



Automation Engineering Instrumentation and Control



Excellence in Engineering



Contents



Summary

03

History

04

What We Do

05

Sectors

10

Case Studies

17

Partners & Technology

24

Clients

25

27 Years

internationally
delivering
successful
results.



History

C&P has developed over 250 projects for industrial automation, smart buildings, electrical engineering, instrumentation, software implementation, telemetry, energy efficiency, and industrial assemblies in Brazil and Latin America.

Progress

High expertise in the following sectors:

- **Sanitation**
- **Petrochemical:** electrical engineering, software development and implementation, telemetry, automation and control. Most projects built for PETROBRÁS;
- **Oil & Gas:** control room, monitoring and telemetry, instrumentation and automation;
- **Nuclear, Chemical, Energy, Steel Industry, Paper and Cellulose, Cement, Smart Buildings and Food Industry:** industrial assembly and automation, control rooms, telemetry and monitoring, software development and implementation.

Key Achievements

C&P's thriving long history has resulted in effective strategic partnerships with several brand name companies, such as Honeywell, Siemens, and others, assuring to deliver the most efficient and cost-effective solution.

Brief History



C&P was initially founded in 1993 in São Paulo, Brazil, but quickly expanded to several Latin American countries, with a strong focus on Sanitation, Oil & Gas, and Energy.

One of C&P's most substantial competitive advantages lies in its Execution Model, developed by its Senior Executive Team, enabling projects' simultaneous execution with fast scalability while delivering assertive projections and cost reduction.

What We Do



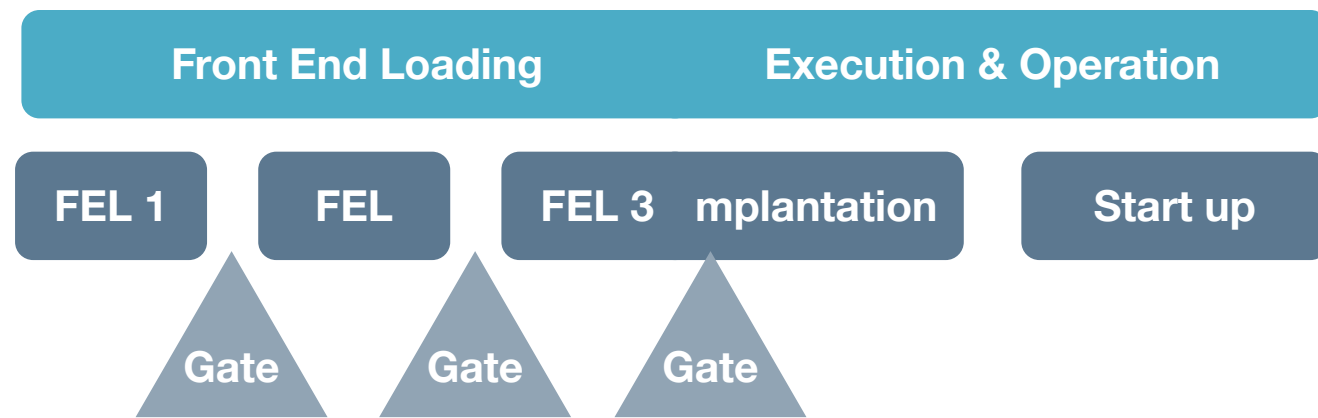
Productivity and Cost Reduction

- Conceptual and executive Electrical Engineering and Instrumentation projects
- Supply and Implementation of PLCs, DCS's, SCADA Software, Telemetry, PIMS, MES
- Process Modeling and Simulation.
- Projects Monitoring and Implementation
- Management and Monitoring of Supplies Type "EPC"
- Industrial Assemblies and Energy efficiency



Conceptual Electrical Engineering and Instrumentation Projects

– Key Activities



FEL – Front End Loading
FEL 1 – Business planning
FEL 2 – Conceptual project
FEL 3 – Basic project

- Viability Studies
- Evaluation of Technical Alternatives
- Preliminary Design
- Investment Projections (CAPEX) and Operating Costs (OPEX)
- Automation Architecture
- Engineering Flowchart (P&ID's)
- Instrument Listing
- Technical Specifications of Instrumentation / Automation
- I/O Lists
- Unifilar Diagram
- Electrical Equipment Technical Specifications
- Lighting Studies
- SPDA study



Executive Electrical Engineering and Instrumentation Projects

– Key Activities

- Loop Diagrams
- Interconnection Diagrams
- Interlocking Diagrams
- Control Room Lay-Out Plans
- Cable / Conduit Routing Plant
- Instrument Installation Detailing
- Functional Electrical Diagrams
- Power Distribution Plants
- Lighting Calculation
- Lighting Plants
- Grounding Plants and SPDA
- Materials Listing
- Operation Manuals and Automation Operating Procedures



Supply And Implementation Of Plcs, Dcs's, Scada Software, Telemetry, Pims, Mes

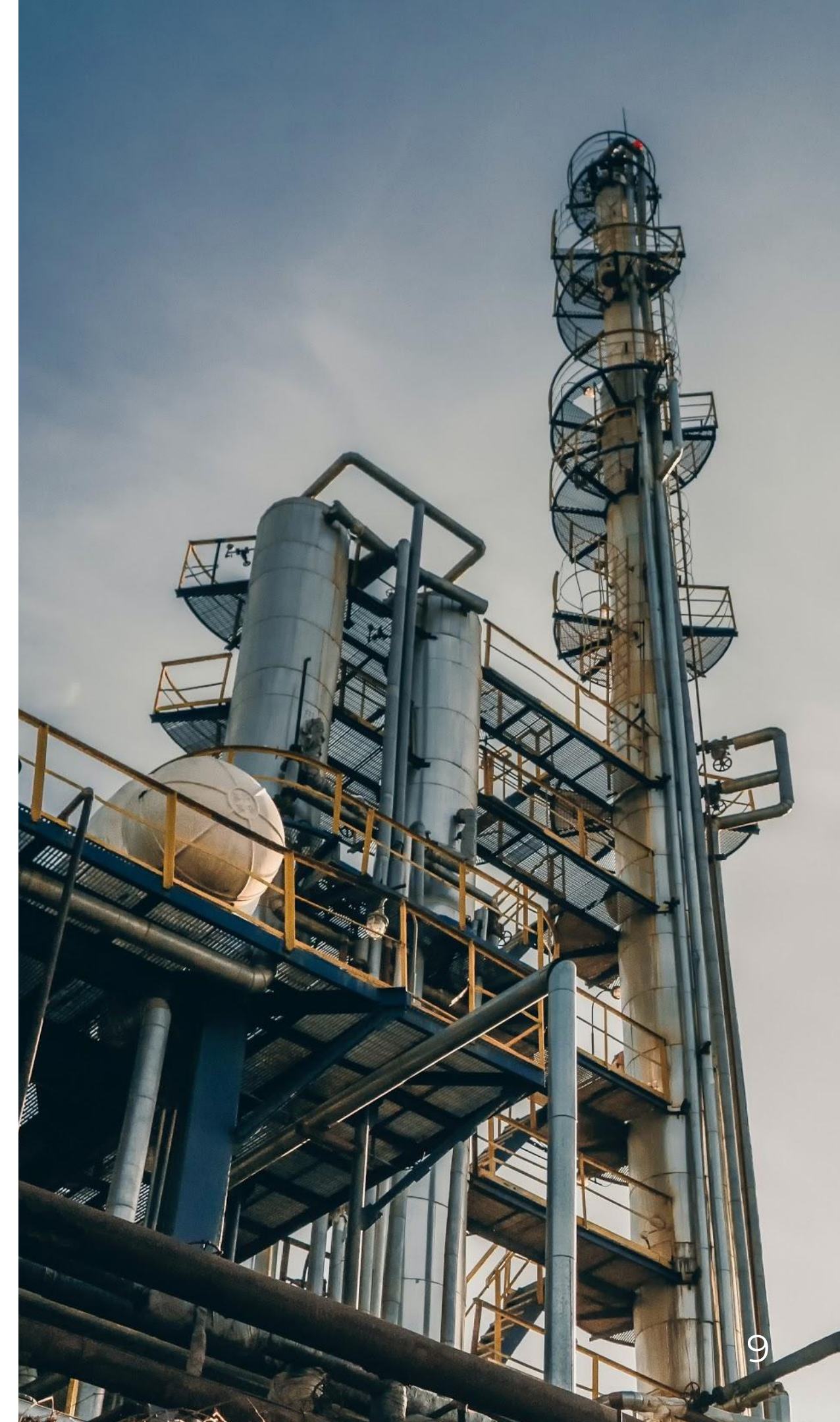
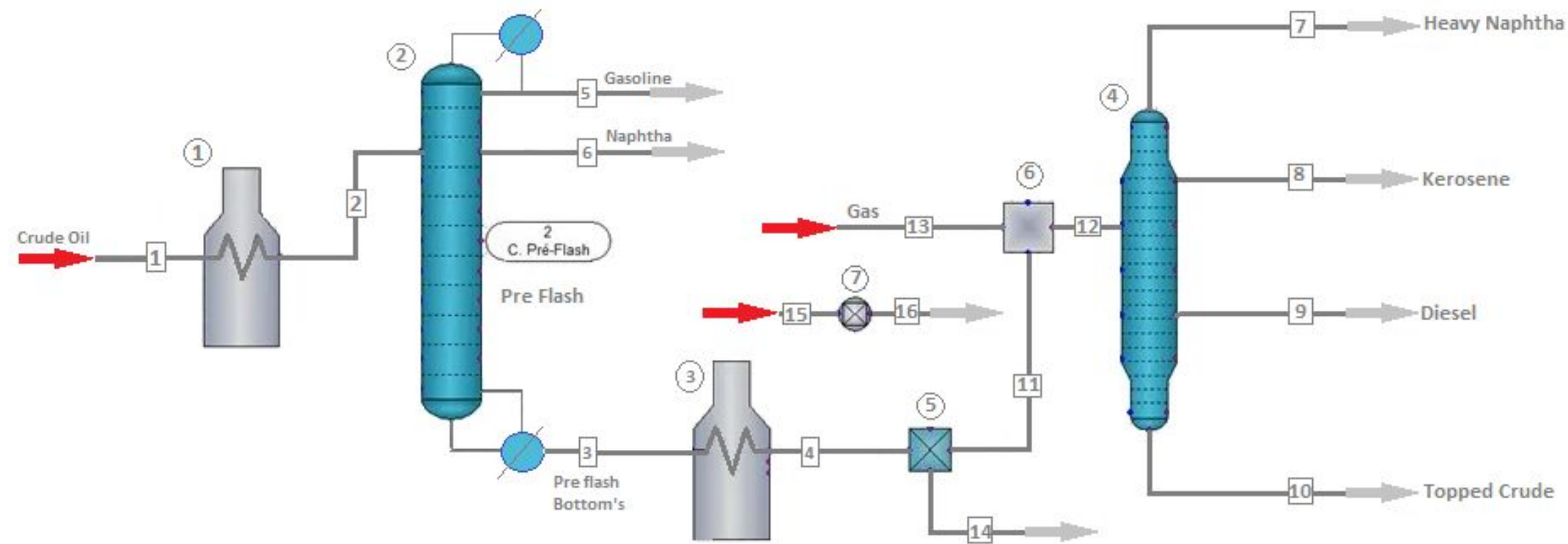
– Key Activities

- Automation Assembly Panels
- Supply of PLCs, DCS, SCADA
- Software Development PLC Application
- DCS Application Software Development
- SCADA Software Development
- PIMS Development
- MES Development
- Telemetry Implementation
- Radio Link Studies
- Factory Acceptance Tests (FAT), Site Acceptance Tests (SAT)
- Commissioning
- Start-up



Process Modeling and Simulation

– Illustration



Sectors



Sanitation



Chemical



Oil and Gas



Nuclear



Food and Beverage



Energy



Steel Industry and Cement



Information Technology



Smart Building



Petrochemical

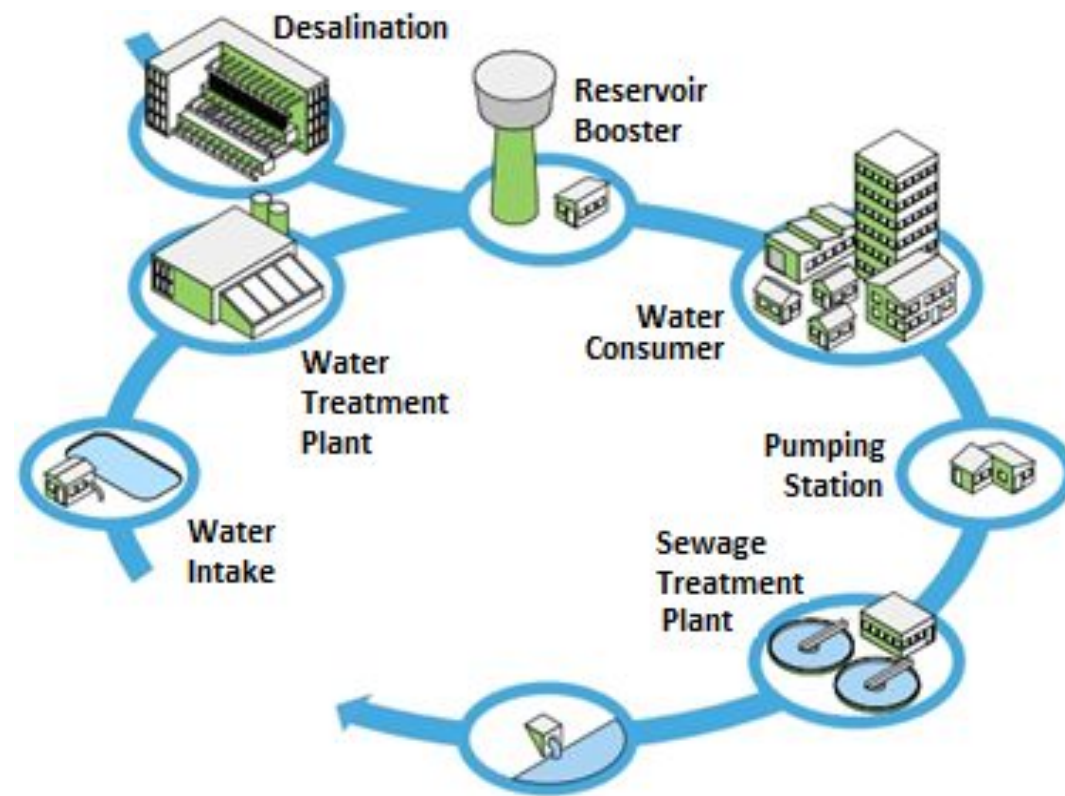


Automobile



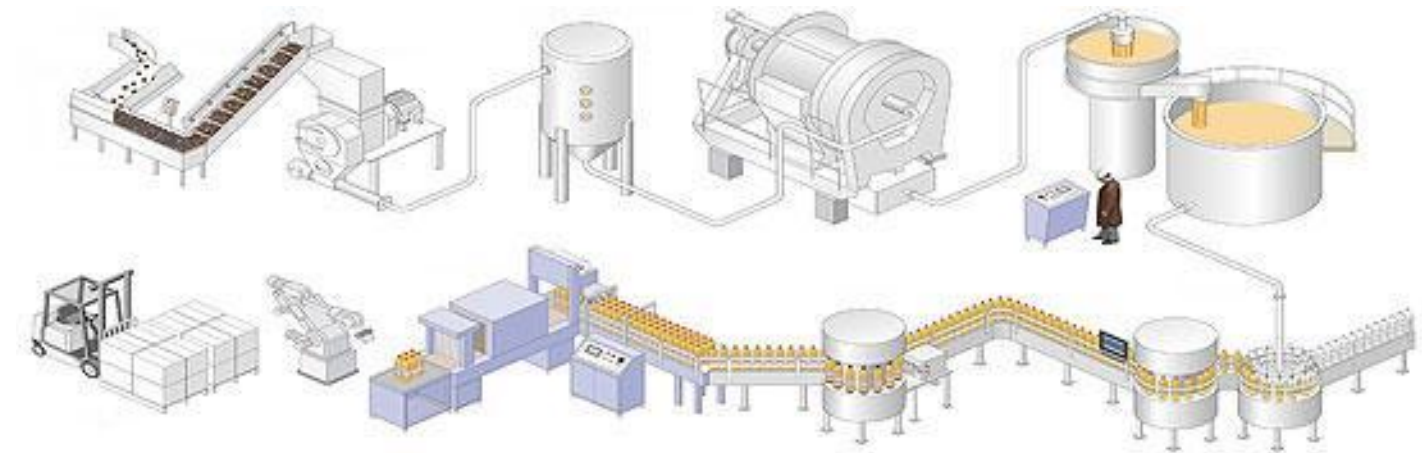
Paper and Cellulose

Sanitation



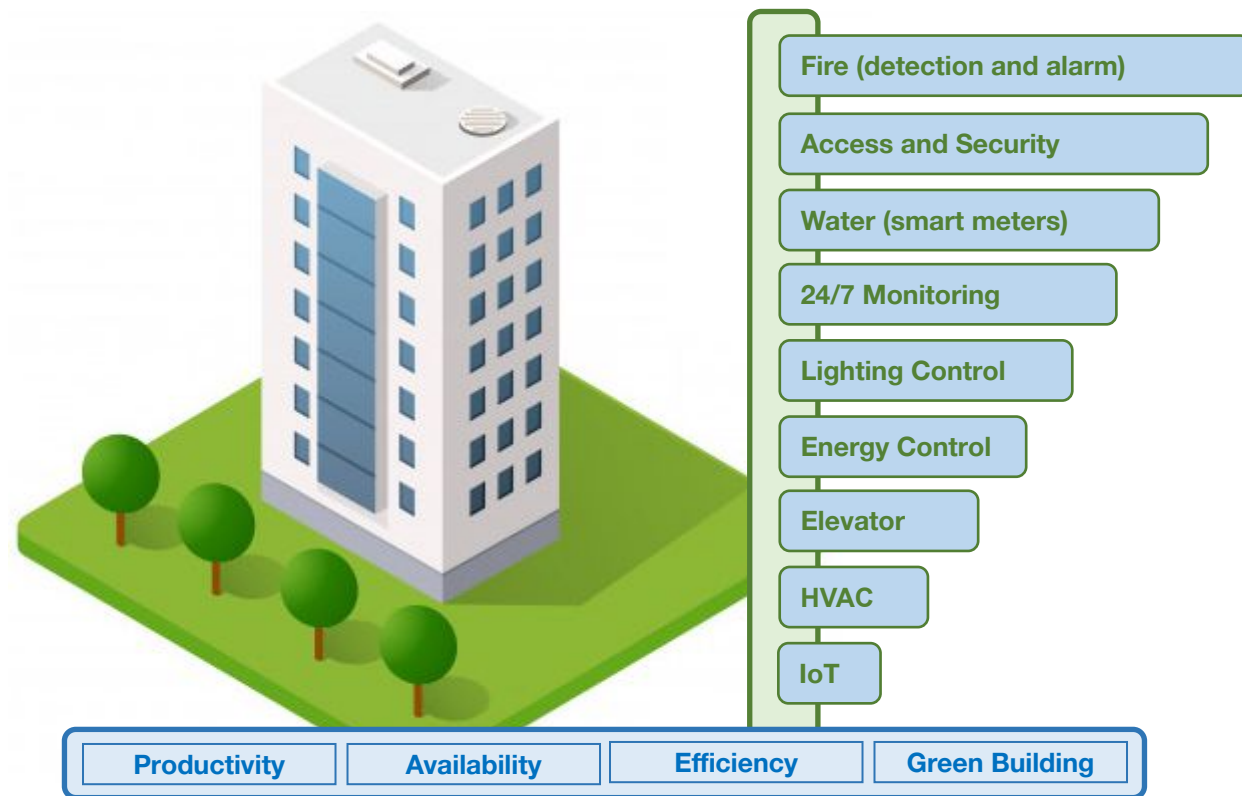
- Water Treatment Station
- Sewage Treatment Station
- Water Pumping Stations
- Sewage Pumping Stations
- Macro Measurement
- Pressure Reducing Valves (PRV)
- Telemetry

Food and Beverage



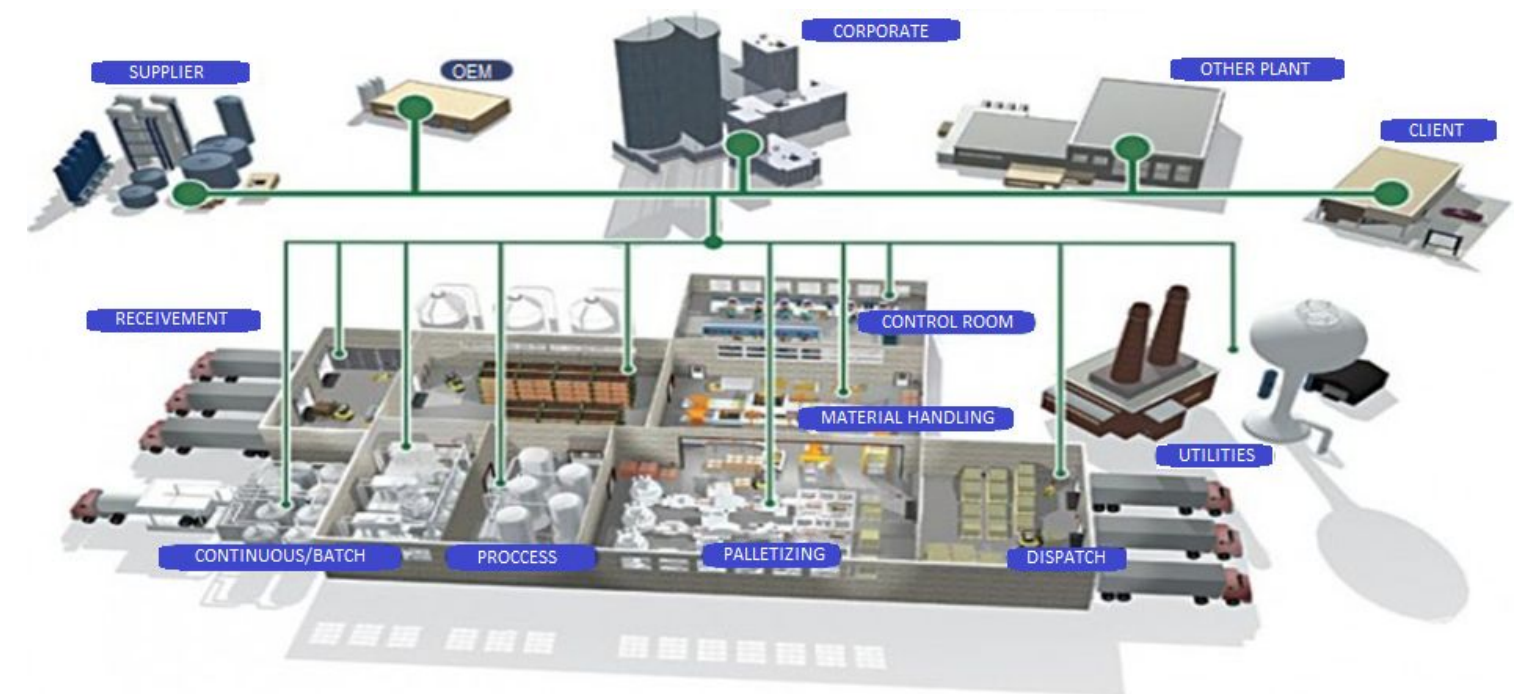
- Regulatory Power Codes
- Material Handling, Automation and Packaging
- Supply Chain Management, Logistics
- Continuous and Batch Process
- Mass and Energy Balance
- Spray Drying
- Clean-In-Place (CIP), Steam-In-Place (SIP)

Smart Building



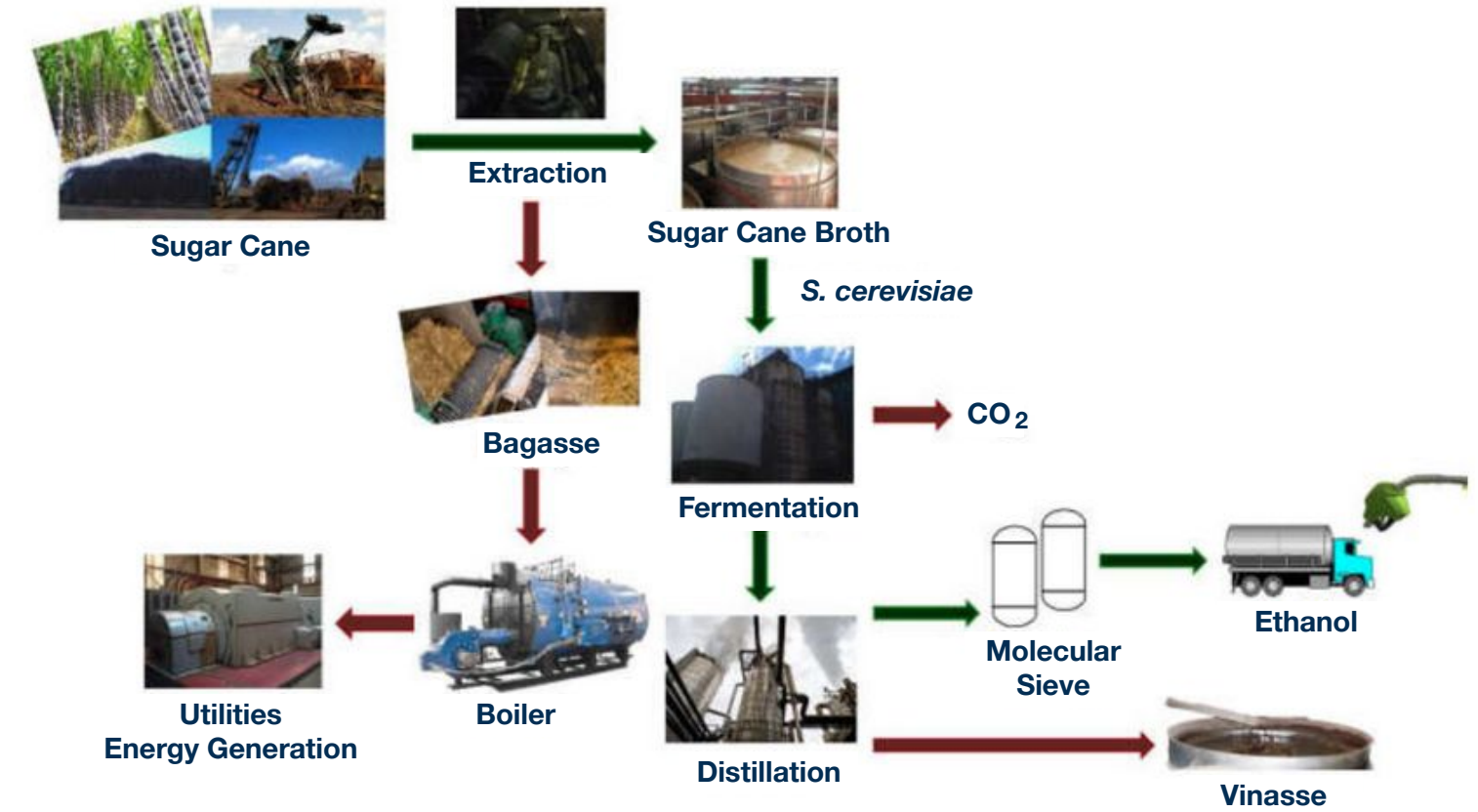
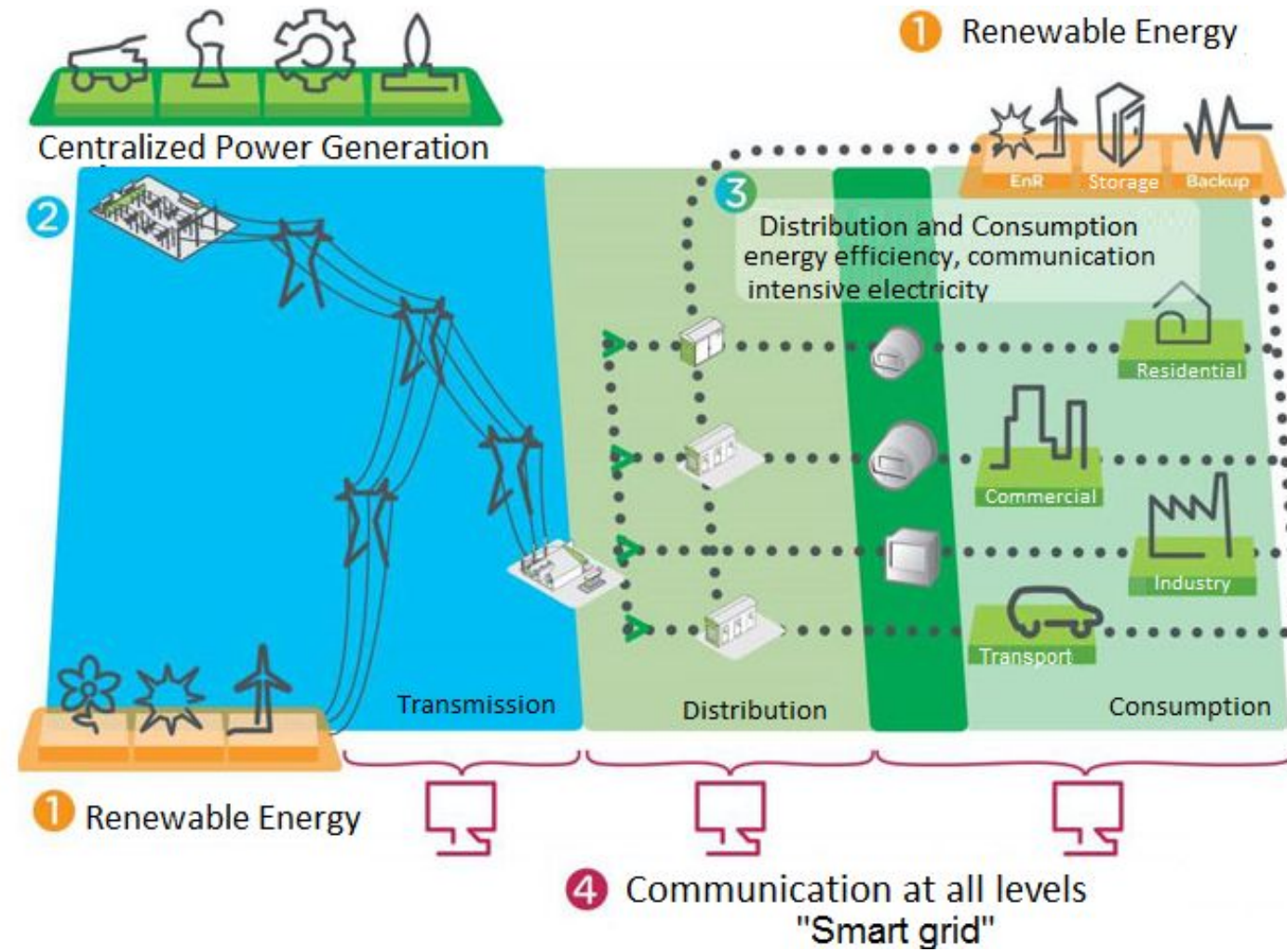
- Building Management System
- Energy Optimization
- Lighting Control
- Access Control
- Intruder Detection
- HVAC and CFTV
- Fire Protection

Chemical



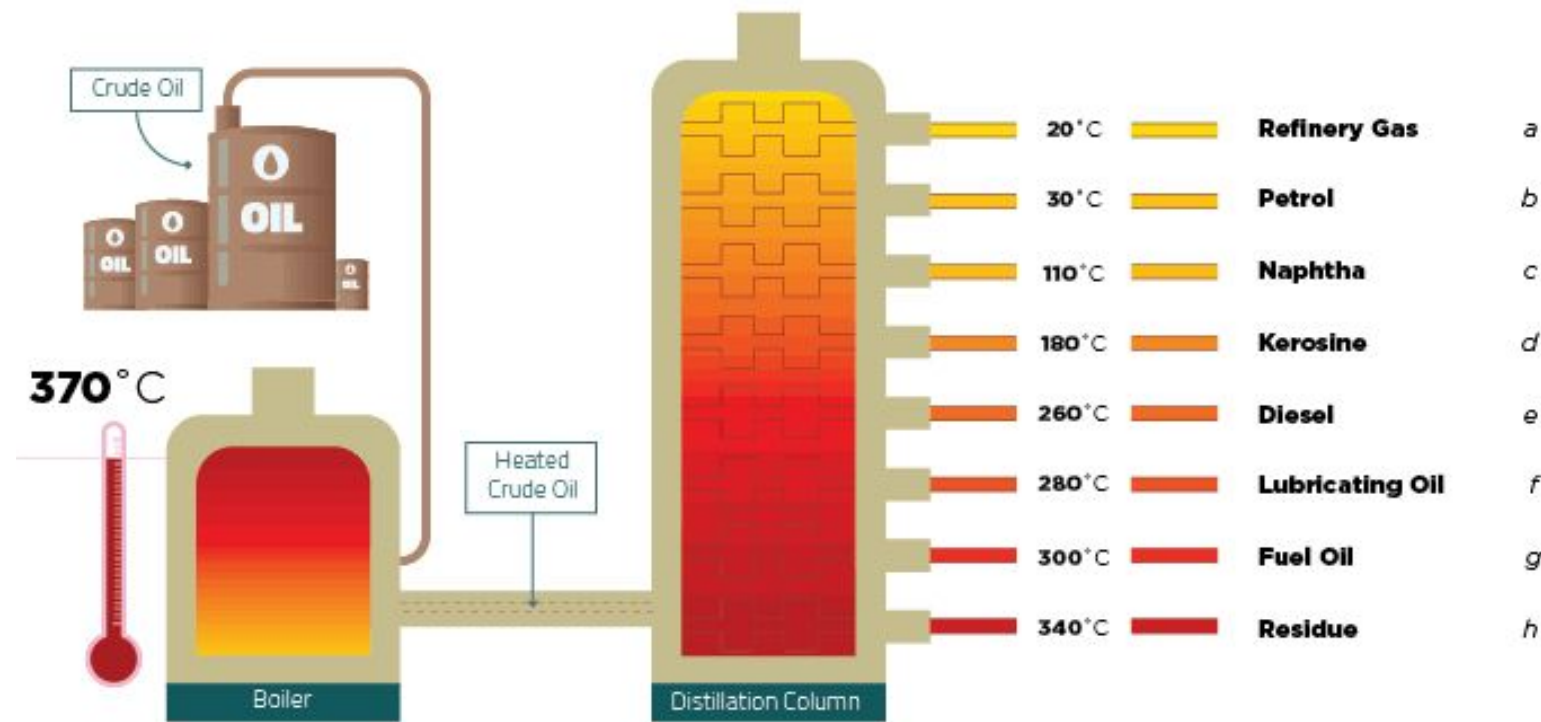
- Raw Material (tank farm distribution and management)
- Burner Management Systems (BMS)
- Separation: distillation, crystallization, filtration
- Conversion: polymerization, synthesis, fermentation
- Utilities
- Palletizing
- Extrusion, Coating, Galvanizing

Energy



- Generation
- Distribution
- Small Hydro Power
- Thermoelectric Plants
- Transport
- Renewable Energy
- Energy Efficiency
- Ethanol Plants

Petrochemical



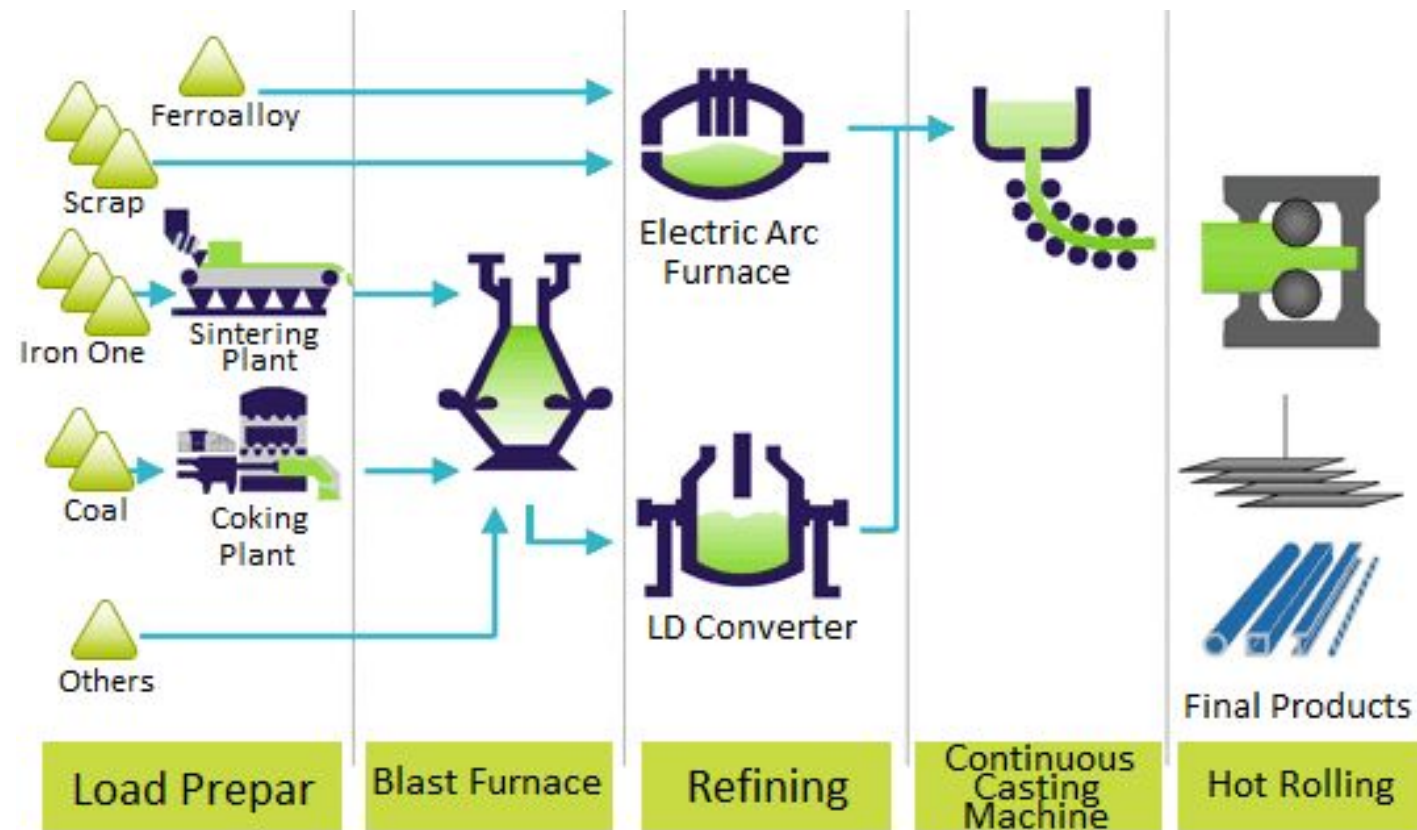
- Extraction
- Platform
- Refinery
- Loading Terminals
- Storage
- Transportation (pipeline)

Oil and Gas



- UPGN (Natural Gas Processing Unit)
- Extraction
- Transport and Distribution
- Storage
- Liquefied Gas
- City Gates
- PRS (pressure reduction station)

Steel and Cement



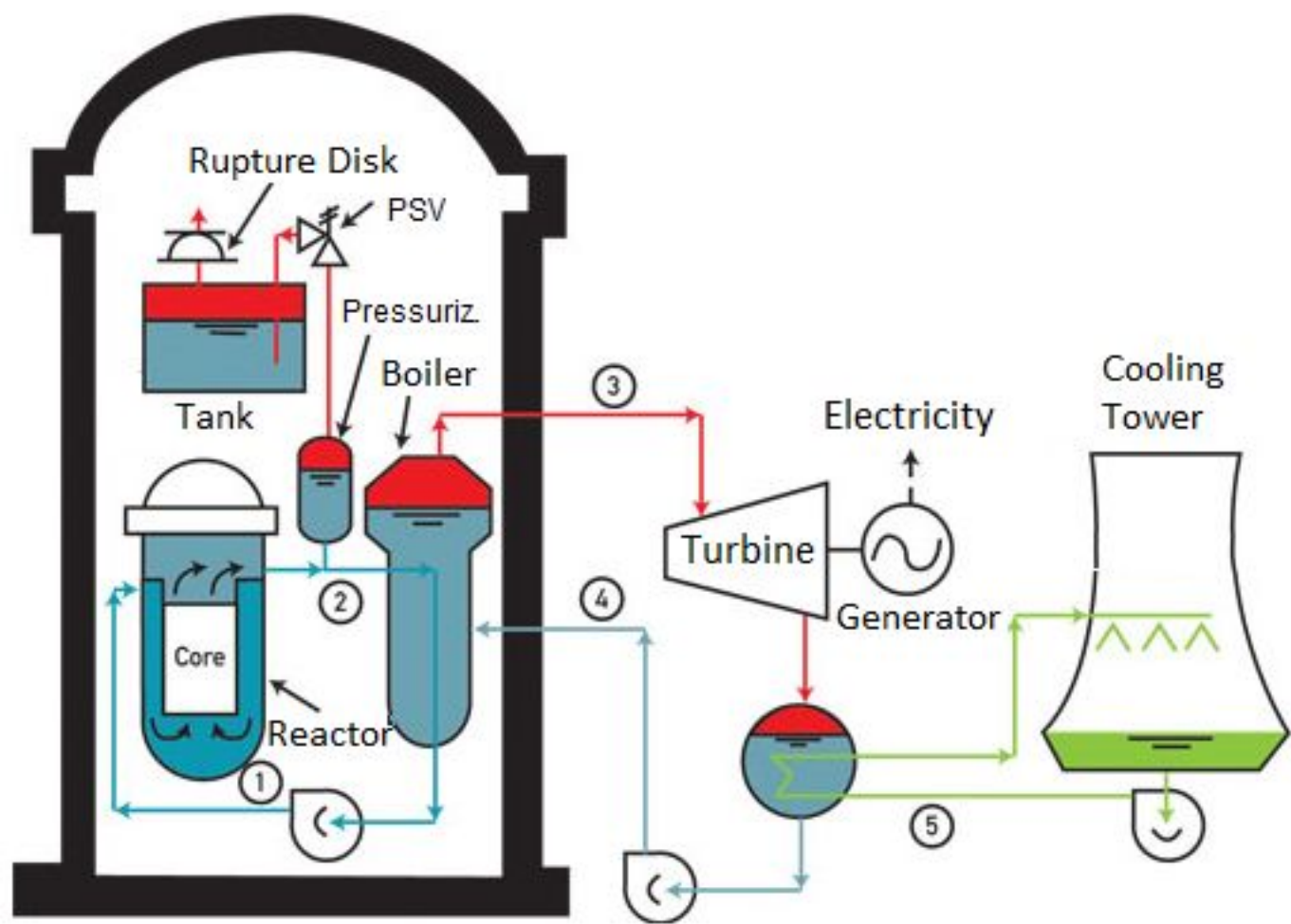
- Ore Extraction
- Storage Yard
- Sintering, Coke Oven
- Reduction
- Steelmaking
- Desulfurization
- Casting
- Lamination

Automobile



- Press Shop
- Paint booth
- Robotics
- Supply Chain, Logistics
- Utilities
- Energy

Nuclear



- Extraction
- Powder Factory
- Tablet Factory
- Enrichment
- Utilities
- Generation

Information Technology



- Data Center
- Industrial Network
- Database
- Information Management
- Security in Data Networks
- Software Development
- Big Data

Case Studies



Case Study 1: EDP

Case Study 2: Leiner

Case Study 3: ALGAS

Case Study 4: SABESP

Case Study 5: INB

Case Study 6: Ciplan

Case Study 1: EDP

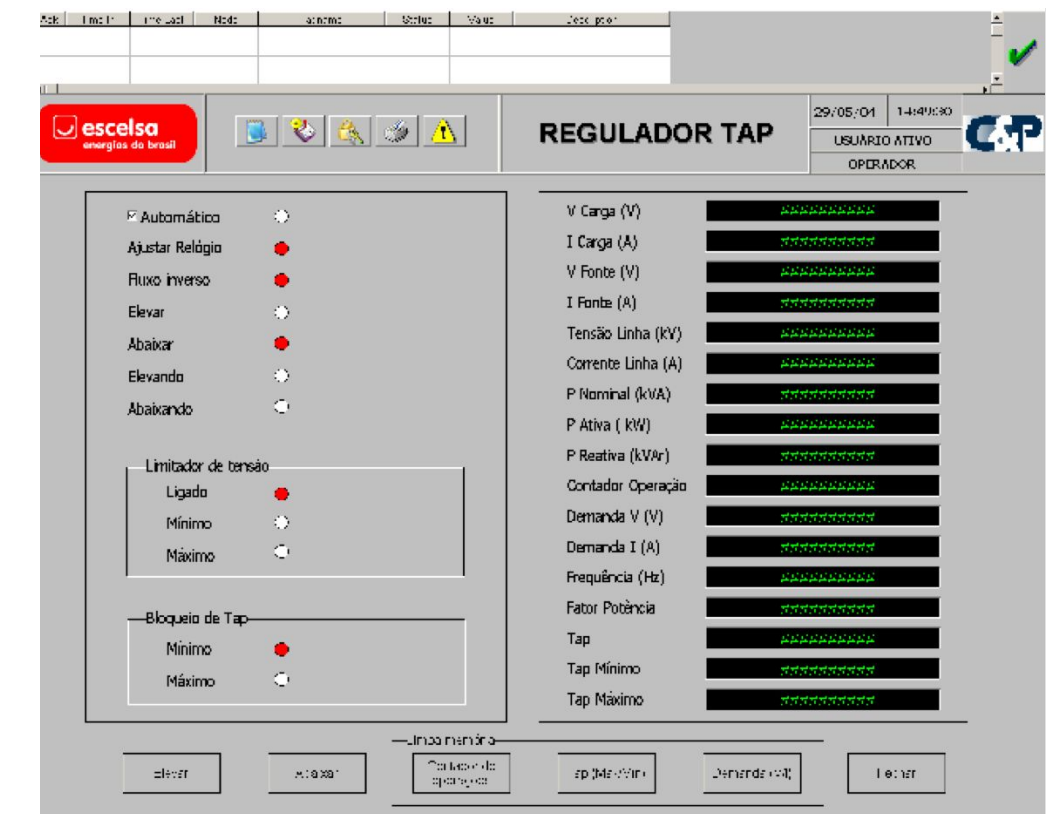
EDP is one of Brazil's largest energy utility suppliers and distributors, servicing nine states with approximately 3.1 million consumers. This case applied to the Brazilian state of Espírito Santo.

PROBLEM: Although reclosers are usually located in the primary distribution network, substations can also carry them to re-establish power supply interruptions faster and more efficiently, protecting the system against permanent or temporary faults, such as those caused by natural events.

EDP hired C&P to automate the equipment's monitoring and controlling, instead of manually — a time-consuming and expensive task.

SOLUTION: C&P engineered a solution through the ScateX SCADA software (EFACEC) at EDP's Operational Control Center to reclose and supervise the reclosers installed along the power transmission lines. Cellular (GPRS) and radio modems provided communication between the devices and the Operational Control Center.

RESULTS: The project significantly reduced production losses and improved the final product quality. Additionally, the new and improved equipment and processes drastically decreased electricity consumption — approximately 20% in overall reduction.



Case Study 2: Leiner

Leiner is a worldwide gelatin manufacturer. This case refers to Leiner's plant in Maringá, Brazil, which produces 8 tons of gelatin a year.



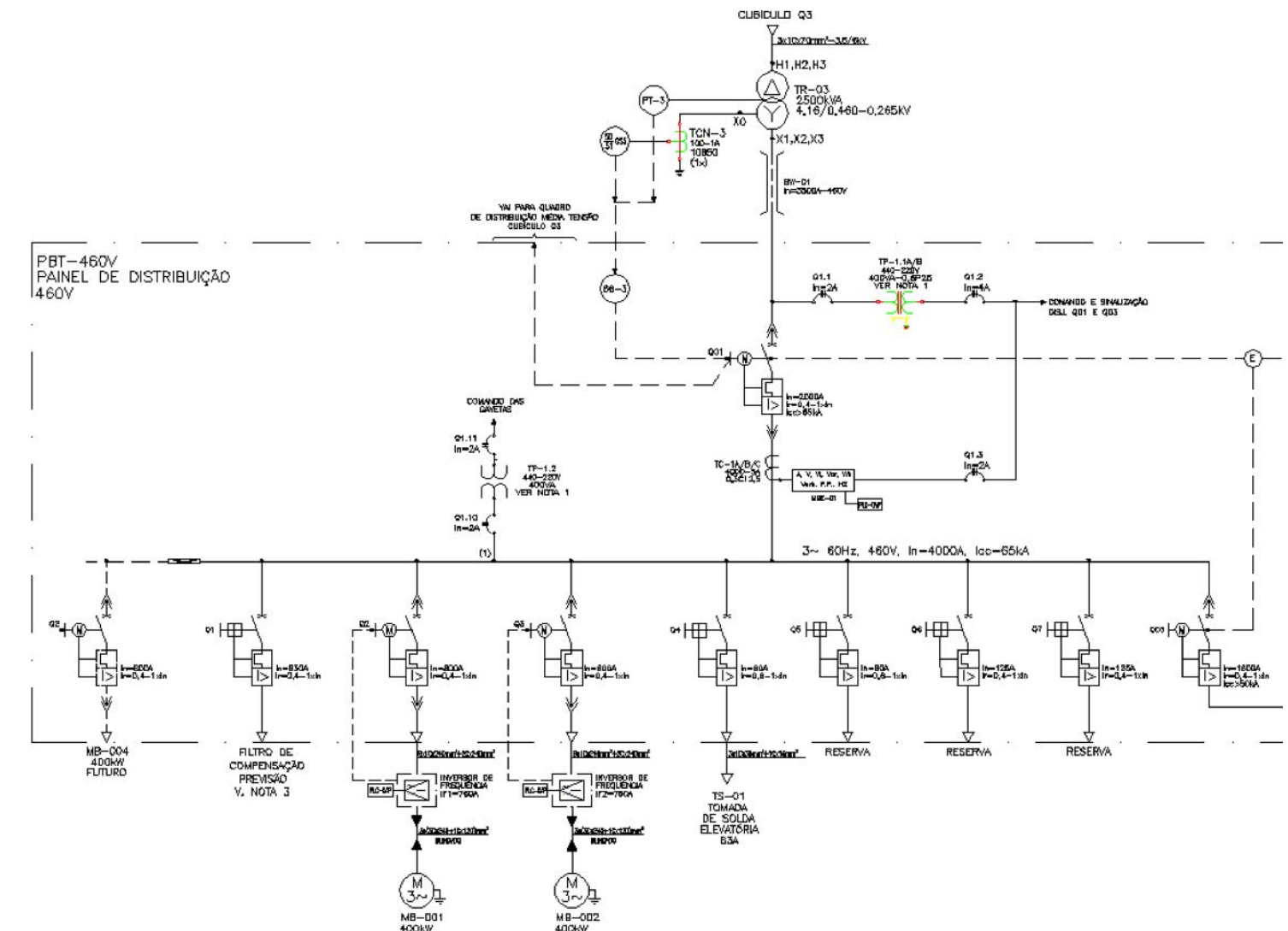
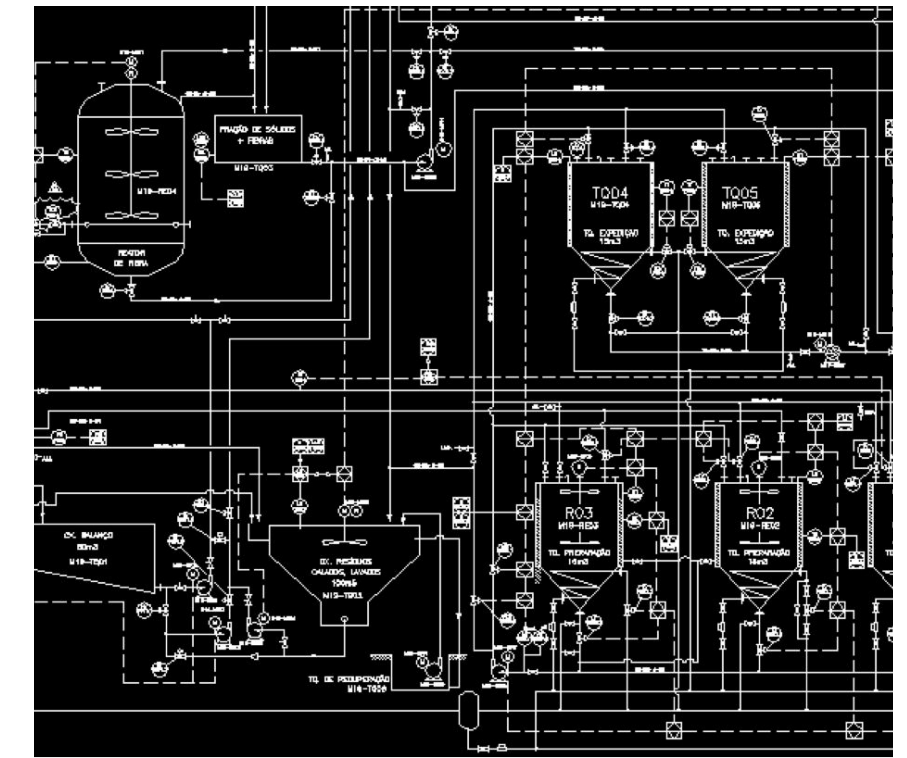
PROBLEM: The Leiner gelatin plant in Maringá, Brazil, had ongoing subpar production and final product quality issues resulting from old installations and equipment, additionally driving up costs, negatively impacting Leiner's market share.



SOLUTION: C&P planned and executed an electrical and engineering automation project, including technical feasibility studies and cost renovation. The goal was to automate all factory operations and replace old electric motors with ones with frequency inverters.



RESULTS: The project significantly reduced production losses and improved the final product quality. Additionally, the new and improved equipment and processes drastically decreased electricity consumption — approximately 20% in overall reduction.



Case Study 3: ALGAS

Algas supplies gas to the industrial, automobile, residential, commercial, generation and cogeneration sectors in Alagoas, Brazil.



PROBLEM: Manual management of a statewide natural gas distribution process carries a high risk of accidents and pipeline ruptures, potentially leading to supply interruption, given the difficulty of providing the high-demand information necessary for an efficient decision-making process. ALGAS hired C&P to automate the entire delivery flow and control operation, from planning to execution, for the state of Alagoas, Brazil.

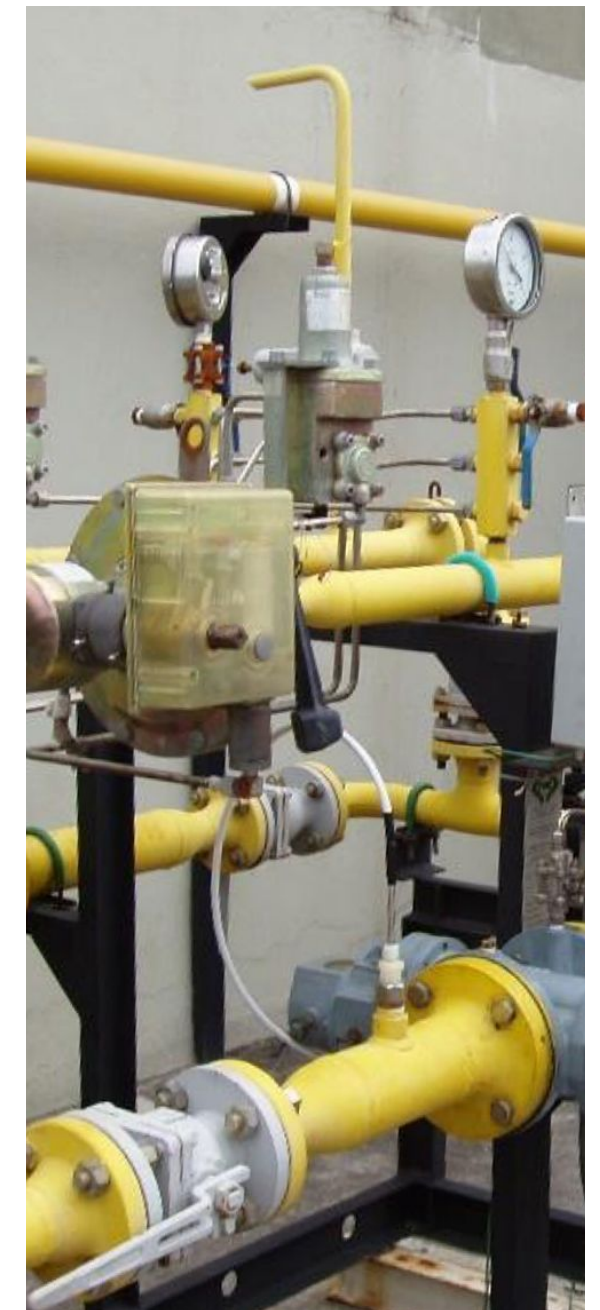
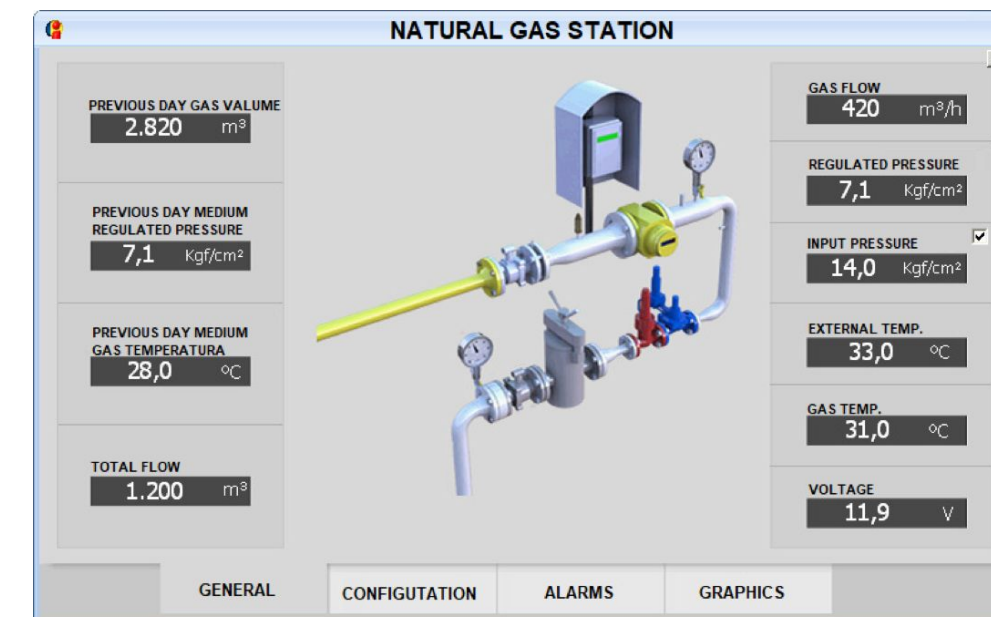
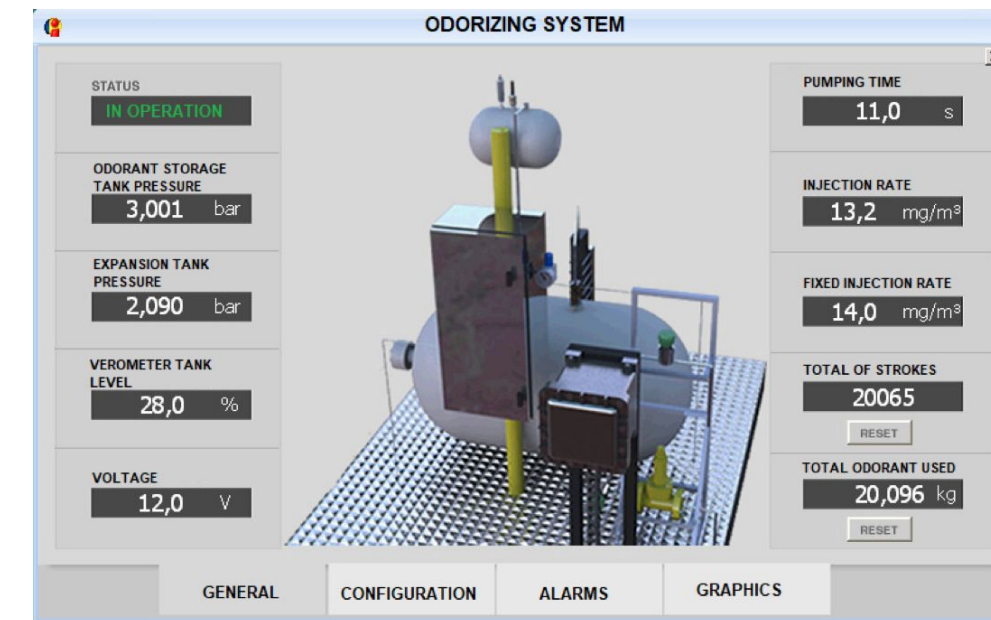


SOLUTION: C&P implemented SCADA iFix and Proficy Historian (GE Digital) software to provide a personalized solution for real-time monitoring and control. Field devices collected and communicated the information via cellular modems.



RESULTS: C&P's solution provided full supervision and control of the entire natural gas distribution for the state of Alagoas, consisting of 500 km of gas pipelines, 50 sites with 2 City Gates, 18 reduction and metering stations, 30 pressure reducing regulation skids for vehicle natural gas refueling stations, 1 odorizing unit, 1 gas chromatograph, and 48 natural gas control valves.

Additionally, the implemented system also provided tools for process simulation, natural gas distribution operation planning, monitoring natural gas delivery performance coefficients, asset availability, analysis, and correlation of historical data, enabling continuous operation optimization.



Case Study 4: SABESP

Sabesp is a Brazilian water and waste management company. It provides water and sewage services to residential, commercial, and industrial users in São Paulo and in 363 of the 645 municipalities in São Paulo State.



PROBLEM: Manual management of a water distribution system supplying 29 cities and 20 million consumers often lacks the information speed for an efficient decision-making process, leading to accidents, main ruptures, and consequently, supply interruptions.



SOLUTION: C&P implemented Spectrum Power SCADA and PI historian (OSIsoft) software to provide a personalized solution, including a total of 150 thousand tags at the SABESP's Operational Control Center. The solution also allowed web access to all company units.



RESULTS: Full automated supervision and control for the entire distribution area within São Paulo's metropolitan region, involving 1270 km of mains with 298 reservoirs, 146 control valves, 453 pumps, and 284 flow and pressure management points.

The solution also provided tools for process simulation, water supply operation planning, monitoring of water delivery performance coefficients, availability of assets and water quality, and analysis and correlation of historical data, enabling continuous optimization of the operation.



Old Operational Control Center



Current Operational Control Center

Case Study 5: INB

Brazilian Nuclear Industries (INB) operates in the field of uranium production — mining, processing, enrichment, UF₆ to UO₂ conversion and fabrication of fuel assemblies for Brazilian nuclear power plants.



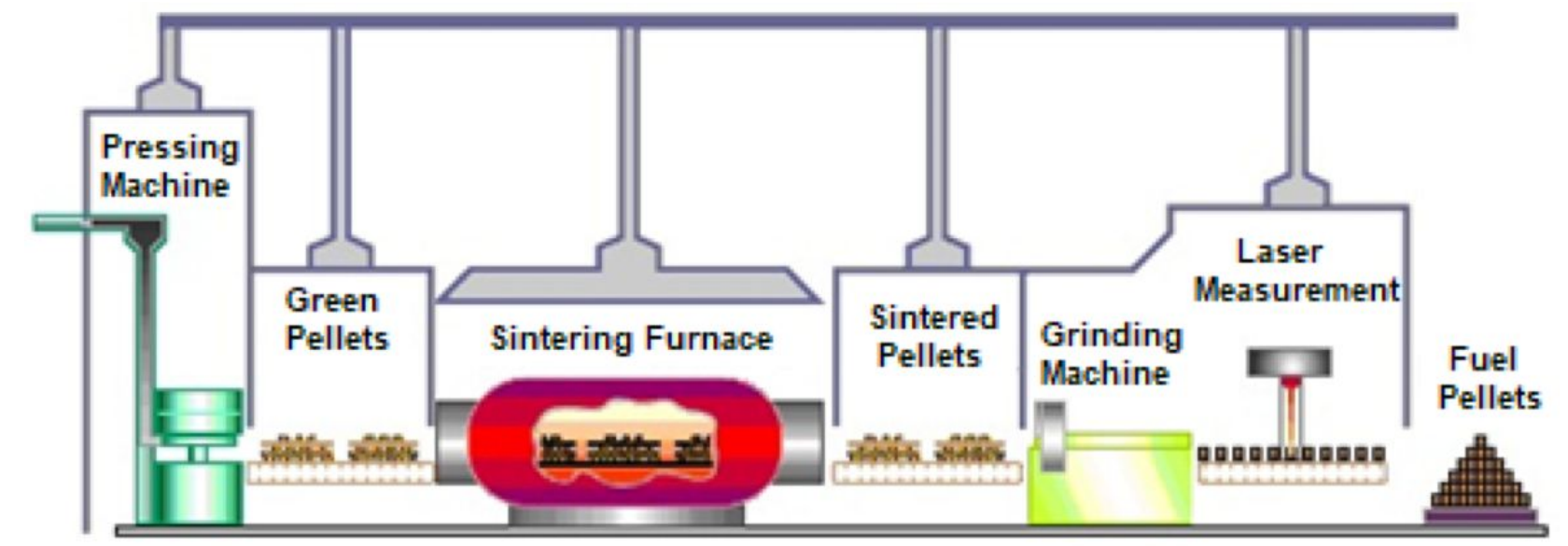
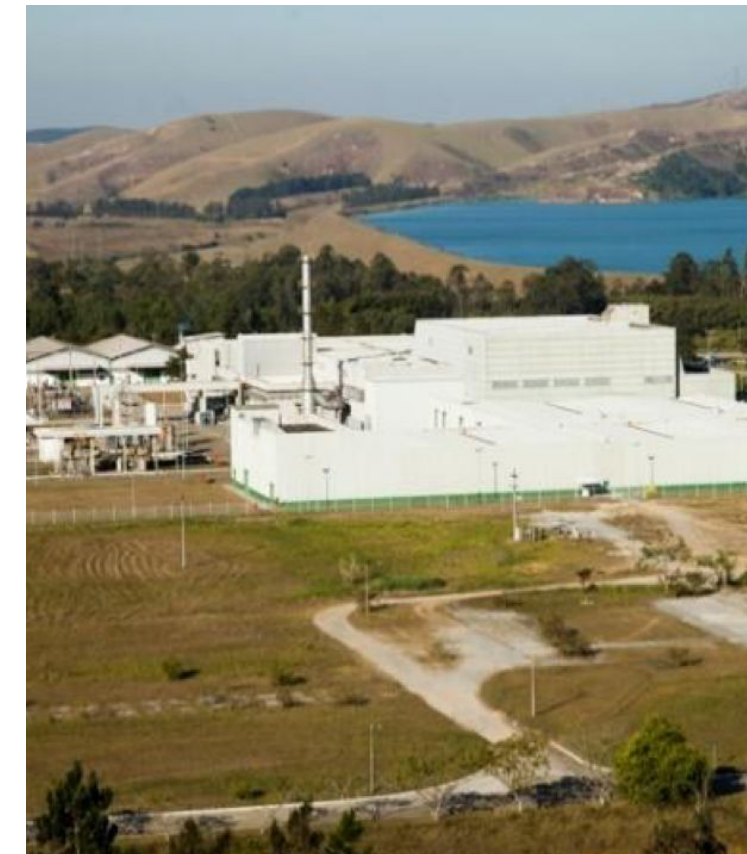
PROBLEM: Founded in 1988, Brazilian Nuclear Industries (Indústrias Nucleares do Brasil - INB) produces nuclear fuel for the Nuclear Power Plants of Angra 1 and Angra 2. The Uranium Dioxide (UO₂) powder and pellet manufacturing process was carried out in Europe at a high cost, preventing nuclear technology development in the country.



SOLUTION: C&P developed a basic and executive instrumentation and industrial automation project to produce 120 tons of rod/assembly per year. From the reception of the raw material to the final product and the building units, all operations were automated using Siemens PLC's and SCADA software.



RESULTS: As a result, INB can set up nuclear fuel powder and pellet factories, achieving technological independence and reducing costs. C&P delivered the project ahead of schedule, providing a 20% savings.



Case Study 6: Ciplan

Ciplan works to develop efficient products and services for civil construction. The company is part of the French group Vicat, and is recognized as one of the largest in the segment of Cement and Aggregates in the country.



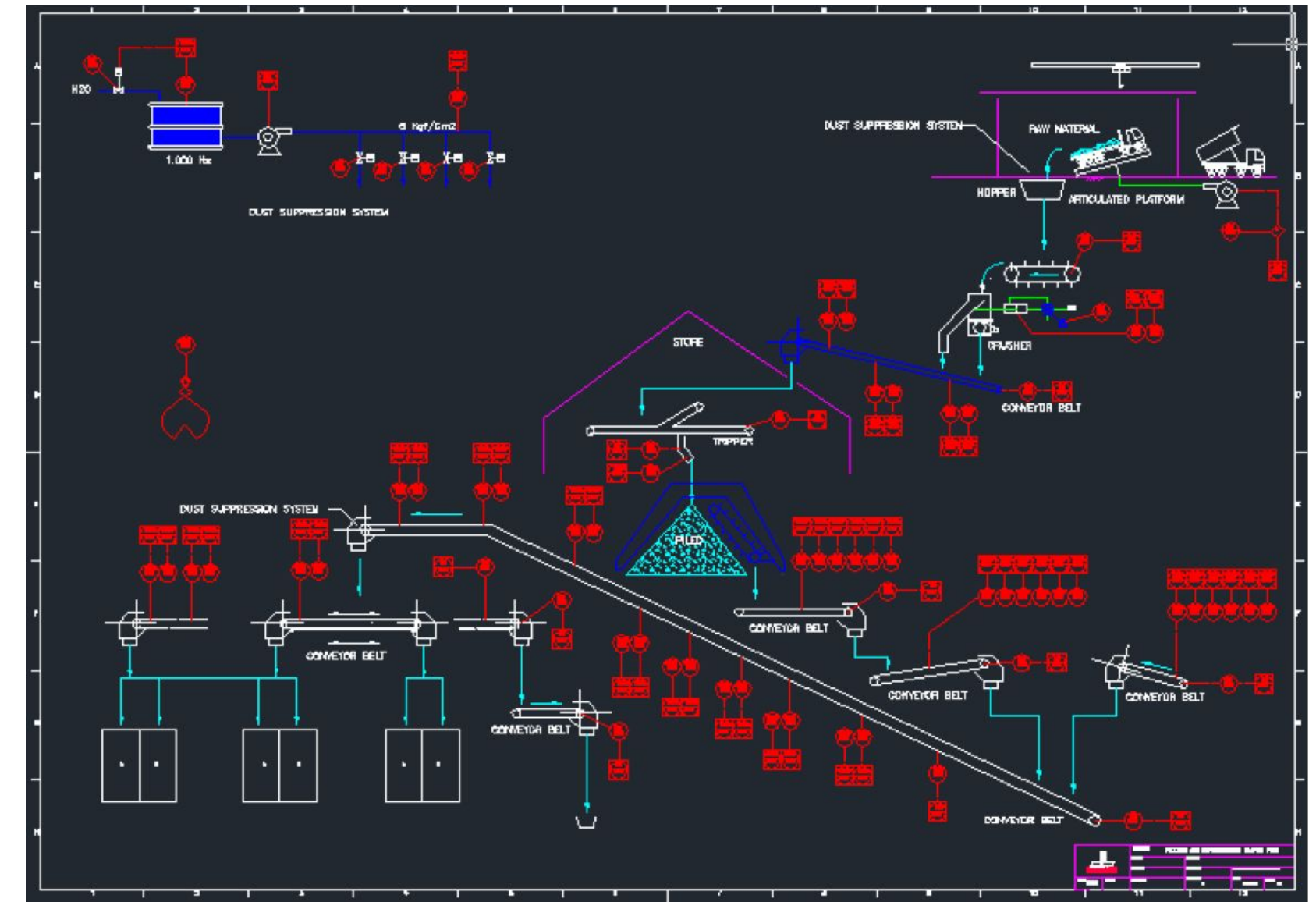
PROBLEM: Founded in 1968, Ciplan operates a factory in Sobradinho, Federal District, with an annual production capacity of 3.2 million tons of cement. The factory needed to increase its ability to receive and transport raw materials by 330 t/h to expand its production.



SOLUTION: C&P developed a basic and executive instrumentation, automation, and electrical engineering project, including technical feasibility studies and expansion implementation costs. All operations were automated, including the use of Rockwell PLC's, smart MCC's, DH + Fieldbus, and InTouch SCADA software.



RESULTS: Expansion of the reception and storage of raw materials was implemented, making it possible to increase cement production at the factory. The project was completed ahead of schedule, providing 15% of overall savings to the original quote.



Partners & Technology



Rockwell
Automation

Schneider
Electric

SIEMENS

ABB



Wonderware

elipse
software




EMERSON

Honeywell

 **OSI**soft



AVEVA

SmartPlant
Instrumentation
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Clients



Thank You.



Brazil:

cpic@cpic.com.br

www.cpic.com.br

USA:

222 W Merchandise Mart, Ste 1212,

Chicago, IL 60654

flavia@idealunchbox.io

+1 (224) 659-3593

