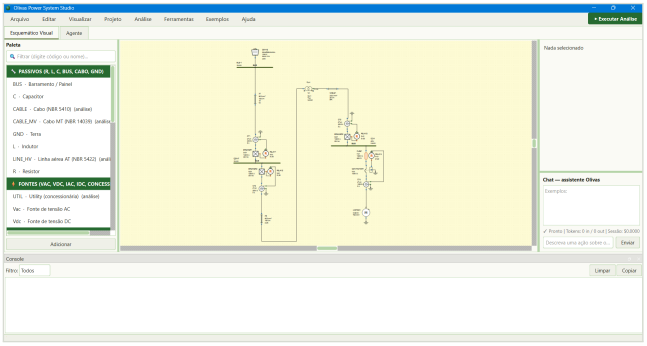
15 · INTERFACE

Technical workspace, light or dark theme.

Integrated work environment — canvas, palette, properties, console and AI assistant — with menus organized by engineering workflow and keyboard shortcuts.



Dark theme — workspace with palette, project tree, assistant and console.



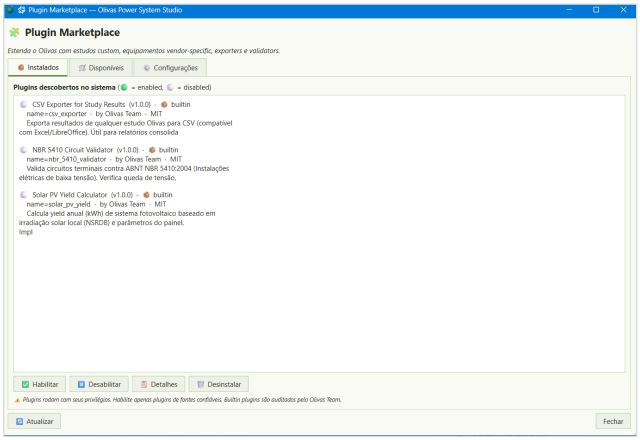
Light theme — the same technical base, comfortable reading for presentation.

Menus by engineering workflow: File · Edit · View (palette F9, properties F10, assistant F12, online mode of results over the schematic) · Project · Analysis (F5–F8) · Tools · Examples · Help. *(Application UI in PT-BR.)*

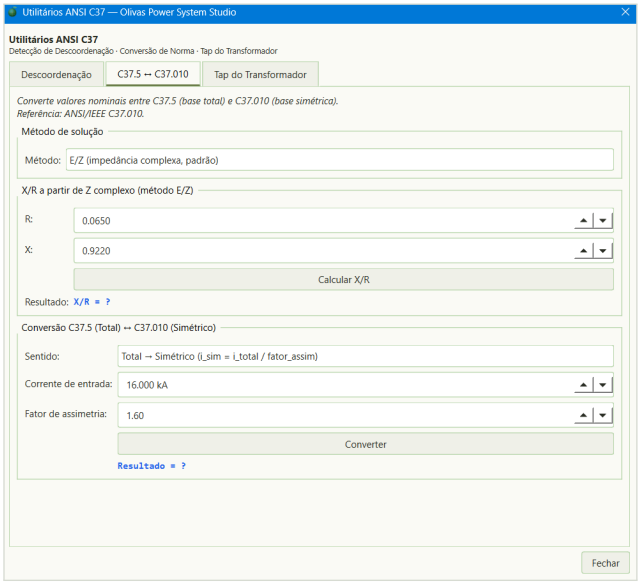
16 · TOOLS

Engineering beyond calculation.

Utilities that support real operation: scenario comparison, ANSI compliance, audited extensions and license/update management.



Plugin marketplace — audited extensions (NBR 5410 validator, exporters).



ANSI C37 utilities — miscoordination, C37.5 ↔ C37.010 conversion and transformer tap.

Parallel scenarios

Branches of the same project: clone, activate, compare and promote to the base.

ANSI utilities

Miscoordination detection (IEEE 242 §15.6), X/R and asymmetry, transformer tap.

License & update

Online activation per edition, in-app update channel and connection diagnostics.

17 · DIFFERENTIATORS

Why Olivas, for critical assets.

Compared to established solutions, Olivas brings into one national platform what usually requires several tools — with traceability and AI at the center.

01
Single environment
From SLD to report without exporting to external software. The plant is modeled once and stays a living base.

02
Arc-flash NBR 17227
Native compliance with the first Brazilian arc-flash standard (2025), plus IEEE 1584 and NFPA 70E.

03
Traceability
SHA-256 seal, current-study governance and ART/CREA fields — a trail ready for audit.

04
Specialized AI
Olivas Assistant grounded in standards, from modeling to interpretation, with transparent cost per interaction.

05
Parameterized base
Equipment library from real manufacturers (IEC 61850) — single source, no more scattered spreadsheets.

06
Brazilian & close
Brazilian engineering and dedicated support, with an active development cycle and a PT-BR interface.

18 · EDITIONS

From the academic bench to the corporate asset.

Three editions serve from the student to the corporate client; the Enterprise layer (Olivas Inside) enables pre-switching, verifiable reports and the panel's digital passport.

Student

ACADEMIC

Access to the core modules and reference cases for teaching and research.

Professional

ENGINEERING

Full set of studies, equipment library and auditable reports for the design engineer's daily work.

Enterprise

OLIVAS INSIDE

Corporate layer: pre-switching, optimization (evolutionary computation), IEC 61439 dossier, authenticity verification and advanced AI.

Deployment

SERVICES

Specialized technical support, initial system modeling, base migration and team training.

Scope, timelines and sizing of each service are defined jointly in the commercial proposal. The deployment journey is phased: diagnosis → modeling → migration → training → autonomous operation.

19 · TEAM

Engineering with academic roots.

Olivas Engenharia e Tecnologia combines engineering-software development, high-complexity consulting and power electronics for the Electric Power System (EPS) and protection, control and supervision systems.

Landerson Ferreira Silva

Co-founder · Technical Director

Electrical engineer and doctoral candidate in Electrical Engineering. Creator and developer of the Olivas PSS.

Tomaz Sousa Capetinga

Co-founder · General Director

Engineering and management skills applied to platform development and technical-commercial support.

Sidelmo Magalhães Silva

Co-founder · Technical-scientific board

Full Professor at UFMG and Ph.D. in Electrical Engineering. Specialist in power electronics, power quality and microgrids.

Detailed CVs of the founders on the following pages.

20 · CV

Landerson Ferreira Silva

Co-founder · Technical Director — Olivas Engenharia e Tecnologia

Profile

Electrical engineer, researcher and doctoral candidate in Electrical Engineering, working with an analytical, consultative mindset that connects theoretical fundamentals to the demands of Industry 4.0. He is the originator and lead developer of the **Olivas PSS** platform — a solution with more than **28 analysis tools**, integrating digital twins for pre-switching studies, applied artificial intelligence and the issuance of auditable reports with **SHA-256 and Ed25519** cryptography. As a researcher at UFMG, he leads the development of cyber-physical frameworks and Digital Twin agents for switching assessment, and designed a modular medium-voltage (4.16 kV) test bench for predictive monitoring and computational validation in ATP-EMTP. His industry track record includes work as a specialist at **REGAP–Petrobras**, performing complex electrical studies and technical standardization in mission-critical plants, as well as engineering leadership for the design and certification of power infrastructure, rigor as a specialist inspector (QA/QC) of assets from global manufacturers, and the management of preventive and corrective maintenance programs.

Experience & activity

- Conception and development of the **Olivas PSS** platform — 28+ tools, pre-switching analysis (digital twin), applied AI and reports with a cryptographic seal (SHA-256/Ed25519) (IEC · IEEE · ABNT · NFPA).
- **Doctoral researcher (UFMG):** cyber-physical framework and a Digital Twin agent for switching assessment; design and assembly of a 4.16 kV test bench for predictive monitoring and ATP-EMTP validation.
- **Industrial studies specialist:** electrical studies in mission-critical plants — short-circuit, protection coordination, electromagnetic transients and technical standardization.
- **Engineering & certification lead:** design and certification of power infrastructure (MV panels, E-houses, mobile substations).
- **Specialist inspector (QA/QC):** assessment and certification of power assets (transformers and LV/MV panels).
- **Maintenance engineering manager:** preventive/corrective maintenance programs for electrical installations.

Technical & academic output

- Research in evolutionary computation applied to power-system protection.
- Active snubber controlled by static switches to mitigate TRV escalation and successive reignitions in vacuum circuit breakers.
- National patent application. University lecturer.

Education

Doctoral candidate in Electrical Eng. (UFMG)
M.Sc. in Electrical Eng. (CEFET-MG, 2025)
Specialization in Power Systems (UniBH, 2023)
MBE in Industrial Maintenance Mgmt. (UNINTER, 2021)
Specialization in Renewable Sources (UFMG, 2019)
B.Sc. in Electrical Eng. (FAP, 2017)

Skills

Short-circuit · Coordination/TCC · Arc-flash (NBR 17227 / IEEE 1584) · Transients (ATP/EMTP) · Power electronics · Digital twin · Evolutionary computation · Cryptography (SHA-256/Ed25519) · QA/QC · Python · Generative AI

Contact

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21 · CV

Tomaz de Sousa Capetinga

Co-founder · General Director — Olivas Engenharia e Tecnologia

Profile

Industrial Automation Project Engineer with solid experience in the development and implementation of **Greenfield and Brownfield** Power and Control projects. He has prominent experience in heavy industry, with deep knowledge of critical processes in Oil & Gas refining, blast furnaces, rolling mills, steelworks and cement and lime kiln lines. He specializes in the complex integration between **Process Automation and Electrical Automation**, ensuring plants' operational synergy. His career includes broad experience with different systems and technical standards from global suppliers, ensuring excellence from interconnection architecture to the issuance and validation of engineering documentation.

Experience & activity

- Originator and co-founder of **Olivas Engenharia e Tecnologia**, focused on engineering solutions for industrial automation and electric power systems.
- **Industrial Automation discipline lead:** technical coordination of Power and Control projects (Greenfield/Brownfield), from proposal to commissioning, integrating Process and Electrical Automation.
- **Engineering project coordination:** schedule, deliverables, scope and multidisciplinary teams in detailed Electrical and Automation projects.
- **Automation & control architecture:** DCS, I/O lists, safety instrumented systems (SIS) and industrial networks (IEC 61850, Profibus, Foundation Fieldbus, Modbus, HART).
- **Power electrical design:** MV/LV switchboards, MCCs, electrical-room layout and field instrumentation.
- **Safety compliance (NR-10 / NR-12):** panel retrofit and specification of safety components (light curtains, safety relays).
- **Project management (PMI / Scrum):** deployment of a PMO with agile methodology and management by indicators and strategic objectives.

Technical domain

Equipment: motors, panels, drives, soft-starters, transformers, PLC, DCS, HMI, field instrumentation. **Documentation:** P&ID, logic/loop diagrams, network diagrams, cause-and-effect matrix, datasheets, supply inspection, databook. **Sectors:** Steel, Cement, Mining, Oil & Gas and Cogeneration.

Education

B.Sc. Electrical / Electronics / Telecom Eng. (PUC Minas, 2007)
MBA in Project Management (FGV, 2013)
Professional Scrum Master I (PSM I, 2020)

Skills

Project management (PMI · Scrum) · DCS · PLC · HMI · Industrial networks (IEC 61850 · Profibus DP/PA · Foundation Fieldbus · Modbus · HART · DeviceNet) · MV/LV electrical design · MCCs · Instrumentation · Commissioning & start-up · NR-10 / NR-12

Contact

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22 · CV

Sidelmo Magalhães Silva

Co-founder · Technical-scientific board — Olivas Engenharia e Tecnologia

Profile

Graduated in Electrical Engineering with a **gold medal** from the Federal University of Minas Gerais (UFMG) in 1997, with a master's and doctorate in Electrical Engineering, also from UFMG, in 1999 and 2003. He worked in **ABB**'s Product Development Department in Switzerland, developing power-electronic converters for industrial power-system applications. He is a **Full Professor** at UFMG's Department of Electrical Engineering, teaching undergraduate and graduate courses. He completed a **postdoc at the University of Wisconsin–Madison** (USA) on electrical microgrids. He has experience in the design of power-electronic converters, digital signal-processing systems for static-converter control, analysis and resolution of power-quality problems, and microgrids.

Experience & activity

- **Full Professor, Dept. of Electrical Engineering, UFMG:** coordination of applied-research and development projects; design and construction of power-electronic converters and digital control systems; advising of undergraduate, master's, doctoral and postdoctoral work.
- **Postdoc, University of Wisconsin–Madison (USA):** research in electrical microgrids; supervision of master's and doctoral work.
- **ABB Switzerland:** development of power-electronics-based equipment to solve power-quality problems.
- **Olivas Engenharia e Tecnologia:** research and delivery of innovative solutions to industrial-sector problems.

Technical & academic output

More than **40** papers in scientific journals · more than **100** papers in national and international conferences · **six** national and **one** international patent applications · advising of master's and doctoral work · supervision of postdoctoral work.

Education

Ph.D. in Electrical Eng. (UFMG, 2003)
M.Sc. in Electrical Eng. (UFMG, 1999)
B.Sc. in Electrical Eng. (UFMG, 1997)

Skills

Power-converter design · Digital signal-controller design · Power-quality studies · Dynamic modeling of power-electronic converters, electric drives and industrial power systems

Contact

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23 · CONCLUSION

A living technical base, auditable and national.

Olivas PSS turns the electrical study from a static deliverable into a permanent engineering asset — modeled once, maintained by the team and auditable at any time.

What the client gets

- Single environment, from SLD to auditable report
- IEC · IEEE · ABNT (NBR 17227) · NFPA compliance
- Cryptographic traceability and study governance
- Specialized AI assistant and PT-BR support

Next steps

- Guided technical demo with the client's plant
- Pilot project on a sample set of substations
- Phased, sized deployment proposal

Request a demo

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