

# THERMAX'S SUSTAINABLE APPROACH TO CONTROL ROOM COOLING



## **CONTROL ROOMS – VITAL HEARTBEATS OF INDUSTRIAL FACILITIES**

Control rooms are vital facilities in every industry. These repository spaces are essential for more than one reason – monitoring of the operations, controlling machine performance, and making mission-critical decisions. Encompassing operational and command centers within them, control rooms enable effective monitoring of multiple machines and processes 24\*7. Housing equipment that provide real-time view of the machines' state, the control rooms also accommodate large operations teams.

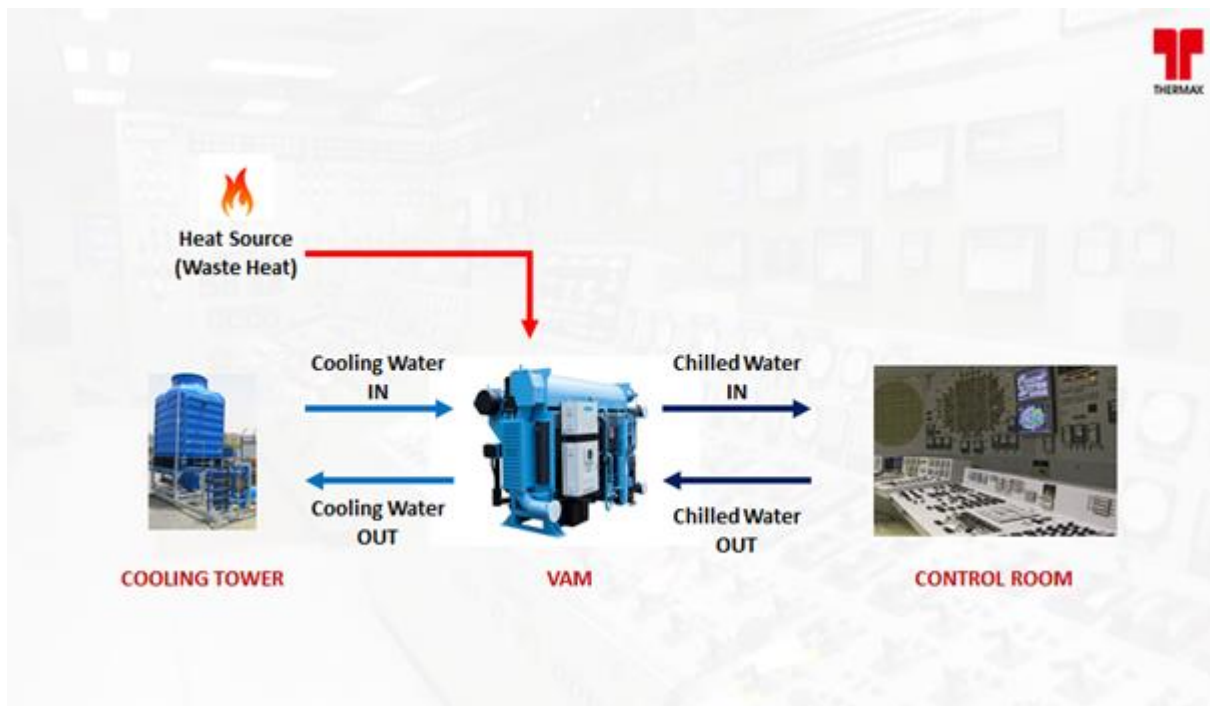
Control rooms house rows of closely positioned monitors and machines. Large equipment installed in the room emit heat, disturbing the ambient room temperature. The radiated heat, if not mitigated, might cause equipment damage, which consequently impacts the facility's uptime and productivity. Control room cooling entails consideration of human comfort too since the comfort of an operator directly influences data interpretation and decision-making.

Conventionally, control room cooling is offered by electric chillers which increases the plant's dependency on the electric grid and hence its energy costs. Employing the energy-saving vapour absorption technology to cool the control rooms can address heat mitigation at significantly lower costs compared to the electric chillers.

## Control Room Cooling with Absorption Chillers

Absorption chillers are run by heat rather than electricity, potentially saving huge energy costs for the industry. Using heat sources like steam, hot water, thermic fluid, etc., to power the chillers, offer significant energy gains while delivering chilled water at consistent temperature.

Since the application's inception, Thermax absorption chillers have been reducing tonnes of CO<sub>2</sub> emissions owing to control room cooling across sectors. Our installations at 75+ facilities exclusively for control room cooling have helped industries achieve their energy optimisation targets.



## Sustainable control room cooling for India's largest power major

With major portion of the electricity still generated from fossil-fuels, power generation units are in search of ways and strategies to improve energy efficiency and reduce their greenhouse gas emissions. Power plants offer a wide range of opportunities for deploying self-sufficient utilities. For instance, in a large-capacity power unit, the turbine exhaust steam at 30°C contains more than 300 MW heat. Hence, the heat recovery potential of exhaust steam from turbines and boilers remains the focus of sustainable solutions providers. Vapour absorption

chillers designed to run with a range of heat sources and cater to the unit's cooling demands can make a huge impact on the industry's energy utilisation pattern.

One of India's largest power utilities is working towards generating reliable power at competitive prices in a sustainable manner. In a bid to integrate sustainability in every possible area, the company surveyed and identified the high energy-consuming utilities. Control rooms in their plants are essential for monitoring multiple utilities and controlling operations, thus guaranteeing effective production and distribution of power. Cooling the equipment and systems within the control room accounted for a significant amount of the plants' energy costs. Hence, the company sought energy-efficient and high-reliable solutions for cooling the control rooms.

In line with our business philosophy, we studied the available heat sources and zeroed in on the exhaust steam from the turbines to run the chiller. Thermax's double effect steam fired vapour absorption chillers employed at the plant run on exhaust steam and deliver chilled water at consistent temperature, which is used to cool the plant's control room.

## **DOUBLE EFFECT STEAM FIRED ABSORPTION CHILLER**



**CAPACITIES: FROM 50 TR TO 3500 TR**

**CAN OFFER UP TO -5°C CHILLED WATER**

**TEMPAT: 30°C (86°F)**

**HEAT SOURCE: STEAM**

**STEAM PRESSURE: FROM 3.0 TO 10.0 BAR G**

**CHILLED WATER TEMPERATURE: UP TO 1°C (34 °F) AND -2 °C (28.5 °F) WITH BRINE**

**COP: 1.45 - 1.5**

Successfully optimising the plant's energy utilisation with our chillers, the power major collaborated with us to expand their sustainability efforts further. Following the first commissioning in 2007, Thermax has commissioned around 40 vapour absorption chillers in the company's plants across the country. Our efficient cooling solutions have thus helped the power plant reduce its carbon emissions and energy costs.

### **Advantages of Absorption Chillers**

**WHEN THE CHILLER'S HEAT SOURCE IS LIVE STEAM /  
HOT WATER / THERMIC FLUID / THERMAL GASES**



**LOW MAINTENANCE**

Vapour absorption chillers have long service life with at least 20 years before the first major overhaul.

**MINIMAL OPERATING COST**

Utilisation of available asset in the plant offers cooling almost at free of charge.



**BETTER PART LOAD PERFORMANCE**

Feasibility of load balancing with minimal power consumption.

**REDUCED CARBON FOOTPRINTS**

As electricity consumption is drastically reduced, carbon emissions is reduced by several tonnes.



**NOISELESS OPERATION**

Control rooms require noise-free environment for minimal disruptions. Hence, VAMs are the right machines for control room cooling.

**ZERO OZONE DEPLETION POTENTIAL**

Cooling is carried out without the use of harmful CFC refrigerants.



