

## BROAD AC: Case Study of Habib Oil Mills

### INTRODUCTION

Habib Oil Mills (Pvt.) Ltd. "HOM" is the largest FMCG Company exclusively in the vegetable oil & fats sector in Pakistan.

The company produces premium brand cooking oils and hydrogenated cooking mediums and markets the products through its own distribution network. The manufacturing facility of HOM is equipped with a continuous process plant, which enables production without any human interference.

Within the cooking oil and banaspati segment, the company manufactures a variety of products ranging from household to industrial and bakery food items; mainly for cooking, frying, puffing, creaming and baking purpose. With time, HOM has diversified and established itself in the categories of Water, Recipes Mixes & Masalas and sauces as well.

In this case study we will explore the details of process and chiller application.

### PROCESS DETAILS

We all generally like the snap of chocolate, the creaminess of a biscuit filling, the pour ability of cooking oil and the texture of pastries. All these products depend on the melting or solid and liquid characteristics at the various temperatures of the oil or fat used in the particular product.

In naturally occurring edible oils and fats there are a range of fatty acids involved with the triglycerides. These fatty acids can be saturated, unsaturated, long-chain or short-chain and in themselves have different melting points.

In edible oil processing, a fractionation process consists of a controlled cooling of the oil, thereby inducing a partial, or 'fractional', crystallization. The remaining liquid (olein) is then separated from the solid fraction (stearin) by means of a filtration or centrifugation.

Therefore, a chiller is required to successfully achieve desired results of fractionation process.

### ENVIRONMENT

General temperature requirement for fractionation process is 20-25 degrees Celsius.

### PLANT SITUATION

At Habib Oil Mills, they had purchased a new MTU engine and wanted to utilize its waste heat for their process needs.

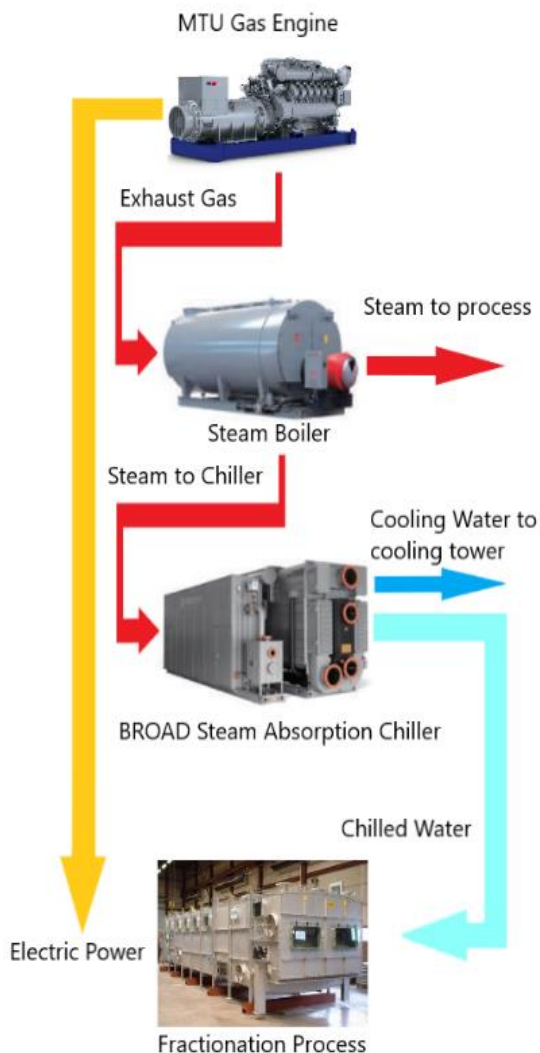
### BROAD SOLUTION

Habib Oil Mills had a steam requirement for their process and also needed cooling for their fractionation process.

We calculated their total steam requirement and calculated the total steam that can be produced from the engine exhaust gases.

As the engine could produce sufficient steam to cater both the process and chiller input requirement, therefore BROAD proposed a double stage steam chiller.

Model	Category	USRT
BS100	Steam from WHR Boiler	330
<b>TOTAL Cooling Capacity</b>		<b>330</b>



### FEATURES

- 1) Total capacity = 330 USRT
- 2) Chiller with TITANIUM TUBES. Increased lifespan of 60 years.
- 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) Whole unit filtration system ensures reliable operation, increased lifespan and stable output by filtering non-desired particles through magnetic and SS mesh filters.
- 7) Smart Chiller. Able to control auxiliaries (Packaged Water Distribution System included) as per demand.
- 8) Real time online COP displayed on the chiller screen. Instant, Hourly and Daily COP indication.
- 9) Chiller is being monitored at BROAD Global Monitoring Center for free throughout chiller life span. Three tier monitoring Total.
- 10) Free of cost solution sampling service throughout chiller lifespan.
- 11) Efficiency of power house increased above 65% through BROAD chiller.
- 12) With **waste heat recovery chiller**, BROAD makes huge annual **savings** when compared with electric chillers. **(PKR 15 Million approx.)**
- 13) Reduced Carbon Emissions equivalent to planting 0.3 million trees.