



BROAD AC: Case Study of Fazal Group

INTRODUCTION

Fazal Group is one of the oldest and largest textile groups in Pakistan, with operations in Cotton Ginning, Yarn Spinning, Greige Woven Fabric Manufacturing and Towel Production.

The Company has established a vertically integrated textile business producing finished products, processed and grey fabrics and yarn.

PROCESS DETAILS

This case study aims to describe chilling process at Fazal Cloth Mills (Open End Spinning Unit) and Ahmed Fine Textile Mills (Weaving unit). Details of both process are as follows:

Open-end Spinning:

Open end spinning is a technology for creating yarn without using a spindle. It is also known as break spinning or rotor spinning. In this process the fiber sliver is separated into single fibers. The separated fiber material is brought by an air stream to a collecting surface from which it is drawn off while being twisted. It is a more recent method of yarn formation compared to Ring Spinning. It is generally used for coarser yarns but with very high output levels. Autocoro machines are commonly used for this process which usually have high speed rotors in them.

Weaving:

When the weft yarn meets the warp a fabric is created. The weaving is made on highly technological weaving looms through a complex process carried out with the utmost care, in a controlled environment, and with great experience of the weaving staff. For Denim products, further down the line are special dyeing and stitching processes to get the final desired finish.

ENVIRONMENT

Both Open-end Spinning and Weaving process require a controlled environment for better functioning of machines and superior end product quality.

Ambient temperatures are controlled to remove the heat from machines and plant room, while humidity is controlled for superior end product quality.

Usual requirement for open-end spinning process is humidity less than 50 and temperatures around 24-26 degrees Celsius.

Usual requirement for weaving process is very high humidity levels and temperatures around 26 degrees Celsius.

To meet the aforementioned environment requirements, Chillers and AC Plants are incorporated in the system.

PLANT SITUATION

At Fazal Cloth Mills, there are two MTU engines and two CAT engines. Client is producing steam from the exhaust of these engines. Jacket Water is available for heat recovery.

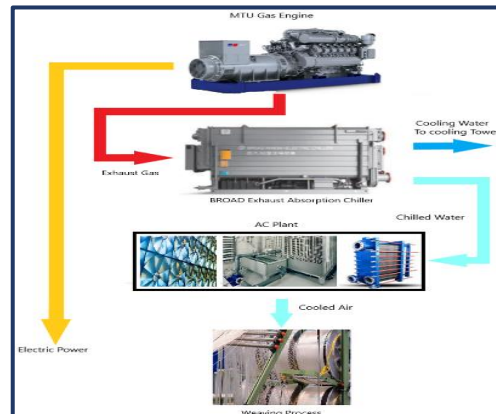
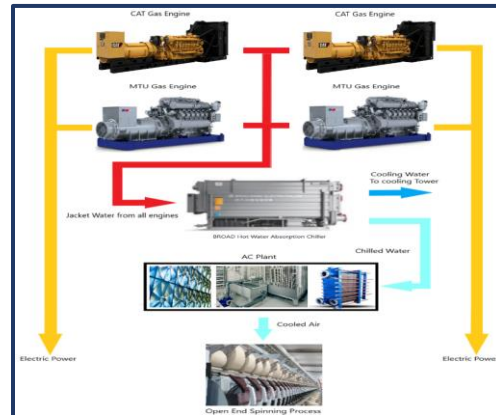
At Ahmed Fine Textile Mills, there are MTU engines. Exhaust gases and jacket water of these engines were not being utilized. Therefore, client wanted to use waste heat recovery chiller to provide necessary cooling for the weaving plant.

BROAD SOLUTION

At Fazal Cloth Mills, BROAD proposed a single hot water absorption chiller to recover the heat of jacket water of all four engines to fulfill their cooling requirement.

At Ahmed Fine Textile Mills, BROAD proposed a single exhaust fired absorption chiller to provide free cooling. It is noteworthy that BROAD introduced world's first exhaust fired absorption chiller and has been doing R&D to improve this technology. Thus the supplied chiller has been operating for more than a decade and has proven to be highly reliable in its operation.

Model	Category	USRT
BDH400	2 MTU & 2 CAT Engines Jacket Water	1320
BE125	MTU Engine Exhaust	415
TOTAL Cooling Capacity		1735



FEATURES

- 1) Total capacity = 1735 USRT
- 2) Chillers with high quality tubes with thickness even above the Japanese standard. Titanium Tubes in latest generation.
- 3) High Quality Imported Factory Mounted Heat and Cold Insulation.
- 4) Efficient Plate Type Heat Exchangers.
- 5) Auto Purging and Venting System. Does not use vacuum pump for purging. Saves additives.
- 6) All equipment form renowned brands e.g Danfoss, Omron, Telemecanique etc.
- 7) Smart Chiller. Able to control auxiliaries as per demand.
- 8) Real time online COP displayed on the chiller screen. Instant, Hourly and Daily COP indication.
- 10) Chillers are being monitored at BROAD Global Monitoring Center for free throughout chiller life span. Three tier monitoring Total.
- 11) Free of cost solution sampling service throughout chiller lifespan.
- 12) Efficiency of power houses increased above 60% through BROAD chiller.
- 13) With **waste heat recovery chillers**, BROAD will make huge annual **savings** when compared with electric chillers. **(PKR 40 Million approx.)**
- 14) Reduced Carbon Emissions equivalent to planting 1.5 million trees. This is also in line with the Green Initiative of Government of Pakistan.