

PULP AND PAPER | WOOD PRODUCTS MANUFACTURING  
MINING AND MINERAL PROCESSING | OIL AND GAS | POWER | CHEMICAL AND PROCESS

Flexible, innovative solutions  
for all of your project and system needs



**A.H. LUNDBERG SYSTEMS LIMITED**  
CANADA

# Overview

**AHLS is a Canadian process technology consultancy that specializes in chemical systems, evaporation, heat transfer, mass transfer, and air- and water-related environmental control systems.**

We have successfully delivered engineering solutions to the international Pulp and Paper, Mining, Wood Products, Power, Chemical, and Oil & Gas industries since 1954.

Our team would be honoured to put our expertise and experience to work for you.



**A.H. LUNDBERG SYSTEMS LIMITED**

# Products and Services

- **Environmental Solutions**
- **Evaporation Solutions**
- **Energy Optimization Solutions**
- **Equipment Specialties**
- **Engineering Services**



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# Environmental Solutions



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**AHLS offers a wide variety of advanced environmental systems to comply with ever more stringent requirements in air pollution control.**

Installations range from complete plant-wide system integration, system add-on and retrofit, to engineering and design of upgrades.



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# Odour Control Systems

AHLS is the leading supplier of non-condensable gas (NCG) collection systems in the pulp and paper industry. We have solved problems of waste gas management in a broad spectrum of process industries, including biogas and landfill gas collection and utilization.



# Thermal Oxidizers / FGD

AHLS's Direct fired Thermal Oxidizers (DTOs) are a proven economical and energy-efficient solution designed to destroy HAPs to meet environmental regulations.

Our flue-gas desulfurization (FGD) technologies effectively remove sulphur dioxide ( $\text{SO}_2$ ) from exhaust flue gases.



# Wet ESP Systems

AHLS's Wet Electrostatic Precipitator (Wet ESP) system provides a state-of-the-art solution to the highest possible efficiency in the collection of sub-micron particulate fumes, condensable organic aerosols, and acid mist.





# Regenerative Catalytic Oxidizers

AHLS's Regenerative Catalytic Oxidizers (RCOs) meet the challenge of minimizing fuel (95% fuel savings) and operating costs while destroying VOCs.

We also offer a Direct Fired Oxidizer (DFO), which has become the primary point for disposal of the waste gas streams for many clients in the Pulp and Paper industry.

# Wet ESP and RTO Systems

The combined Wet ESP and RTO systems provide high efficiency particulate and VOC removal.



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# Evaporation Solutions



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Evaporator technology varies from tubes to plates, inside versus outside, and up, down, or flooded.

**AHLS has the experience and expertise to deliver the right solution every time. We have worked with all types of liquids and systems – from pre-evaporators to concentrators, and crystallizers with high product solids.**



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# Multiple Effect Evaporators

Where plant steam is available, AHLS offers multiple effect evaporator systems for services such as concentration of Kraft pulp mill black liquor. The technology has been the preferred choice in industries such as pulp & paper and chemical plants.





# Mechanical Vapour Recompression Evaporators

AHLS offers falling film evaporators with mechanical vapour re-compression (MVR) to drive the evaporation process. MVR evaporators are used where low pressure steam is not continuously available and electrical costs are favourable.

# Flooded Forced Circulation Concentrators

AHLS Multiple Effect Evaporators can be designed either as Falling Film, Rising Film (also called Long Tube Vertical) or Flooded Forced Circulation. The systems are designed for proper condensate segregation, optimal economy, and corrosion resistant alloys to suit the application.



# Condensate Stripping and Distillation

AHLS offers distillation systems and are world leaders in steam stripping of pulp mill foul condensates. The process degasses and removes the TRS and methanol in the condensate to allow for condensate reuse. Our patented methanol purification system will distill the Stripper off Gas (SOG) to make a >99.85% methanol product.

We have provided modular distillation and stripping systems to separate chemicals to our customers specifications.



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# Energy Optimization



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**AHLS offers a host of solutions to the increasingly more energy conscious industrial sector, such as specialized heat exchangers designed to economically recover energy from flue gas, waste steam, and blow heat.**

**Our specialty is heat exchange to or from difficult service fluids such as TMP waste steam, heavy liquor, or high fouling liquids.**



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# Heat Recovery Reboiler

Our heat recovery system features a tubular reboiler to convert dirty waste steam to clean process steam, or to preheat air to be used in a flash steam dryer. The reboiler waste steam can be contaminated with suspended solids such as fibre.

# Heavy Liquor Heater

AHLS heat exchangers for heavy liquor include a shell and tube heat exchanger using indirect steam to heat liquor within the tubes. Liquor recirculation is utilized to maintain velocity within the heat exchanger at varying boiler operating rates.



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# Specialty Equipment and Custom Engineering Solutions



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**AHLS supplies a range of chemical reactors and handling systems to efficiently and safely generate the process operation required. Specialty equipment offerings include:**

- Cyclone separators
- Chemical handling systems
- Distillation columns
- Eductors
- Filters
- Mist eliminators
- Mixers and reactors
- Phase separation technologies
- Quench vessels
- Safety system components
- Specialty pressure vessels
- Sulphur dioxide and chlorine vapourizers
- Venturis
- White liquor oxidation



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# Methanol Purification

The AHLS Methanol Purification System provides energy savings and environmental benefits to process industries disposing of effluent streams containing methanol. The process and equipment are supported by world-wide patents.

The recovered methanol will meet the commercial grade purity level of >99.85 wt%.



# Turpentine Recovery

AHLS utilizes a two-stage condensing system to optimize turpentine recovery, reduce stripping steam requirement, and increase turpentine decanter efficiency.



# White Liquor Oxidation System

AHLS supplies two types of white liquor oxidation chemical reactors to generate a caustic substitute. Our patented air oxidation system drives residual sulphide content to low concentrations, while our oxygen system is supplied as a module complete with all piping and instrumentation ready for connection.



# Sulphur Burners

AHLS provides complete sulphur burner systems for incinerating elemental sulphur to generate sulphur dioxide.

Our sulphur burner is applicable to mining, chemical plants and pulp and paper. Systems can be designed for high sulphur dioxide concentrations and pressurized operation.



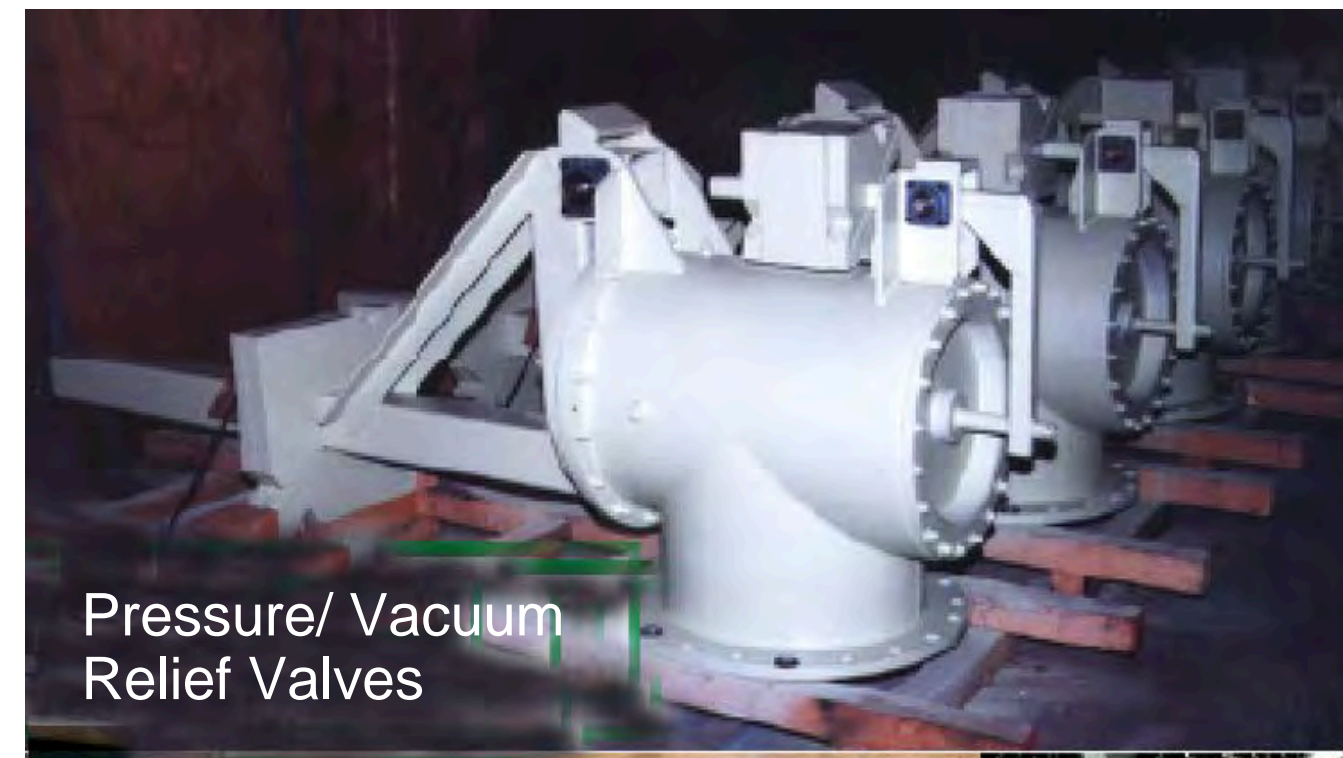
# Specialty Tanks

AHLS provides systems to handle, off-load, and store most chemicals used in process industries, including sulphuric acid, sodium chlorate, chlorine, sodium hydroxide, sulphur dioxide, and molten sulphur.

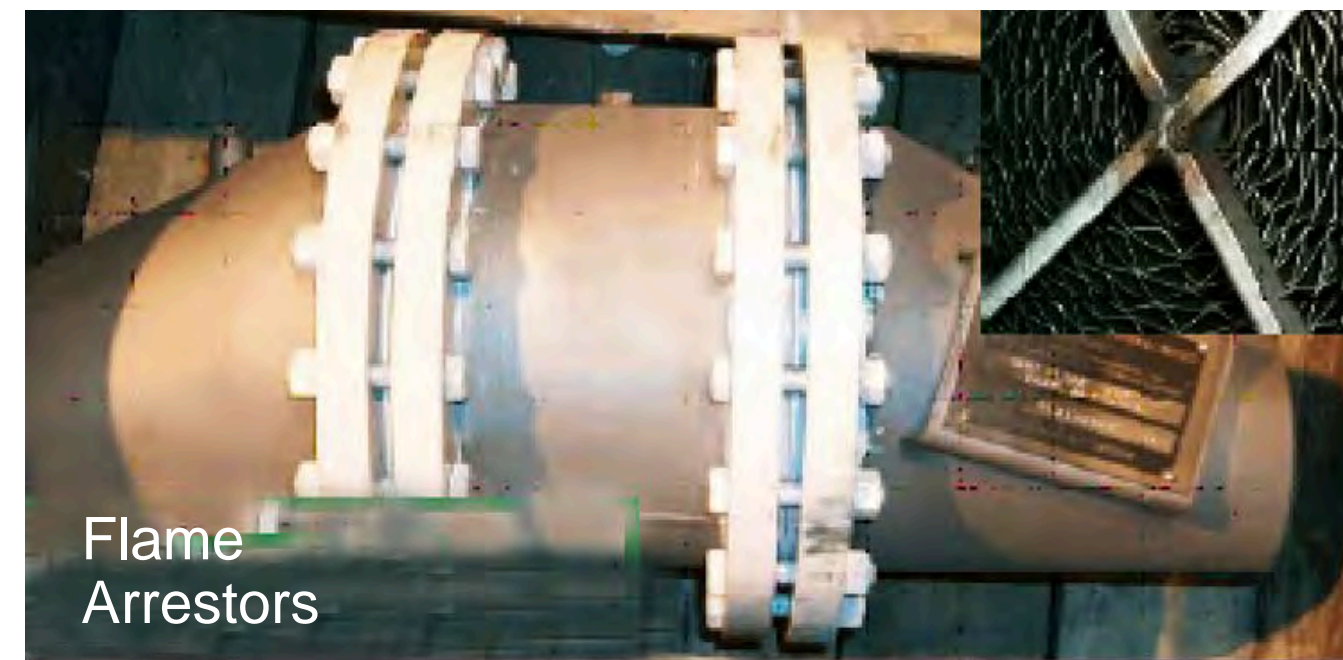


# Custom Components

AHLS designs and supplies custom components especially for difficult service. If you can't find it on the shelf, give us a call.



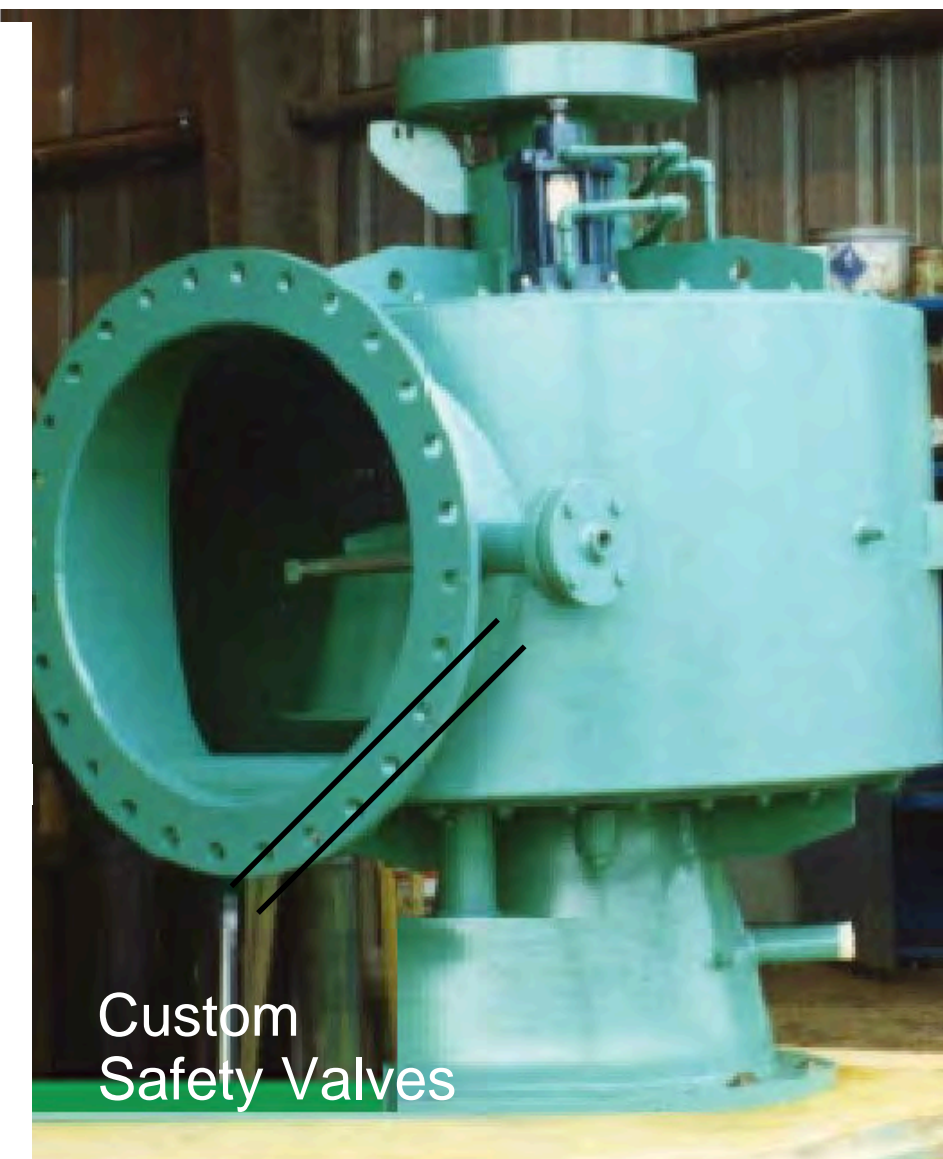
Pressure/ Vacuum Relief Valves



Flame Arrestors



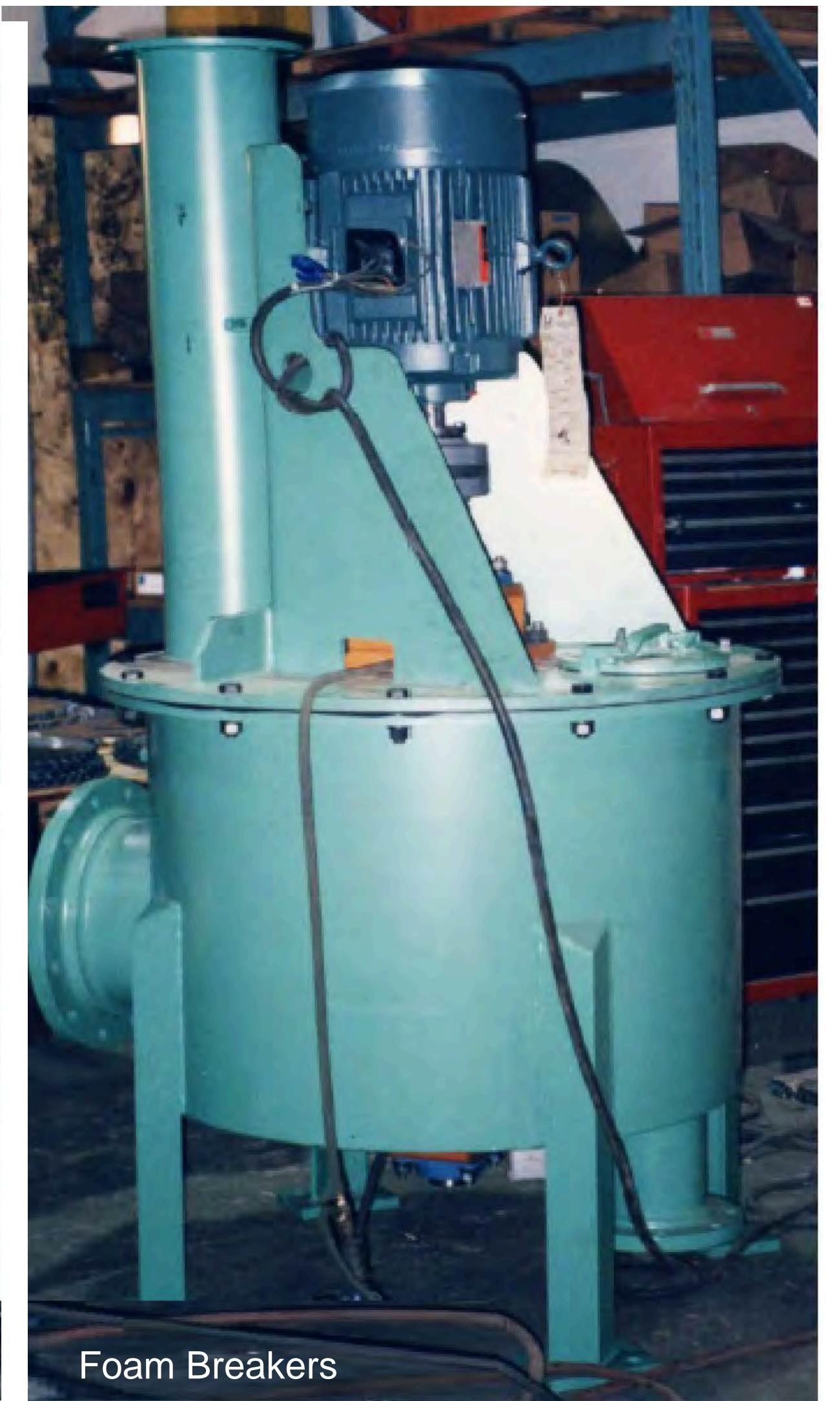
Custom Waste Gas Burner Nozzle



Custom Safety Valves



Custom Vacuum Breakers



Foam Breakers



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# Engineering Services



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**AHLS has provided a wide range of industrial engineering services to a host of international clients.**

Our commitment to those clients over the years and the vast experience and expertise of our consulting team members form the foundation of our success. Our services, all of which utilize the latest technologies, include:

- Engineering Studies / Audits
- Process Engineering
- Instrumentation / Controls / Electrical (ICE)
- Project Engineering
- Full Project Turnkey

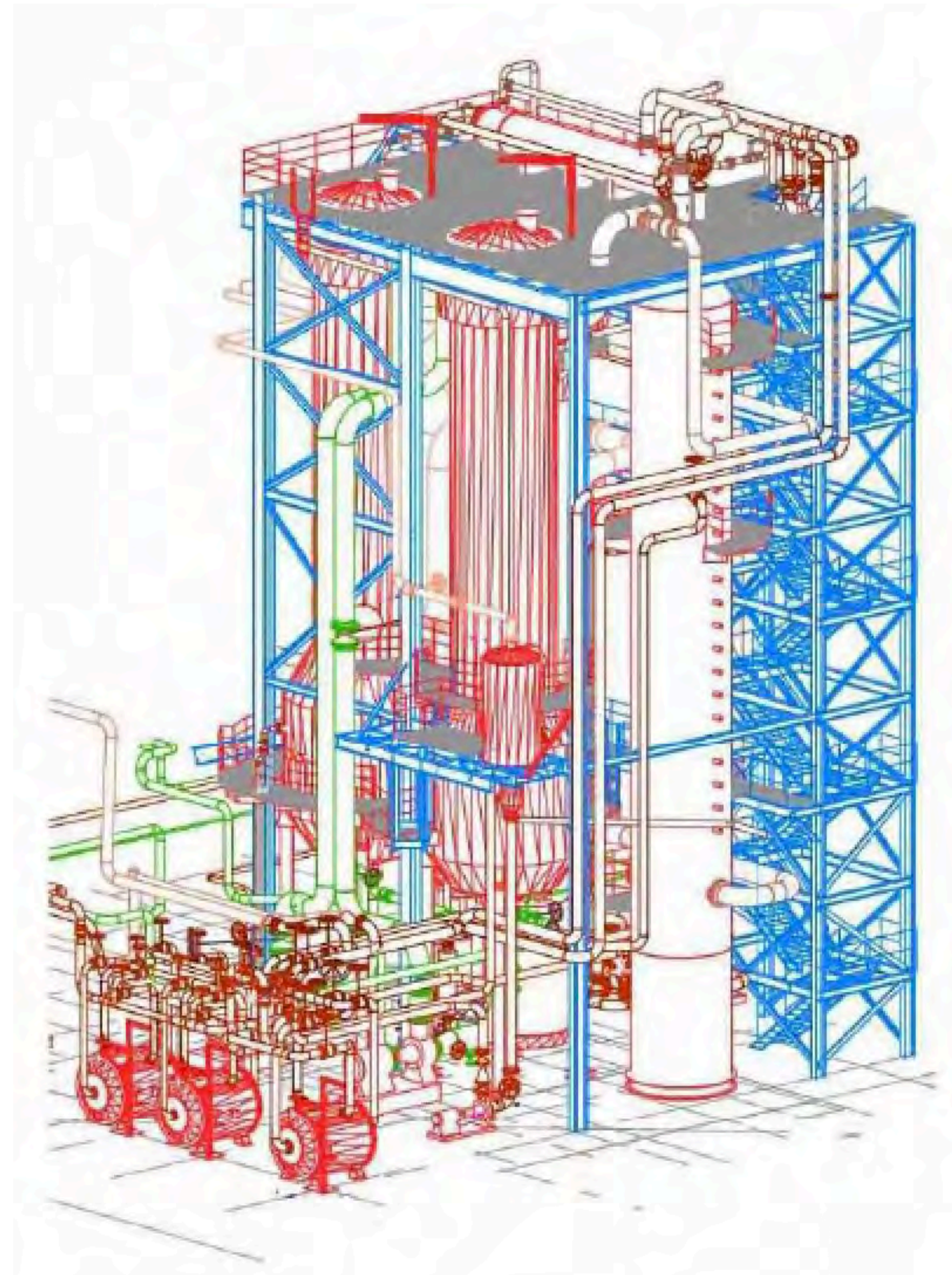


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# Process Engineering

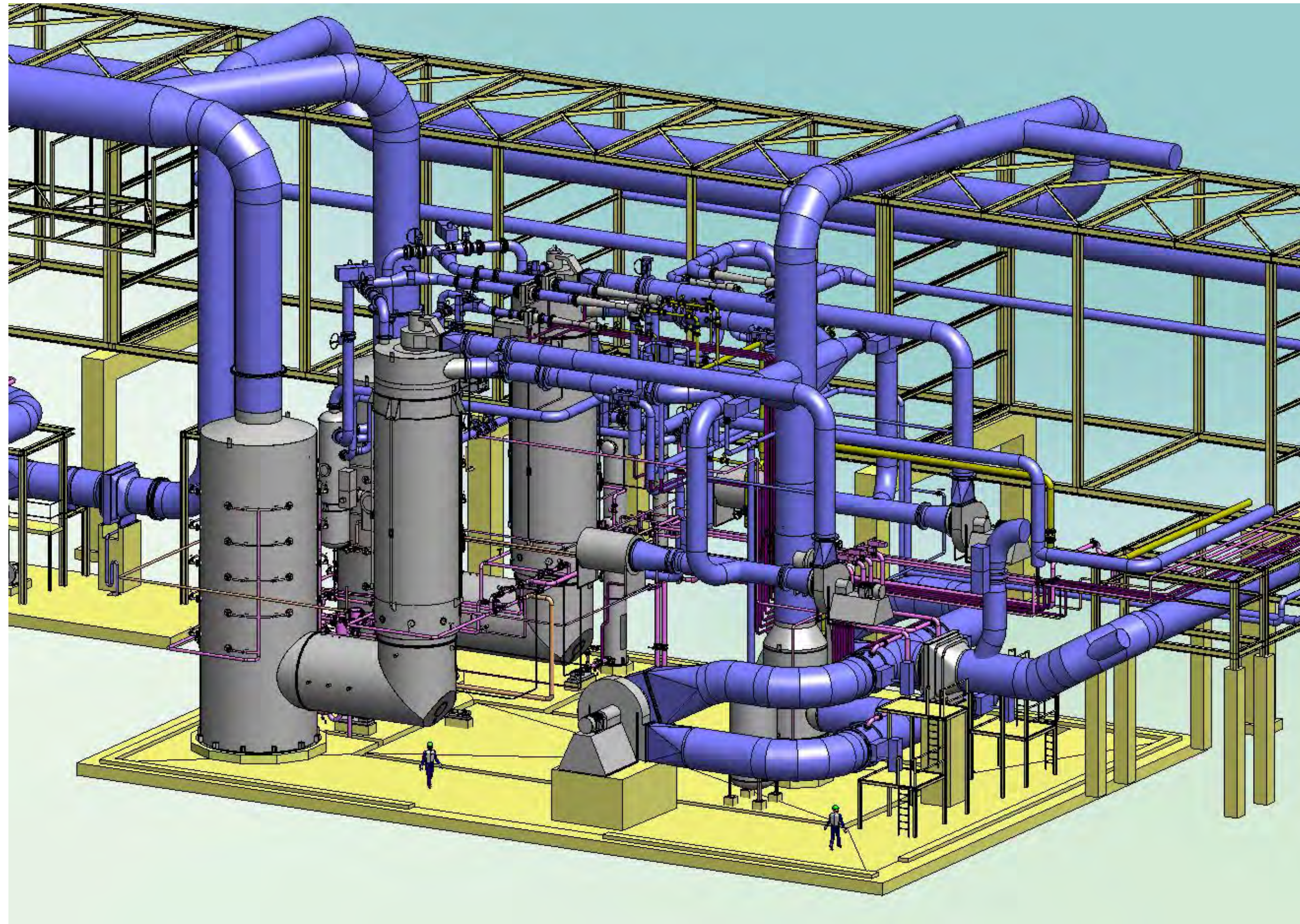
Process engineering services provided by AHLS typically includes:

- Heat and Material balances
- P&ID Diagrams
- Vessel Drawings
- Pump Specification
- Instrument Specification
- Valve and Instrument Lists
- Operation and Maintenance Manuals
- Onsite Training



# Detailed Engineering

Detailed engineering services provided by AHLS include:



- Equipment Design
- Process Design
- General Arrangements
- Piping Design
- Insulation Design
- Electrical Design
- Instrumentation Design
- Civil Design
- Structural Design
- Commissioning
- Start-up Services

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A proud record of  
international success



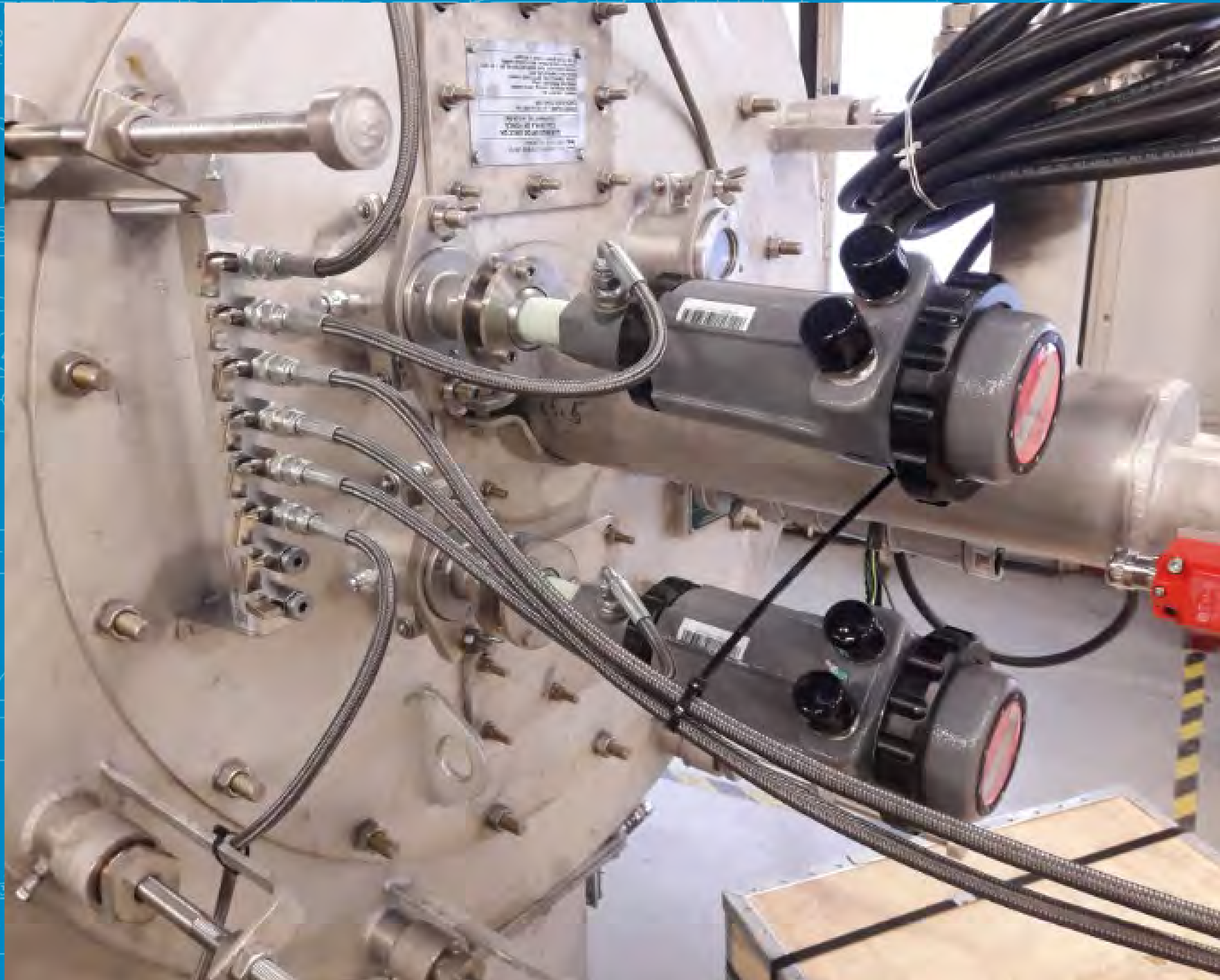
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**AHLS is a Canadian company located in Vancouver, British Columbia, Canada. Our key personnel have over 300 collective years of industry experience, and collaborate with a network of international representatives to provide innovative engineering solutions and custom-designed equipment to a growing list of worldwide clients.**

**The following projects represent a sampling of the many successful projects we have completed around the globe.** (List available upon request)



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# NCG Systems

## Indianapolis, Brazil

CNCG and DNCG Systems

EPS supply of CNCG and DNCG collection and incineration systems in recovery boiler and power boiler with back-up flare at the new dissolving pulp plant...



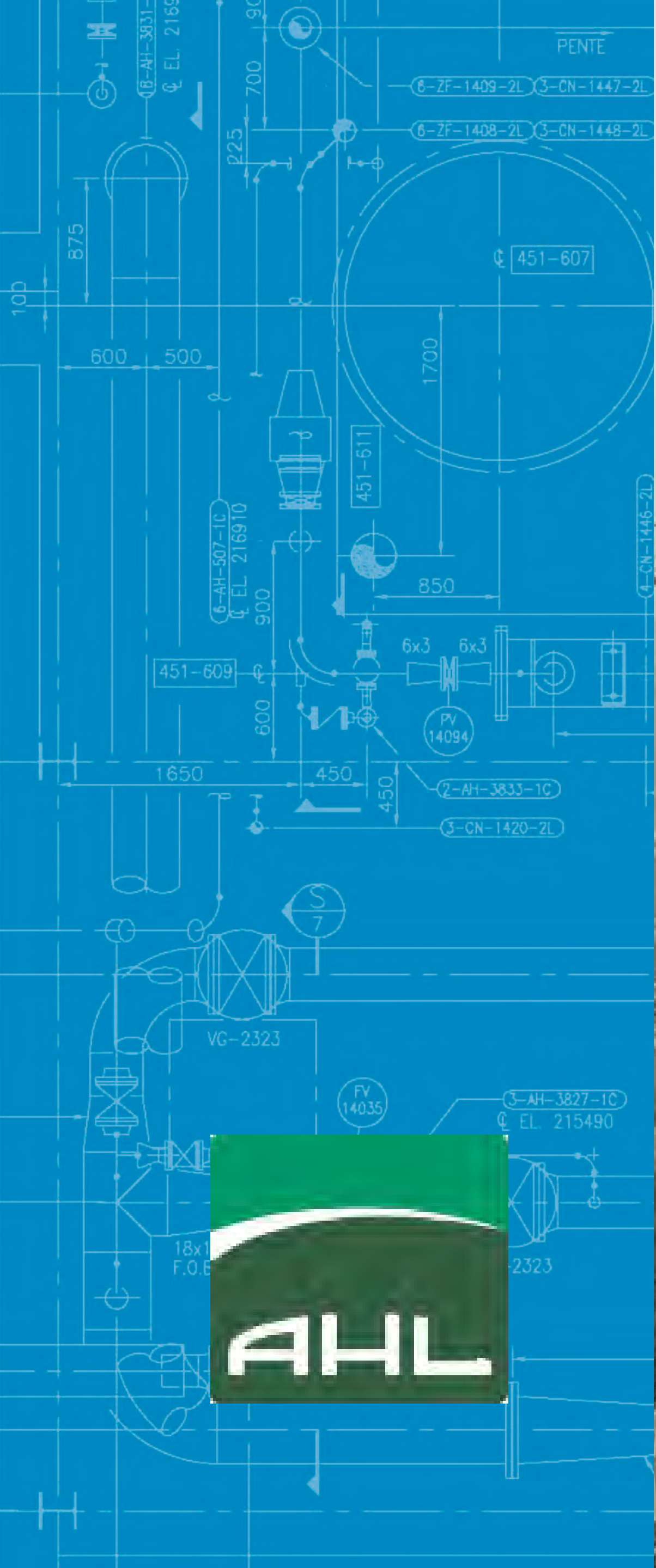
# Sulphur Burner

Sacramento, California, USA

E72B

Modular supply of 35  
stpd sulphur burner with  
quench vessel and  
indirect contact  
secondary cooler.

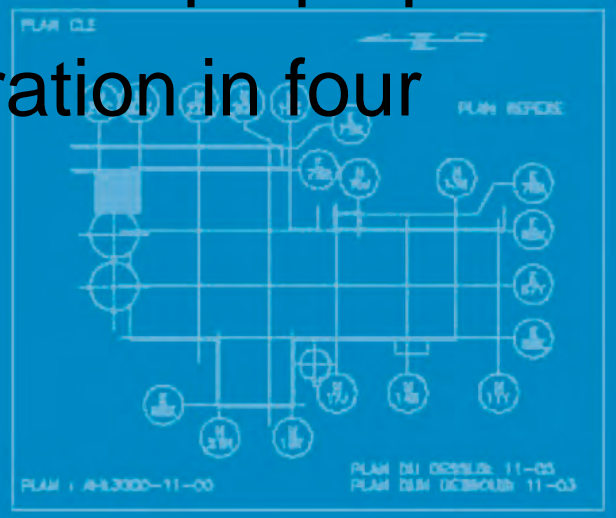




# NCG System Upgrade

## Kerinci, Riau, Indonesia

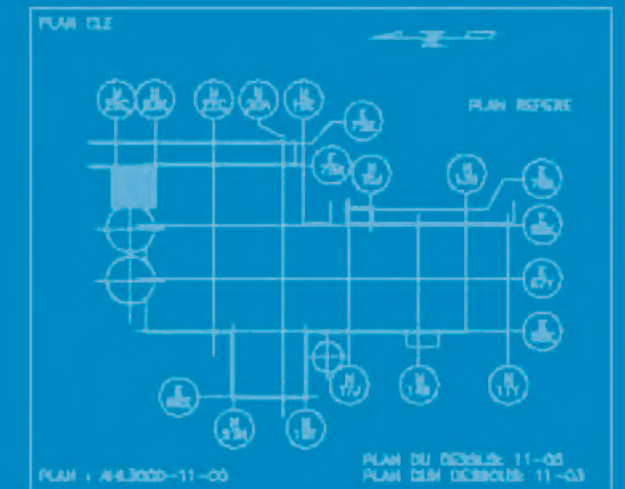
EPS supply of mill wide CNCG, SOG/ Methanol, and DNCG system upgrades for a 7500 admtpd pulp mill, including incineration in four recovery boilers.



# Sulphur Burner

Sarpsborg, Norway

Modular supply of 96 mtpd sulphur burner with waste heat boiler and indirect contact secondary cooler.

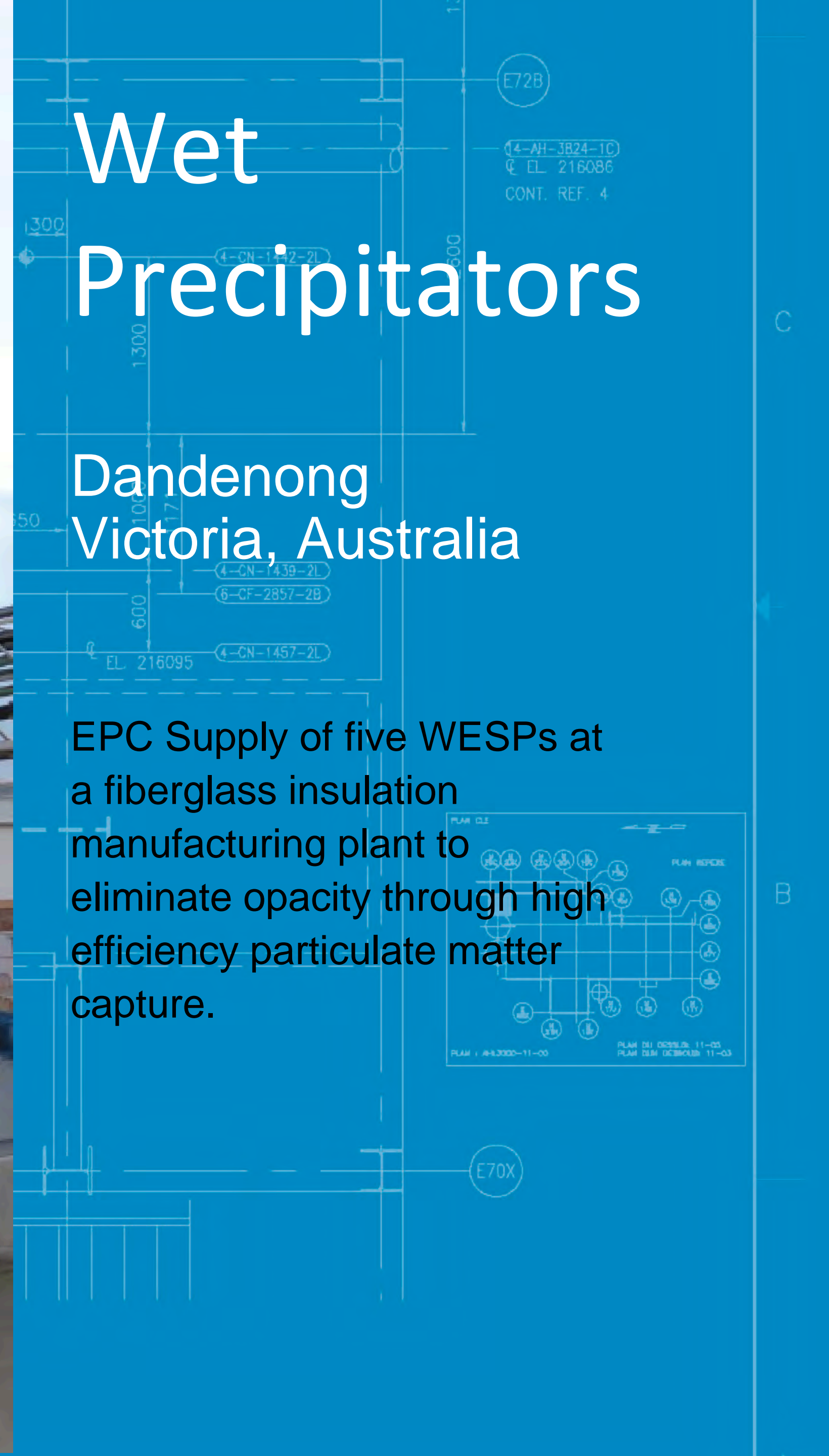
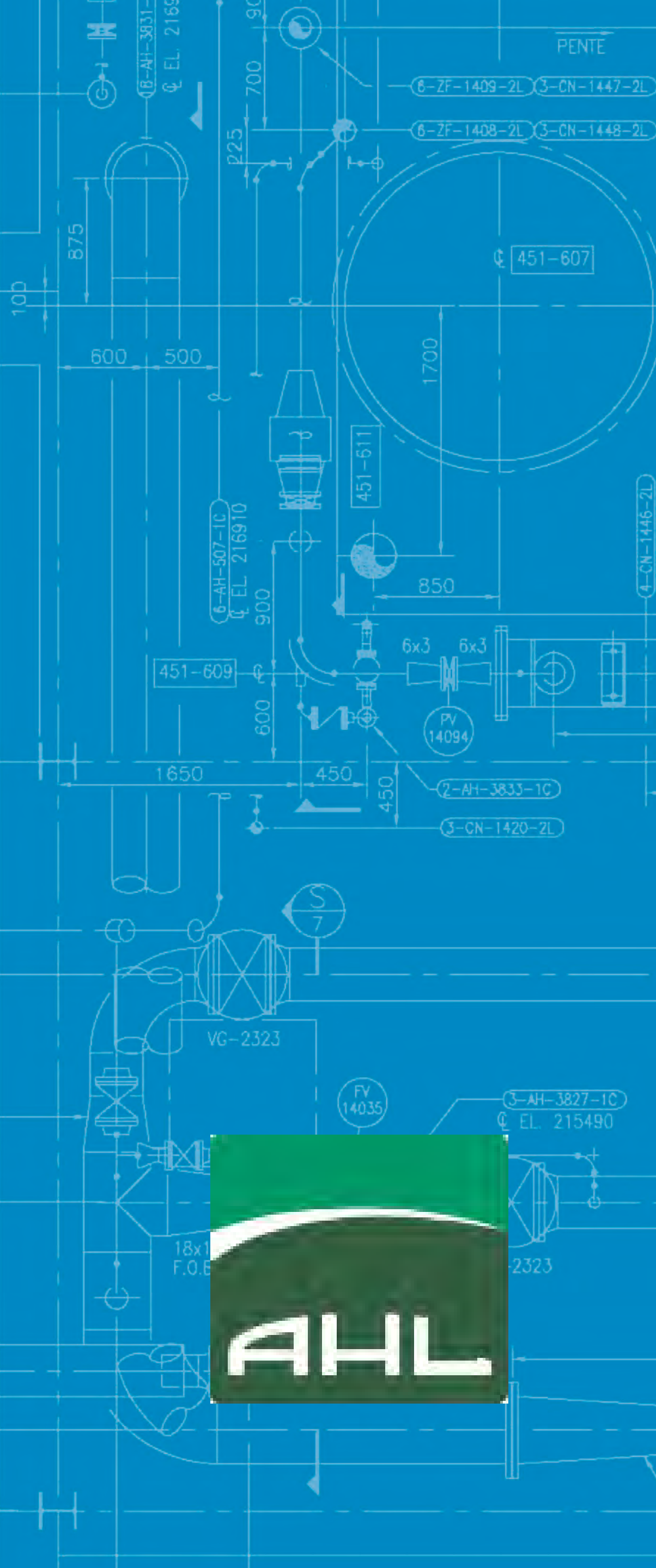


E70X

# Wet Precipitators

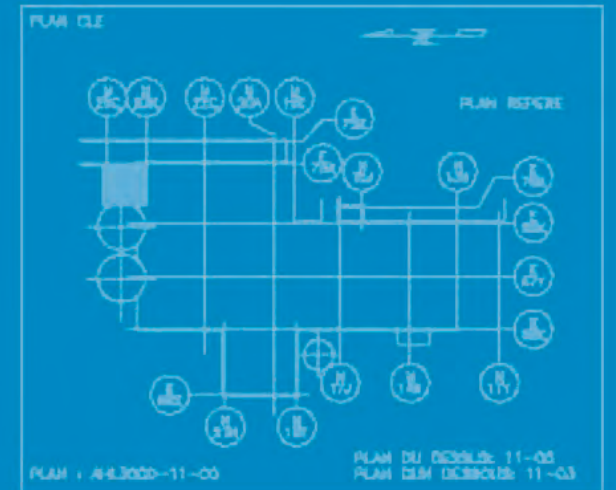
Dandenong  
Victoria, Australia

EPC Supply of five WESPs at  
a fiberglass insulation  
manufacturing plant to  
eliminate opacity through high  
efficiency particulate matter  
capture.



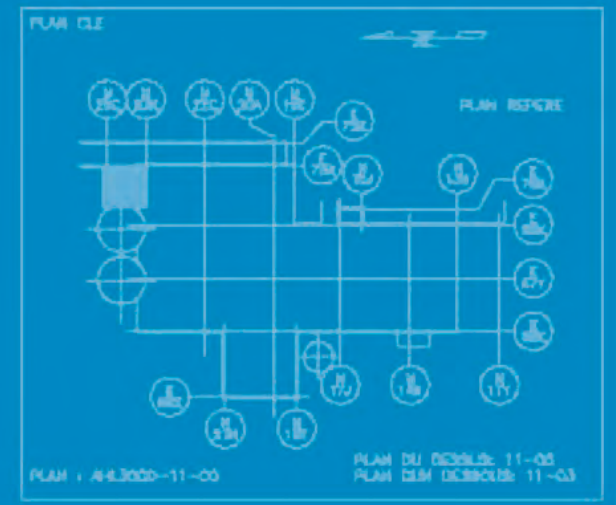
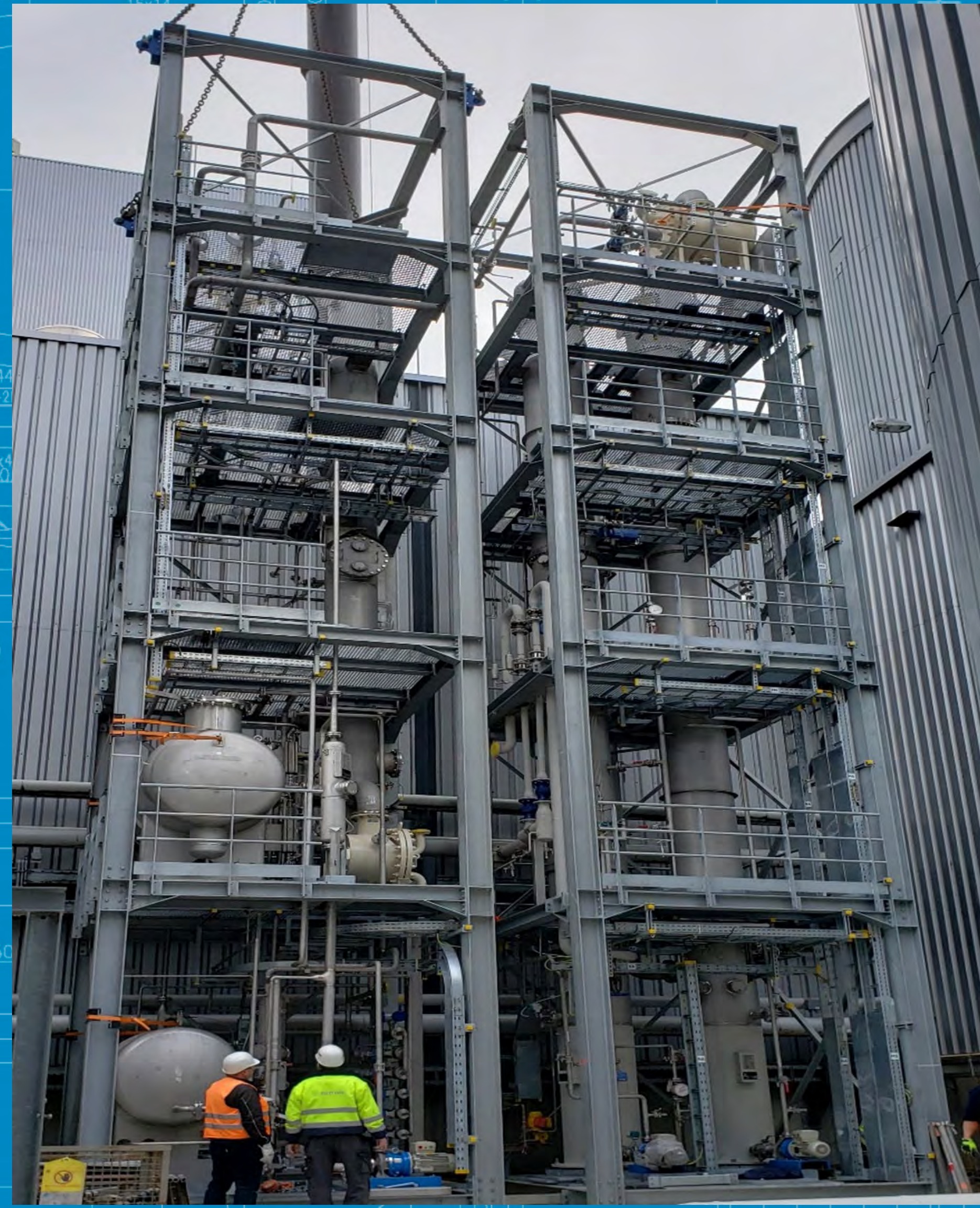
# Methanol Purification Alberta, Canada

Recovery of methanol  
in pulp mill foul  
condensate effluent  
into commercial grade  
99.85% purity  
methanol product.



# Methanol Purification Germany

Recovery of methanol  
in pulp mill foul  
condensate effluent  
into commercial grade  
99.85% purity  
methanol product.



## One of our many satisfied clients...



Thank you and your firm for your excellent performance in designing our new \$11 million Non-Condensable Gas (NCG) Collection and Treatment System to comply with the latest Air Emission Regulations. I personally was very pleased with your ability to manage and execute the entire project with total competence and superior judgement while adjusting to changing circumstances. Finally, we appreciate the fair and professional manner in which A. H. Lundberg Systems does business and would gladly provide references on your behalf for future projects.



**A.H. LUNDBERG SYSTEMS LIMITED**

# How can we help you?

**If you need creative and cost-effective process engineering solutions, call us today for a complimentary custom technical consultation with our industry experts.**

For more information, please contact:

Ben Lin at **1.604.629.5599** (x103)

or email: **blin@ahlundberg.com** or **sales@ahlundberg.com**



**A.H. LUNDBERG SYSTEMS LIMITED**

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