

Technical Visit to Kibing Group (M) Sdn. Bhd., Negeri Sembilan

NEGERI SEMBILAN BRANCH

reported by



Ir. Dr Oh Seong Por

The Negeri Sembilan Branch (IEMNS) of The Institution of Engineers, Malaysia, organised a technical visit to Kibing Group (M) Sdn. Bhd., at the Tuanku Jaafar Industrial Zone, Sg. Gadut, Negeri Sembilan, on 4 August, 2018. The group of 26 participants from engineering consultant firms, industry sectors, universities and the IEMNS office spent half a day at the plant which is a subsidiary of China Kibing Glass Company.

The company occupies a land area of 130 acres but only 68 acres are used for the glass plant which still makes it the biggest industrial glass maker in Negeri Sembilan. Kibing Glass Company bought the plant which was previously operated by Samsung Corning Malaysia. Reconstruction began in 2016 and mass production started on 20 April, 2017. It has two production lines with a combined capacity of 1,400 tons per day. One line is dedicated to low-energy coated glass production and the other

is for high-end multi-colour glass production.

The delegates, led by Ir. Dr Oh Seong Por, Branch Chairman of IEMNS, arrived at the plant at 9.30 a.m. where they were welcomed by Kibing Managing Director Mr. Lim Swee Ee. They were briefed on the company profile, product portfolio, production capacity and waste heat recovery system.

At about 10.30 a.m., the delegates toured the production lines to see in detail the float glass manufacturing technique which comprises the following:

1. Metering and charging of raw material (fine sand rich in silica and other chemical compounds).
2. Melting process using a furnace burner to raise the temperature to 1,500 o Celsius to transform the raw materials to molten glass.
3. Forming, in which glass is floated on melted tin to evenly spread width and thickness.

4. Annealing which is gradually cooling down glass sheet to prevent distortion.
5. Cutting the cooled and solidified glass sheet to the desired dimensions.

Figure 1 illustrates the process flow of float glass. The process layout is an in-line design which enables float glass to flow in a straight line. Along the process, the glass temperature profile is well regulated to sustain thickness, width, strength and to prevent distortion. These conditions set the production line at about 1 km long, from raw material charging to the stacking of glass sheet. A high level of automation is applied throughout the entire process flow, including automatic mixer, robot to transport work piece, continuous visual inspection system and automatic cutting mechanism.

The participants enjoyed the 2km walking tour of the entire production line. They also observed the multi-million-ringgit waste heat recovery system (see

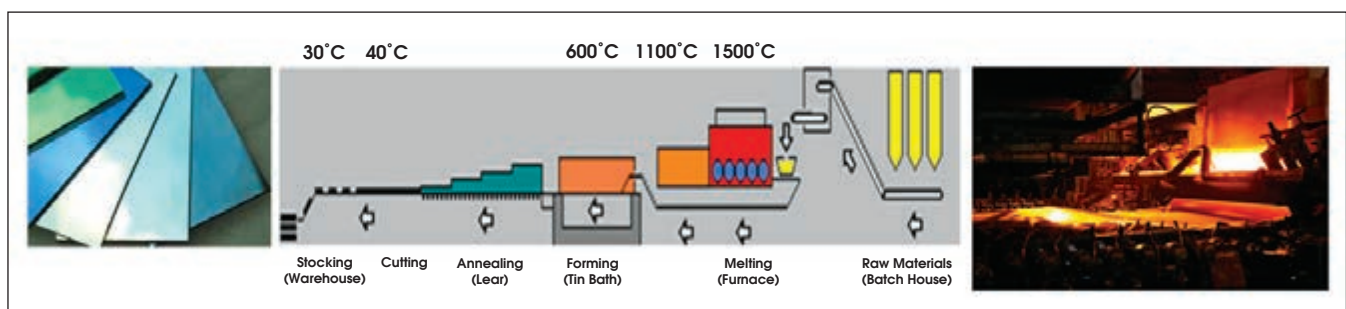


Figure 1: Process Flow of Float Glass

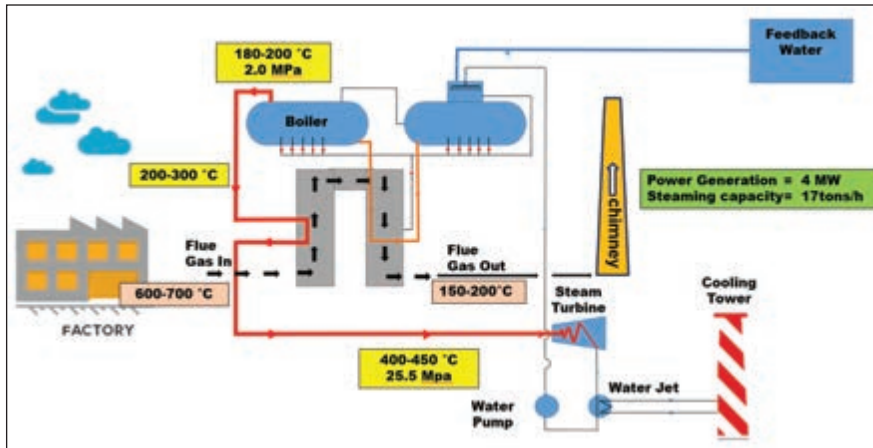


Figure 2: Schematic Diagram of Heat Waste Recovery System



Touring the waste heat recovery system



Participants of the technical visit to Kibing Group (M) Sdn. Bhd.



Ir. Dr Oh Seong Por presenting a letter of appreciation to Mr. Lim Swee Ee



Participants touring production line

schematic diagram in Figure 2). The flue gas (residual gas) from the melting furnace remains at a high temperature of 600°- 700° Celsius. The waste heat recovery system recycles this flue gas to reheat the

steam to superheat temperature levels of 400°- 450° Celsius and raise its pressure to 25.4MPa.

These conditions enable the steam working fluid to propel the steam turbine and generate

electric power up to 4MW which, according to Mr. Lim, is enough to meet 90% of the electric energy consumption of the entire plant. It also helps reduce the flue gas temperature to 150°-200° Celsius before it is released into the environment via a 125m-tall chimney.

Indeed, because of this green technology which conserves energy and protects the environment, Suruhanjaya Tenaga Malaysia has recommended a green tag certification for the Kibing Glass Group.

After the tour, the delegates went to the Visitor's Lobby where Mr. Lim and Ir. Dr Oh conducted a wrap-up session that ended with the exchange of souvenirs and taking a group photograph. ■