TECHBR SOLUTIONS

COMPANY & PARTNERSHIP OVERVIEW

Industrial data and AI for sugar and bioenergy mills

Who we are, what runs in production today, and how we work with partners.



TECNOLOGIA SANTOS
CLOUD AND EDGE COMPUTING

TECHBR SOLUTIONS · techbrsolutions.com.br
IN PARTNERSHIP WITH TECNOLOGIA SANTOS · tecnologiasantos.com
NOVEMBER 2026

We turn the data a mill already produces into earlier, better decisions.

TechBR Solutions is a Brazilian industrial technology company based in São Joaquim da Barra, São Paulo, in the heart of the country's sugarcane belt.

We build **Neural Plant AI**: it brings PLC, laboratory, agricultural and maintenance data into one time-series history, then puts AI on top of it so the team hears about a problem before it turns into downtime.

> **"Your mill warns you before it stops."**

5
mills running Neural Plant AI in production

2
sugar and bioenergy groups as clients

4,400+
live PLC tags collected at a single mill

700+
Grafana dashboards in daily use across the five mills

Any PLC, nothing replaced

OPC UA for modern controllers, Octopus Gateway for legacy ones.

Lab and field next to the process

Laboratory and agricultural data in the same history as the PLC tags.

AI that explains itself

What changed first, the probable cause and what to do.

At a mill, data lives on islands. Losses hide between them.

By the time someone puts the pieces together, the sugar has already gone to the boiler, the pH has already drifted, the bearing has already failed.

SHOP FLOOR

PLCs & SCADA

Many vendors and protocol generations, each with its own screen.

QUALITY

Laboratory

Brix, pol, purity and other analyses kept in the ERP, a LIMS or on paper.

FIELD

Agricultural

Fleet, harvest, planting and cane delivery in separate systems.

ASSETS

Maintenance

Work orders and failure history disconnected from process data.

EVERYTHING ELSE

Spreadsheets

Daily reports rebuilt by hand, shift after shift.

We collect industrial data and unify it in one time-series database.

PLCs, any vendor
OPC UA: Siemens, Rockwell, Schneider, ABB, Honeywell, Yokogawa...

Legacy PLCs
Modbus, DF1 and older protocols via Octopus Gateway

Laboratory
Analyses from ERP, LIMS or lab software

Agricultural
Fleet, harvest, planting, cane delivery

ERP & maintenance
Production, costs, work orders

NEURAL PLANT AI

One history for the whole mill

01 Register tags pick equipment and area, no PLC programming
02 Collect continuous, read-only
03 Historize single time-series database
04 Visualize Grafana dashboards per area
05 Diagnose Synapse Chat and AI agents

Dashboards
Every area, every shift, one screen

Synapse Chat
Ask the plant in plain language

AI agents 24/7
Warnings with probable cause and what to do

Open data
Standard queries for BI, ERP and partner systems

Five mills, two groups, one platform.

1 MILL · SÃO PAULO, BRAZIL

Usina Alta Mogiana

Sugar, ethanol and energy. Six collectors and more than 4,400 live PLC tags, plus laboratory and ERP data, in one history.

4 MILLS · SAME GROUP

Grupo Alto Alegre

A sugar and bioenergy group with four mills, each one running Neural Plant AI with its own dashboards per area.

All five run Neural Plant AI in production, with dashboards for extraction, boilers, fermentation, distillation, utilities and harvest.



Real production dashboards: juice extraction, harvest indicators, boiler water and steam lab results. Identifying names hidden.

What we offer

Industrial data collection and unification in a single time-series database, with AI on top. Plus a gateway for legacy equipment and a partnership in sugar crystallography.

PLATFORM

Neural Plant AI

1 · Industrial Monitoring
PLC, laboratory and agricultural data (fleet, harvest, planting) in one history, with dashboards per area.

2 · Synapse Chat
Talk to the plant. Ask in plain language about any data we collect.

3 · AI Agents
Specialized agents for each part of the mill, watching around the clock.

Read-only: never writes to PLCs

CONNECTIVITY

Octopus Gateway

Converts shop-floor industrial protocols into OPC UA and serves the data through a standard, secure OPC UA endpoint.

An old PLC no longer blocks a modernization project.

Any PLC vendor, no hardware replacement

PARTNERSHIP

Crystals

With Soluciones Científicas: a modern Crystals Desktop, crystallography data collected and historized, and smart dashboards in Grafana.

On a server at the mill or in the cloud

Industrial Monitoring

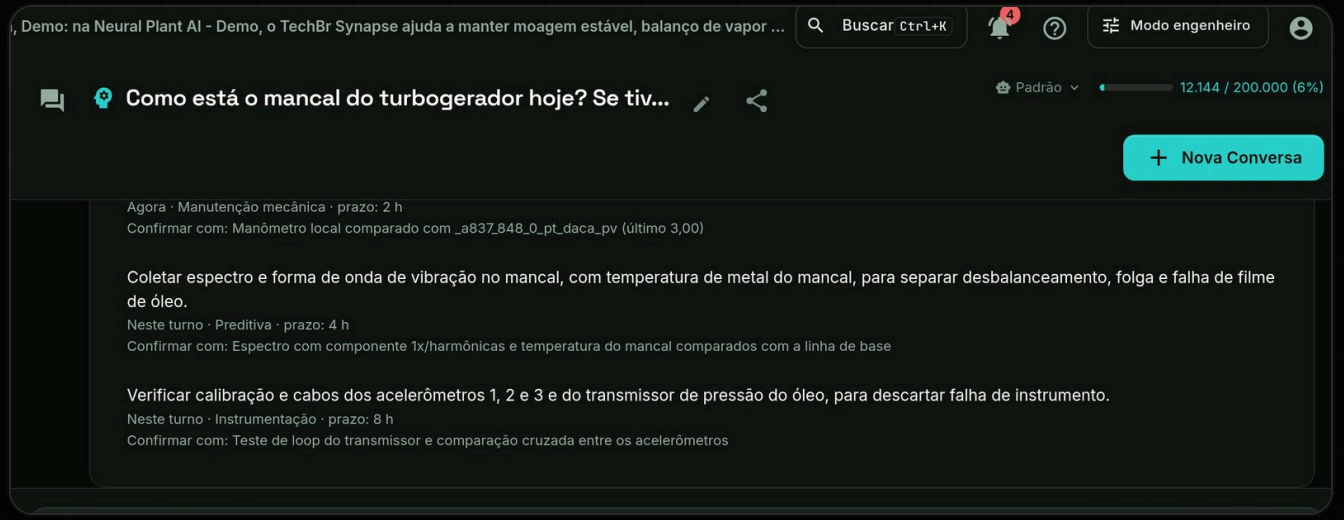
- **PLC data from any vendor** over OPC UA. Pick the equipment, select the tags, set the area: data flows in minutes, with no PLC programming.
- **Laboratory data** from the ERP, LIMS or lab software: Brix, pol, purity, moisture, pH and other analyses, next to the process.
- **Agricultural data**: fleet, harvest, planting and cane delivery.
- **One time-series database** for all of it, with dashboards per area in Grafana.
- **AI dashboard assistant**: ask for a new dashboard in plain language and review it before saving.
- **Read-only**: we never write to the PLCs.



Plant view in Grafana: PLC, laboratory and ERP series side by side for extraction and juice treatment. Demo environment, Portuguese interface.

Synapse Chat: talk to your plant

- **Ask the way you would ask a colleague**: “How is the turbine generator bearing doing today? If something is off, what should I check first?”
- **Answers grounded in the mill’s own data**: every collectable source, PLC, laboratory and agricultural, read from the time-series history.
- **Uses the area’s procedures (SOPs)** and shows a verified badge when the evidence checks out.
- **Ends in actions**: what to do, who does it, by when, and how to confirm.
- A diagnostic copilot, not a generic chatbot. Field validation stays with the team.



Synapse Chat answer with an action plan: each step lists the team, the deadline and how to confirm it. Demo environment, Portuguese interface.

WHAT EVERY ANSWER BRINGS

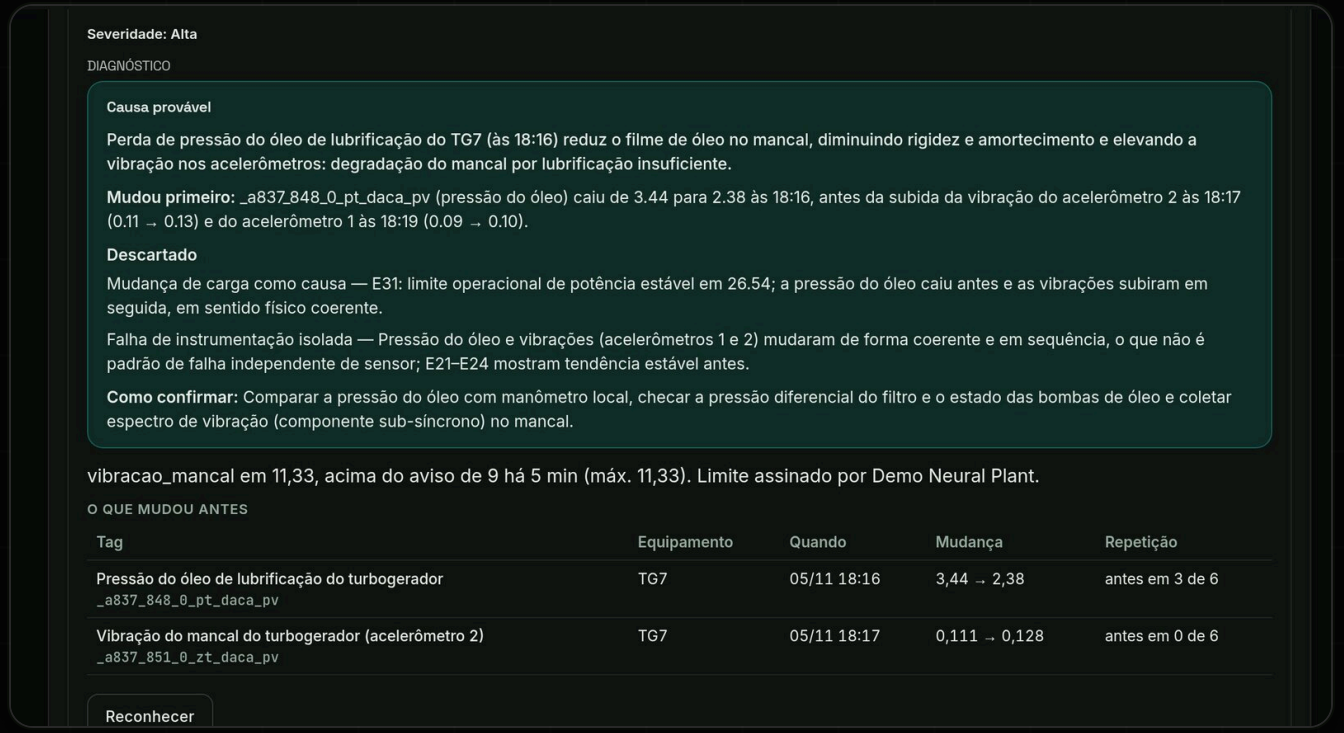
Severity	Evidence	Procedure	Action plan
from normal to critical	the tags and time window it read	the area’s SOP, when it applies	who, by when, how to confirm

AI Agents: a specialist for every area, 24/7

When equipment drifts from its own pattern, the agent for that area warns the team before the failure, showing:

- **What changed first**, with tag, time and size of the change
- **Probable cause**, and the causes it ruled out
- **How to confirm** in the field, and what to do

Cane reception · Extraction · Juice treatment · Evaporation · Boiling & crystallization · Centrifuges · Drying & bagging · Fermentation · Distillation · Boilers · Cogeneration · Turbine generators · Water treatment · Laboratory & quality · Orchestrator: cross-area impact

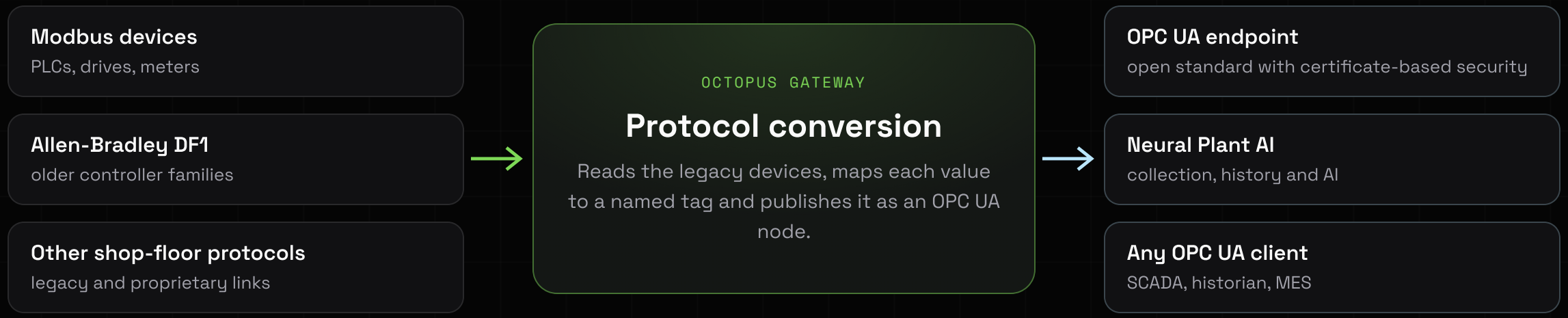


A critical episode on a turbine generator: probable cause, what was ruled out, how to confirm, and what changed first. Demo environment, Portuguese interface.

CONNECTIVITY

Octopus Gateway: legacy protocols in, OPC UA out

Many mills still run PLCs that speak older shop-floor protocols. Octopus Gateway converts them and serves the data through a standard OPC UA endpoint, so any modern system can read it securely.



No PLC replacement and no reprogramming

One standard interface for the whole plant

An old vendor no longer blocks the project

Crystals: sugar crystallography, historized and on Grafana

Soluciones Científicas (scientificas.com) develops Crystals, software that measures sugar crystals from microscope images during the boiling process. Together we:

- **Rebranded Crystals Desktop** into a modern, clean interface (version 3).
- **Connected every analysis to the cloud**, so results leave the lab PC as soon as they are saved.
- **Historized the data** in a time-series database: mean crystal size, coefficient of variation, size distribution and lab Brix and purity.
- **Built smart Grafana dashboards** per material and per pan, against the target for each stage.



Crystals 3 splash, an automatic crystal image mosaic, and the Grafana process view: mean size and CV per material against target.

STRATEGIC PARTNER

Tecnologia Santos: commercial reach and cloud infrastructure

Tecnologia Santos (tecnologiasantos.com) is a cloud, AI and technical consulting company. It supports TechBR as our commercial representative and as our specialist in cloud and infrastructure, and presents Neural Plant AI with TechBR as its industrial technology partner.

CLOUD ARCHITECTURE

AWS, Azure, Google Cloud and Oracle Cloud. Kubernetes, Helm, GitOps and Terraform.

DEVOPS & PLATFORM

Platform engineering, automation and AI-powered, cloud-native solutions.

CYBERSECURITY

Security practices aligned with SOC 2 and ISO 27001 frameworks.

INFRASTRUCTURE

Linux and Windows servers, Active Directory, Hyper-V, and networks with MikroTik, Cisco and UniFi.

COMMERCIAL

Business development, partner relations and a global partnership program.

CONTACT

Ronaldo M. Santos
Infrastructure Specialist & Business Contact

HOW WE WORK

From the first tag to AI in operation

STEP 1

Assess

Tag list, PLC vendors, lab and agricultural sources, network and server.

STEP 2

Connect

OPC UA collectors, Octopus Gateway for legacy PLCs, connectors for lab and ERP.

STEP 3

Historize

One time-series database and the first dashboards per area.

STEP 4

Add AI

Synapse Chat and the area agents, calibrated on the mill's own history.

STEP 5

Support

Monitoring, updates and tuning through the season.

PRINCIPLES

- **Read-only by design**: the system reads data and never writes to PLCs.
- **Runs where the client needs it**: on a server at the mill or in the cloud.
- **Access per user and per area**, with private and shared conversations.

WHAT AI DEPENDS ON

- Enough **history** and **tag coverage** in each area.
- **Calibration** with the mill's own events and the team's feedback.
- AI is a copilot: diagnoses are confirmed in the field before acting.

WORKING TOGETHER

How a partnership with us can work

WHAT WE BRING

- A platform already in production at five mills
- Sugar and bioenergy process knowledge, area by area
- Connectors for PLCs, legacy protocols, laboratory and agricultural data
- AI agents and Synapse Chat ready for a new site
- The Crystals data pipeline, from lab PC to Grafana

WHAT A PARTNER CAN BRING

- Local presence and long-standing client relationships
- The systems that already hold client data: ERP, LIMS, custom software
- Development and integration capacity close to the client
- On-site support during the season

Data integration

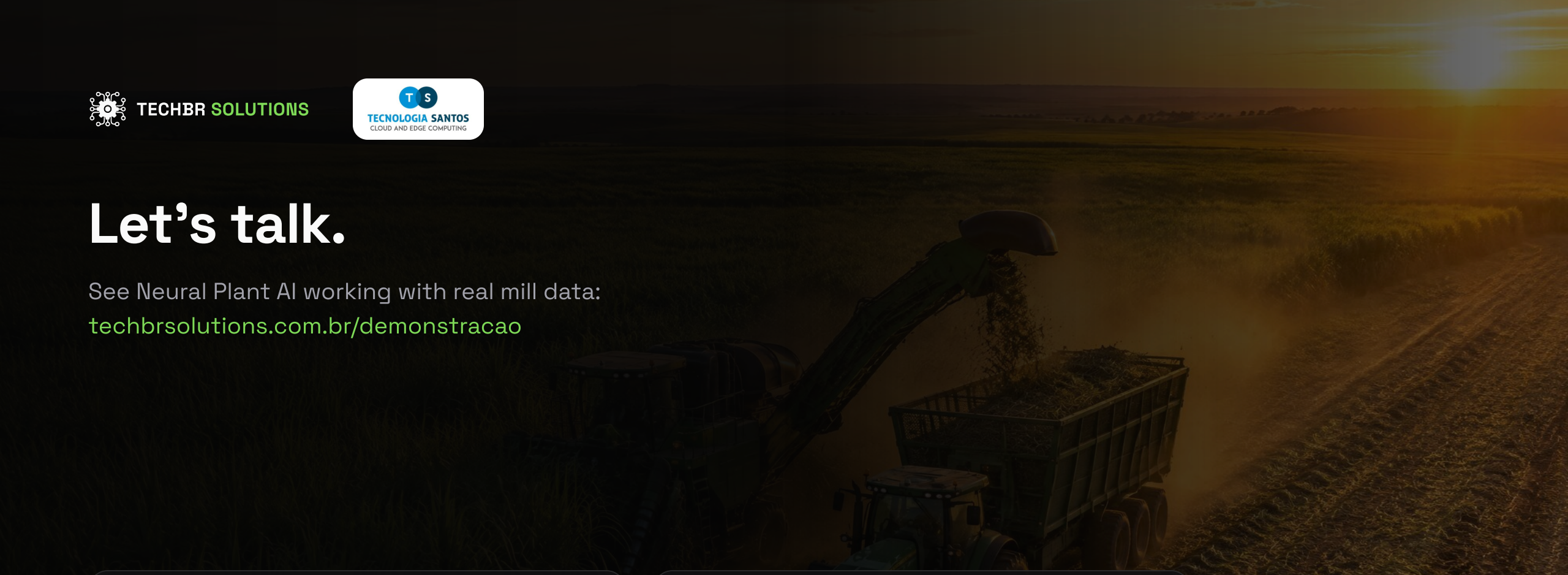
Partner systems exposed through APIs, read by our connectors into the same history and dashboards.

Joint delivery

One project at a client site, each partner owning its part, one plan.

Referral and resale

Bringing Neural Plant AI and Crystals to new mills in the partner's market.



TECHBR SOLUTIONS

TECNOLOGIA SANTOS
CLOUD AND EDGE COMPUTING

Let’s talk.

See Neural Plant AI working with real mill data:
techbrsolutions.com.br/demonstracao

TECHBR SOLUTIONS

Victor Sued

Founder, CEO & Applied AI Engineer

victor.sued@techbrsolutions.com.br
+55 16 97406-8484
techbrsolutions.com.br

TECNOLOGIA SANTOS

Ronaldo N. Santos

Infrastructure Specialist & Business Contact

support@tecnologiasantos.com
+55 11 95456-1103
tecnologiasantos.com