

**HVAC, COGENERATION,
ENERGY EFFICIENCY**



About Us

| Founded in 1978

**| Leading company in Brazil in HVAC and Cogeneration
Design for more than 46 years**

| Pioneer in Brazil in Energy Efficiency Market

**| International experience with projects in South America,
Mexico, Africa and Western Asia**

Introduced several new techniques in Brazil, as:

COGENERATION WITH NATURAL GAS

NATURAL GAS AIR CONDITIONING

CHILLED WATER THERMAL STORAGE

ICE THERMAL STORAGE

GROUND SOURCE HEAT PUMP

DESICCANT COOLING

SOLAR ENERGY IN HVAC

PRIMARY-SECONDARY-TERTIARY CHILLED WATER CIRCUITS

HVAC SYSTEMS



WESTIN LAGUNAMAR OCEAN RESORT , CANCUN, MÉXICO

One of the largest hotels in the region, with 840 suites, all of them with ocean view.

1,600 Tons chilled water plant with 4 centrifugal chillers and ground source heat pump.



SHERATON HOTEL BUENOS AIRES - ARGENTINA

- | 2,500 Tons,
- | Largest Hotel in Latin America;
- | Design of new thermal systems (air conditioning, chilled water, heating, hot water, automation);
- | Retrofit done in 1991 expansion, without interrupting the hotel operation (planning, coordination, etc);
- | High efficiency chilled and hot water systems;
- | High COP centrifugal chillers
Primary-secondary chilled water circuits (variable flow);
- | Full systems automation (Metasys)



Sheraton Santiago, Chile - 1,120 Tons;

Sheraton Barra, Rio de Janeiro, Brazil - 800 Tons;

Sheraton Macaé, Brazil - 450 Tons;

Sheraton Niemeyer, Rio de Janeiro, Brazil - 1,500 Tons;

Sheraton México City - 600 Tons (retrofit);

Westin Regina Resort - 900 Tons (retrofit).



PETROBRAS OFFSHORE PLATFORMS – VERMELHO E PARGO

- | Complet Air Conditioning, Mechanical Ventilation and Refrigeration;
- | Fully compatible with international standards,
- | Full follow-up of construction and commissioning (done in shipyard in Rio de Janeiro)



CHILLED WATER STORAGE SYSTEMS

- More than 30 large storage tanks built since 1985, in Brazil, Chile and Argentina;
- Design for critical facilities like the ones for Rede Globo TV Studios, Optiglobe Datacenters in São Paulo and Rio de Janeiro;
- We designed and patented the chilled water distribution system, used in our designs since the first tank. This concept became “the standard water distribution system” in Brazil.



ALMIRANTE TOWER

ONE OF THE MOST MODERN OFFICE BUILDINGS IN RIO DE JANEIRO, WITH:

- | 1,800 Tons chilled water plant;
- | One chilled water loop with variable chilled water flow;
- | Underfloor air distribution system (the first made in Brazil);
- | High performance in indoor air quality.



MARIO HENRIQUE SIMONSEN OFFICE COMPLEX

MARIO HENRIQUE SIMOMSEN OFFICE COMPLEX IN RIO DE JANEIRO, WITH 7 BUILDINGS INCLUDES:

- | A chilled water plant with 5 absorption chillers e 2 electrical screw chillers, with a total capacity of 3,500 Tons;
- | It is the largest natural gas cooling system in the country;
- | Primary-secondary variable chilled water loops.



OPTGLOBE DATA CENTERS

These two data centers (Rio and Sao Paulo) are in the largest ones in the country, serving as the mains Internet Hubs for submarine cables arriving in Rio and Sao Paulo.



OUROFINO - DRUGS MANUFACTURE PLANT

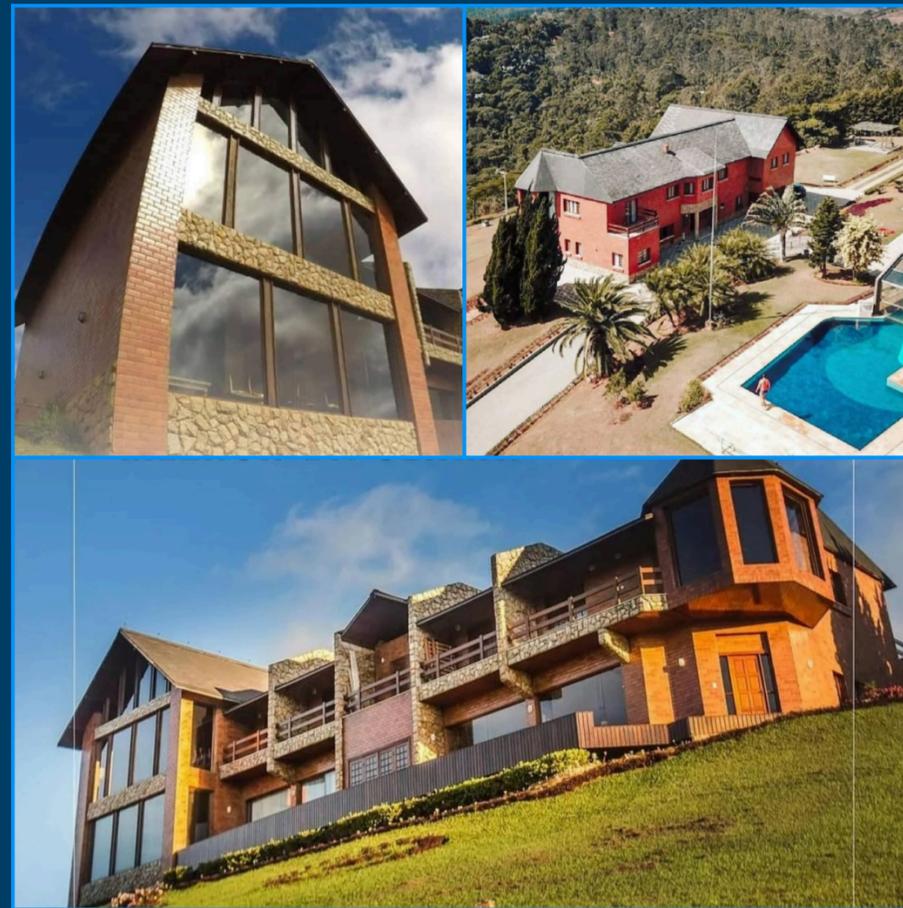
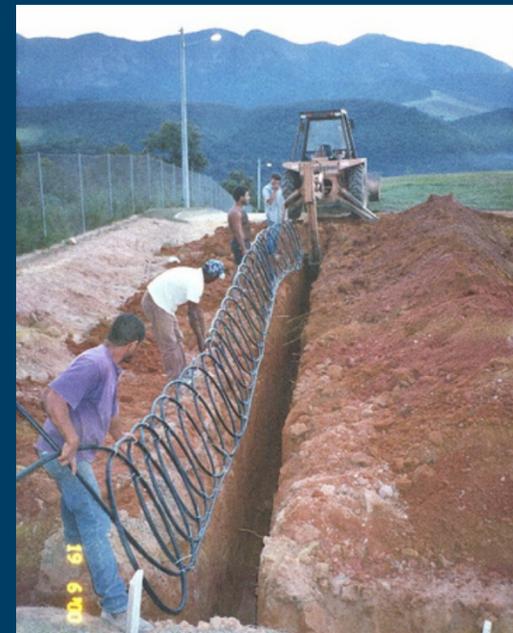
| This factory in the countryside of São Paulo state has 32 “Clean Rooms” with high air purity for the production of pharmaceutical products. It includes two special rooms for bottling with laminar flow systems and 4-stage air filtration.

| With a Chilled and Hot Water Plant (through a Heat Pump / Heat recovery process) and strict control of relative humidity, it is a system with extremely high energy efficiency.



GROUND SOURCE HEAT PUMP

Residence in Therezópolis
(Mountain region)



Westin Lagunamar Cancún
1.400 TR com Ground Source Heat Pump

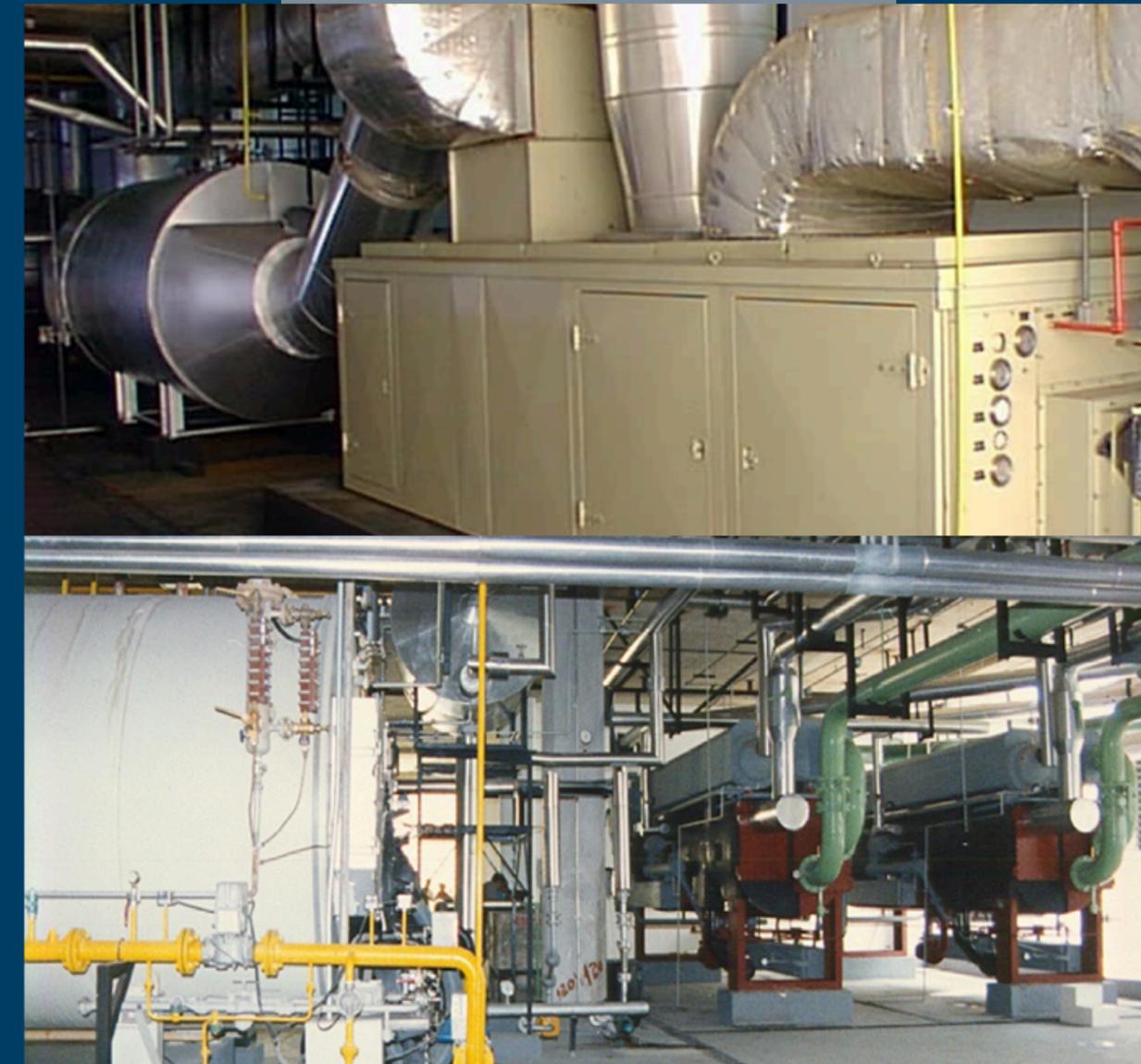


COGENERATION SYSTEMS

ILHA PLAZA SHOPPING

COGENERATION SYSTEM (1991)

- | Electricity Generation: 900 kW with one natural gas turbine;
- | 1,200 Tons of chilled water cooling;
- | 2 x 600 Tons Absorption Chillers with recovered steam;
- | Dual Fuel (natural gas / diesel).



BRAHMA BREWERY

COGENERATION SYSTEM (1995)

- | Electric Power Generation: 15,000 kW
(3 Natural Gas Turbines – 5,000 kW each);
- | Steam generation (heat recovery) = total of 170
Tons/h of installed steam capacity;
- | Dual fuel (natural gas / diesel);
- | Full black start with diesel generator;
- | Full automation and control.

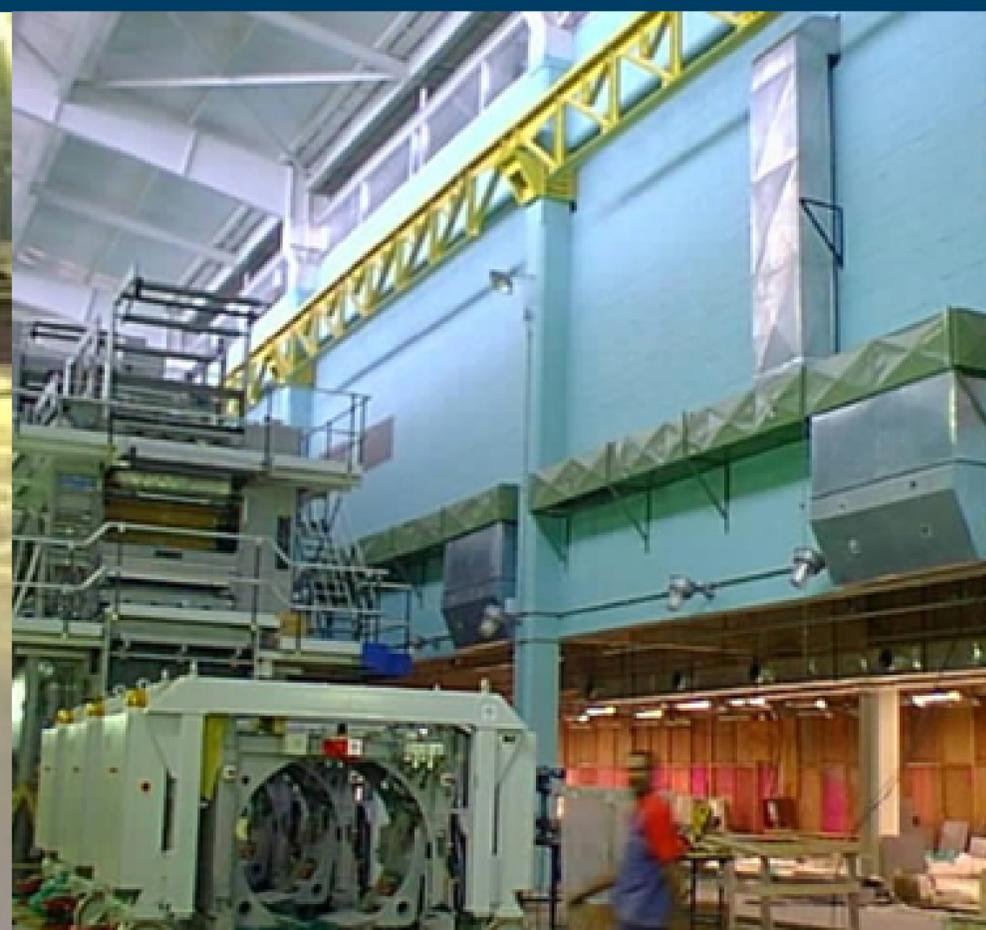


O GLOBO (NEWSPAPER PRINTING PLANT)

COGENERATION (1998)

- | Electric Power Generation: 5,400 kW
- | 1.600 Tons of chilled water for the air conditioning with 2 absorption chillers (with steam from heat recovery boilers);
- | Hot water (from engines jacket and oil cooling) for humidity control for all the areas;
- | Complete air conditioning system with industrial Displacement Flow;
- | Full automation and control with Metasys and Schneider controllers.





COCA-COLA JUNDIAÍ

TOTAL UTILITY PLANT

- | Largest Coca-Cola plant in the world;
- | In operation since August 2,000;
- | Seven utilities supplying all the industrial complex:
 - 5 natural gas engines 1.6 MW each;
 - 20 Tons/h of steam;
 - 3.0 MW of hot water from engines for process;
 - Chilled water for process - 1,700 Tons
 - 90 Tons/day of CO2 from engine discharge gases;
 - 300 m³/h of compressed air;
 - 500 Nm³/h of Nitrogen.



5X1600 KW GAS ENGINES



2X400 TONS ABSORPTION CHILLERS



CO2 STORAGE TANKS



90 TONS/DAY CO2 PLANT



TOTAL REMOVAL OF NH3 REPLACED WITH BRINE

COCA COLA - RIO

COGENERATION PLANT

In operation since 2002

3 natural gas engines 1,600 kW each:

- 6 Tons/h of steam in heat recovery boilers;
- 1,500 kW of hot water from engine for process;
- Chilled water for process – 800 Tons in two absorption chillers with hot water from engine jacket water.



3 X 1600 kW NATURAL GAS ENGINES

DATUM
Engineering



2X400 TONS ABSORPTION CHILLERS



3 HEAT RECOVERY BOILERS

REDE GLOBO TV STUDIOS (PROJAC)

AIR CONDITIONING AND COGENERATION PLANT

- | District Plant with Chilled / Hot Water and Cogeneration;
 - | It is in operation since 2,000;
 - | Supply all buildings of the complex;
 - | 2 gas engines of 2,45 MW each;
 - | 3 Tons/h of steam;
 - | 1,100 Tons absorption chiller;
 - | 2,5 MW of hot water for humidity control;
 - | Integrated with the district cooling system (also designed by Datum) and in operation since 1995.
-



- | 4,500 Tons
- | Contract in permanent development for 16 years, since the initial concept;
- | Thermal Storage of chilled and hot water;
- | Centrifugal chillers with heat recovery for hot water production (humidity control);
- | Large chilled water temp differential;
- | Primary-secondary-tertiary water distribution;
- | Full automation with Metasys system;



The Cogeneration Plant

1100 Tons Absorption Chiller



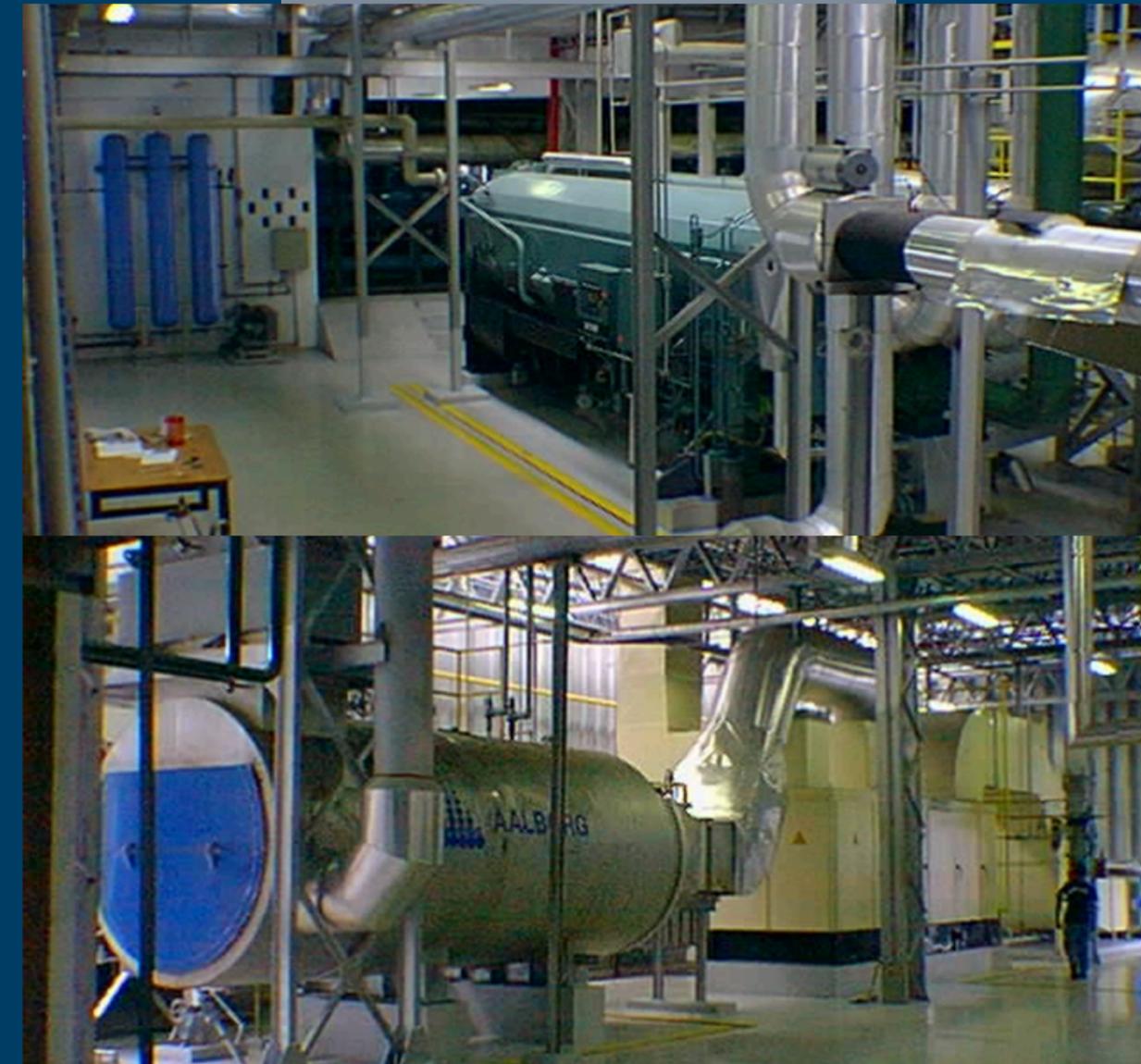
TWO HEAT RECOVERY BOILERS AND ONE STAND-BY BOILER

TWO 2.500 KWE NATURAL GAS ENGINES

NORTESHOPPING

COGENERATION SYSTEM

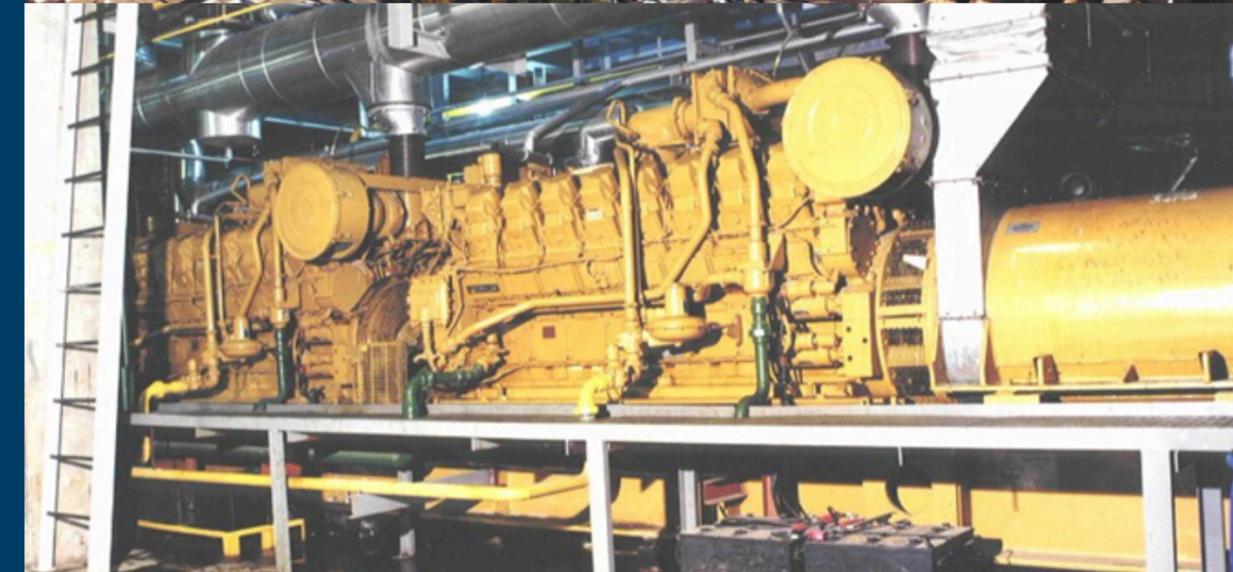
- | In operation since 1998;
- | Gas Turbine Generation: 1,100 kW
- | Chilled water with absorption chiller, centrifugal chillers and thermal storage combined;
- | 800 Tons of chilled water with absorption chiller, using hot discharge gases from the gas turbine;
- | Hot water for the shops like restaurants, etc;
- | Dual fuel (natural gas and diesel).



CARIOCA SHOPPING

COGENERATION (1998)

- | In operation since 2001;
- | 2 natural gas engines 1,600 kW each;
- | 4 Tons/h of steam in heat recovery boilers;
- | Chilled water for air conditioning - 900 Tons in two absorption chillers with hot water from engine jacket water and steam from heat recovery boilers + one 400 Tons screw chiller (total of 1,300 Tons).



PETROBRÁS RESEARCH CENTER - CENPES

- | In operation since 2004;
- | 2 Gas Engines / Generators 1,6 MW each;
- | Chilled water with Absorption Chillers (steam and hot water) plus centrifugal chillers – total capacity of 2,600 Tons;
- | Chilled Water District Center concept with primary-secondary loops;
- | 2 Heat Recovery Boilers;



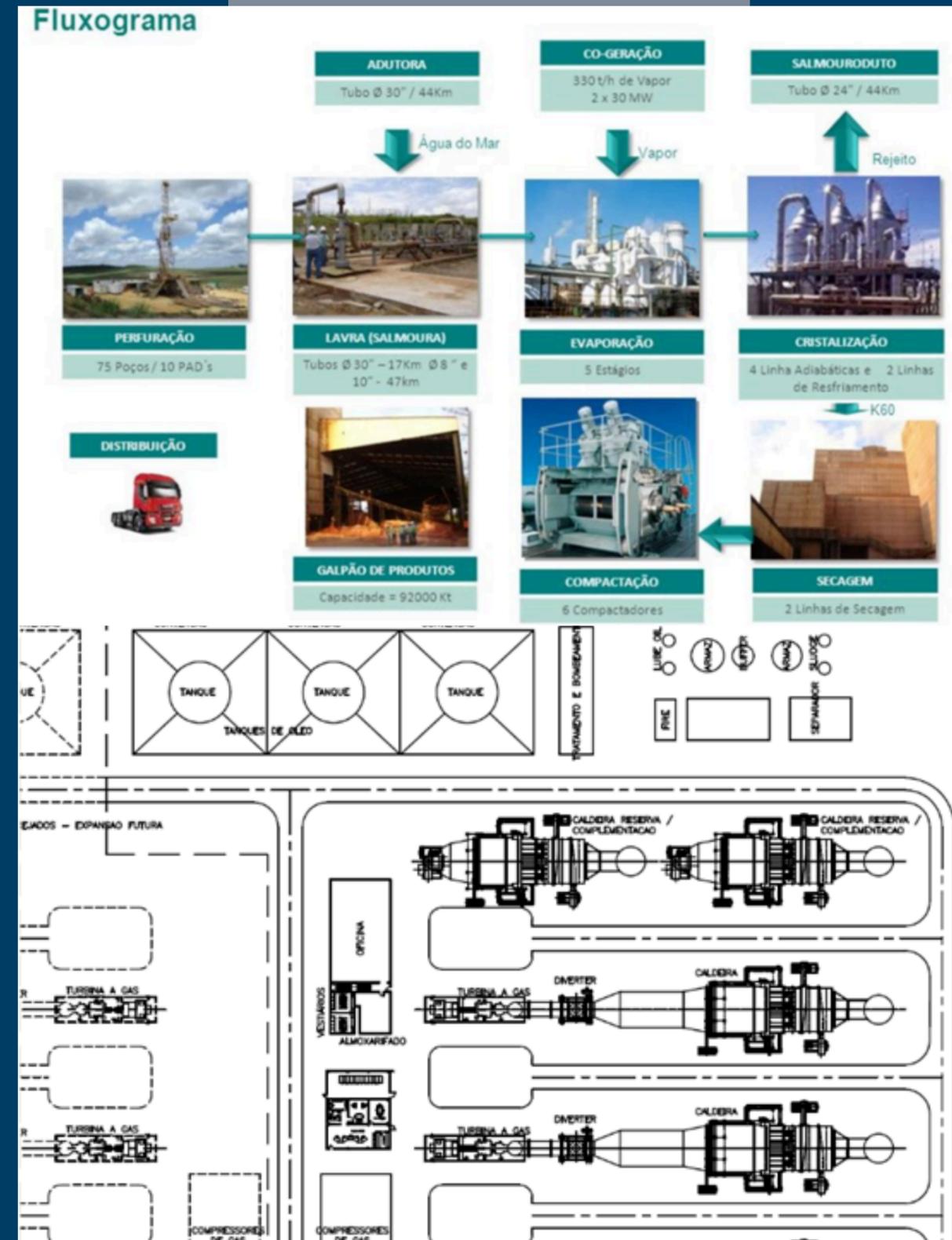
VALE – CARNALITA FERTILIZATION PLANT

FERTILIZATION PLANT

In operation since 2013;

2 Gas Turbines 30 MW each;

2 Heat Recovery Boilers for 150 Tons/h of Steam for process Stand-by Boiler



Cogeneration



PROJAC - Rede Globo TV Studios



AMBEV Brewery Rio de Janeiro



Coca-Cola Jundiai



Infoglobo and Extra Newspapers



Petrobras Research Center - CENPES



Coca-Cola Rio de Janeiro



Ilha Plaza Shopping



Carioca Shopping

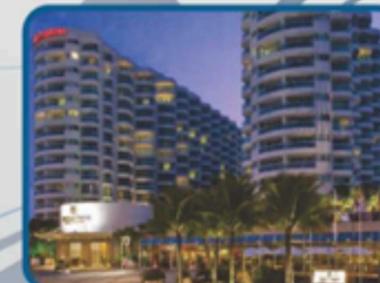


NorteShopping

Gas Air Conditioning



Mario Henrique Simonsen
Business Center



Sheraton Barra Hotel



Fashion Mall

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