ENERGY EFFICIENT SYSTEMS

Recover & recycle your waste energy



Absorption Machines - Heat Pump & Chiller

- Thermal Energy Storage Solutions
- Special Heat Exchangers



Gottschall

CNIM ENERGY EFFICIENT SYSTEMS Recover & Recycle your waste energy

CNIM GROUP: A trusted partner for turnkey installations

Over 60 years of turnkey plants & equipment

As a specialized European provider with a well-established portfolio of proprietary technology, CNIM's solutions have been successfully deployed around the world for more than 60 years.

CNIM has provided 281 turnkey waste-to-energy conversion lines and over 250 biomass plants and boilers, for use either by local authorities or designated operators.

On the equipment side CNIM has provided more than 400 Flue-gas treatment systems and over 150 MW of absorption machines in 26 countries.

CNIM Key figures (2016)

ergy Plant with 500kt combustion capacity per yea © TRM - Trattamento Rifiuti Metropolitan



CNIM equipment optimize your processes in various industries



Combined Heat

& Power Plants



Cooling



Process Industry



Oil & Gas



Maritime

& EXPERTISE





AFTERSALES





CNIM ENERGY EFFICIENT PRODUCTS



ABSORPTION CHILLERS

Cold production down to 2°C using recovered energy

Tailored made Chillers > 70°C Energy source

Custom designed process Single Effect High COP up to 0.84 designed for low temperatures Double Effect with higher COP up to 1.4 depending on conditions



ABSORPTION HEAT PUMPS

Elevation up to 100°C from low grade heat

Tailored made Heat Pumps

High COP of 1.7 Large units available up to 20 MW High District Heat temperature (up to 100°C possible)



SPECIAL HEAT EXCHANGERS

High added value & complex machining

Typical technologies

Liquid/Liquid: Plate Heat Exchangers Gas/Gas: Tubular or plate Heat Exchangers Gas/Liquid: Fire tube Exchangers



THERMAL ENERGY STORAGE

Heat storage solutions, with large scale working temperature

A product for each storage temperature

Down to 0°C Cold Water Storage Up to 180°C Hot Water Storage Up to 240°C Steam Accumulator Up to 350°C Thermstock® Oil Storage Absorption Machines use thermal energy (steam, hot water,...) as their primary energy source. Mechanical or electrical energy is only required for a couple of small pumps which usually consume about 1% of the cooling load. The principle of absorption was discovered more than 2 centuries ago in 1777 by Gerald Nairme. He used sulfuric acid to absorb water vapor and thereby producing cold. Nowadays the most commonly used working fluid pair is composed by water and lithium bromide, a stable an non-toxic salt solution.



Advantages of Absorption





ABSORPTION TECHNOLOGY

The CNIM difference

- Designed to the client's exact needs
- In house manufacturing
- ▶ 160 years of experience with demanding clients
- ▶ 30 years of experience in Absorption Machines
- Reliability, Reactivity & Proximity





BUSINESS	SOLUTIONS	PRODUCTS	DESCRIPTION	
	PowerGen Enhancement	 District Heating AHP Turbine Cooling ARU Steam Accumulator TES Thermstock® TES 	Designed to improve overall efficiency of the Plant. Our solutions recover heat from scrubbers, turbine outlets or geothermal source to produce more energy at the right time.	
	Green Cooling Systems	 District Cooling ARU Engine Driven ARU Cold TES 	Providing cooled water in summer or the whole year round, theses solution give you the best cost of energy when waste heat (from district heating or engines) is available.	
	Industry Energy Saving	 Pre-Heating AHP Pre-Cooling ARU Steam Accumulator TES Thermstock[®] TES 	Achieve more energy autonomy and lower fossil fuel consumption with these solutions that recover waste heat from industrial ovens, dryers or other available sources.	
	O&G Process Optimization	 Condenser Cooling ARU Turbine Cooling ARU Compressor Cooling ARU 	Increase the efficiency by cooling key equipment of onshore or offshore Oil & Gas plants whilst using only the process heat available on site.	
	Deep Blue Cooling	Engine Driven ARUCold TES	Respond to the intensified emission regulation and perform substantial fuel saving with these innovative solutions	

*AHP : Absorption Heat Pump, ARU: Absorption Refrigeration Unit , TES : Thermal Energy Storage





OUTCOMES & REFERENCES



Lithuania 4x14 MW District heating AHP for a geothermal plant

Finland 10x3.5 MW Cooling Water System powered by district heating production in summer

Austria 2,4 MW Pre-cooling System for plastic molding machines



Iran 2x6 MW Ethylene Compressor Cooling System

Offshore 2x1 MW On-board process Cooling Systems



ENERGY EFFICIENT SYSTEMS

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CNIM Energy Efficiency



Systems

Turnkey systems

Products

- Absorption Chillers & Heat Pumps
- Thermal Energy Storage Solutions
- Special Heat Exchangers

Services

Audit & Expertise

▶ Worldwide Maintenance & Aftersales

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