



Modern Techniques for Batch & Cullet Handling in Glass Plants

Presented by

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Overview of ZIPPE Group

Evolution of ZIPPE India

General Aspects of Batch and cullet handling

Batch Mixing

Batch & Cullet Transportation

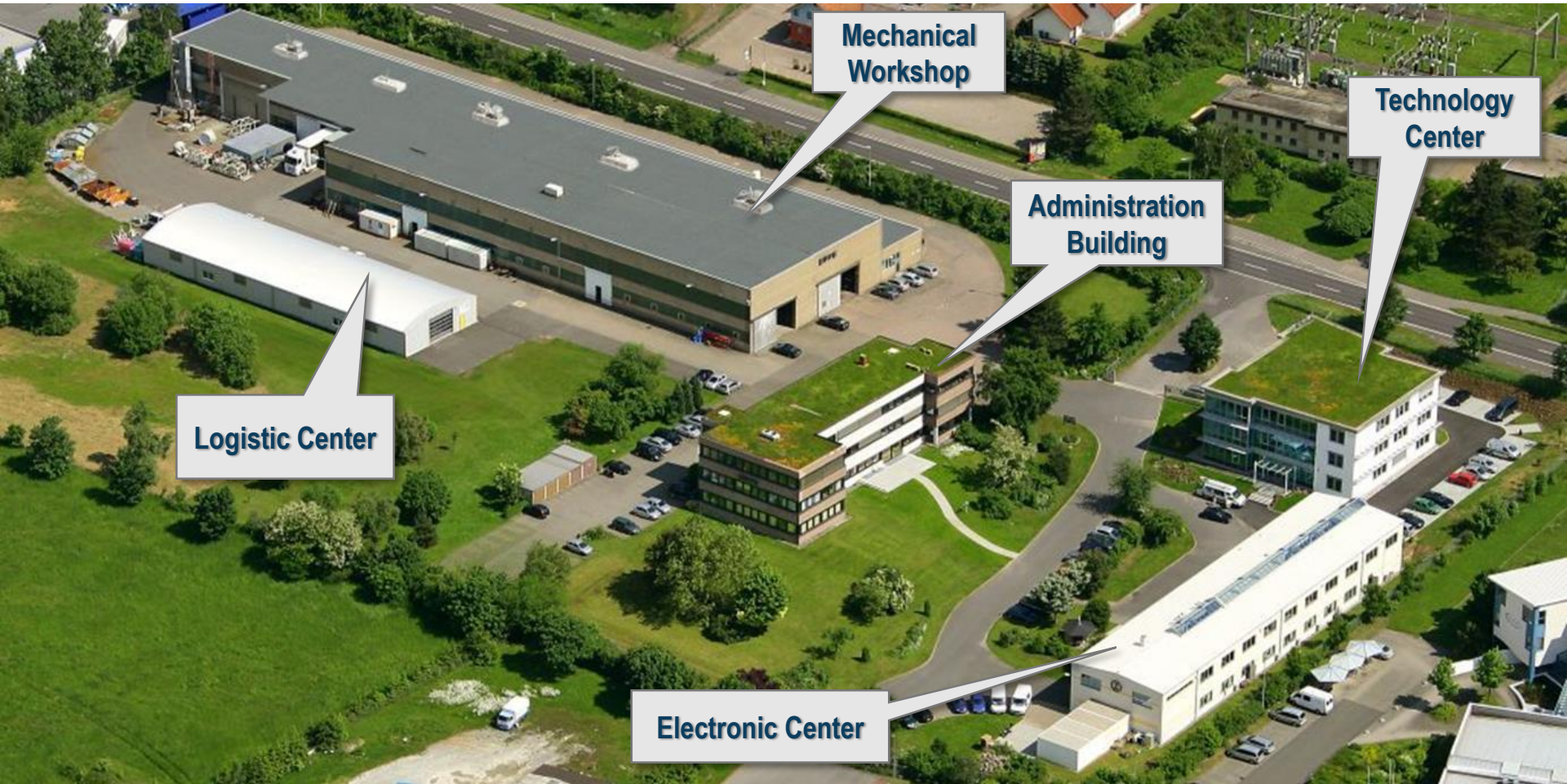
Batch & Cullet Preheating

Way-forward

ZIPPE Group



Wertheim – Zippe group Headquarter

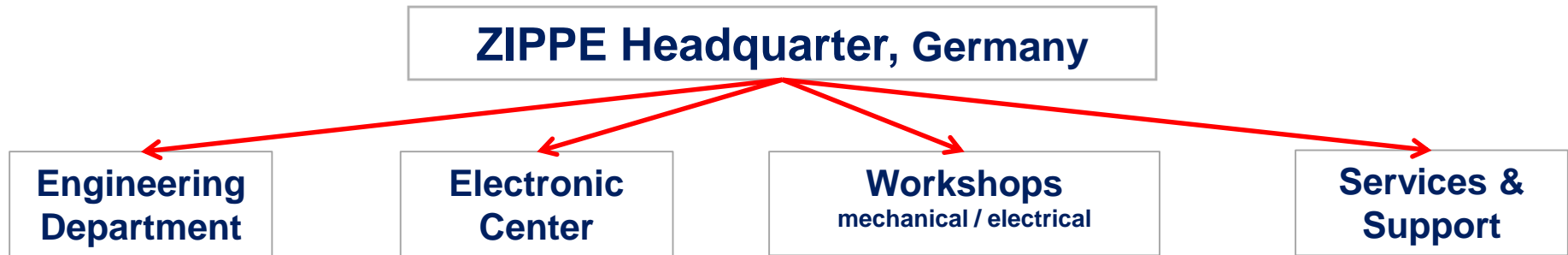


ZIPPE premises in Wertheim

ZIPPE Industrieanlagen GmbH

// 250 employees in Germany

// Turnover : 70 Million EUR /Year



ZIPPE branches abroad:

- ZIPPE India
- ZIPPE Poland
- ZIPPE UK
- ZIPPE Italia
- ZIPPE China

ZIPPE subsidiaries:

- Mügeler Maschinenbau GmbH
(own mechanical production, specialized in the field of belt conveyors)



Alfred Zippe senior
founder of the company
First generation



Alfred Zippe junior & his wife Edith
Second generation



Dr. Bernd-Holger Zippe
President & CEO
third generation

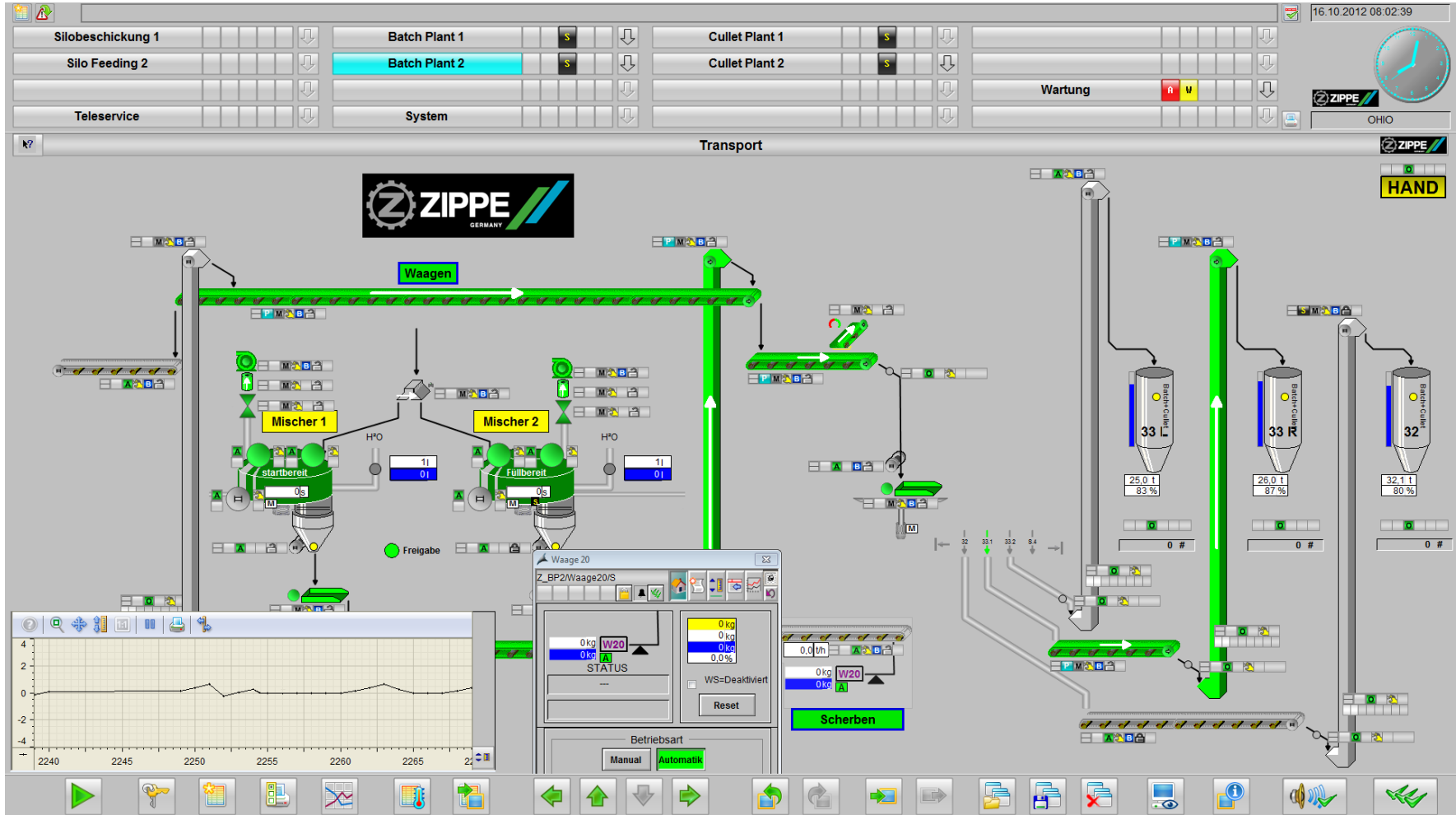


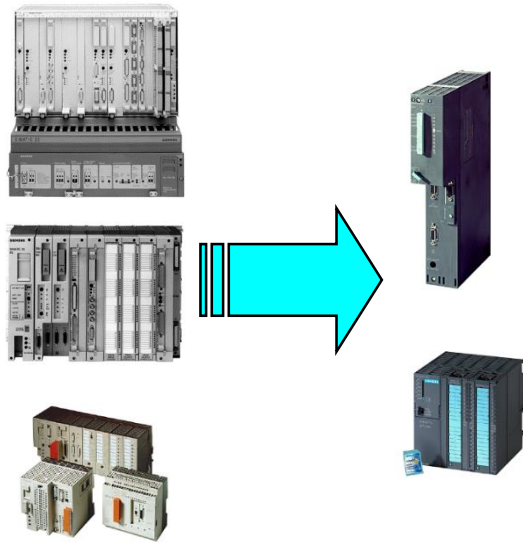
Dr. Philipp Zippe
Vice President Business Development
fourth generation

We offer:

- **High class, reliable technique**
- **Good Service and good customer support worldwide**
- **Environmentally responsible behaviour in matters of:**
 - **Energy consumption**
 - **Recycling**
 - **Dust exposure and environmental load**
- **Modernisation of existing plants**

SCADA Screen / PCS7





- Upgrade during production without interruption
- Latest components (spare parts)
- New functions regarding to the new safety standards
- New features und control functions
- Increase of production
- Reduce of energy costs
- Fast and efficient support



Core competence ->> Modernisation / Upgrades / Retrofits

Quality- and Environmental Management System

DIN EN ISO 9001



CUSTOMER SUPPORT

ZIPPE provides

- 24h service hotline without any costs during the guarantee period
- Problem solution and trouble shooting
- Optimization of conveying and process cycles
- Maintenance and care instructions
- Functional and condition tests with „ZIPPE plant checks“
- Consultation on spare parts



Zippe is top Batch plant and Technology supplier in India. To facilitate Indian customers in a better way , Zippe India was incorporated. Some interesting facts –

- **Incorporated on 23rd of Aug'2012.**
- **Average annual turnover around INR 70 Million.**
- **Excellent Vendor base and service support from India.**
- **Very cost competitive, Quality oriented and very good reach to customers.**

Glass making raw materials are not easy to handle, unless you are being guided by an expert like Zippe. Some Critical parameters concerning glass making raw materials, Batch and cullet are

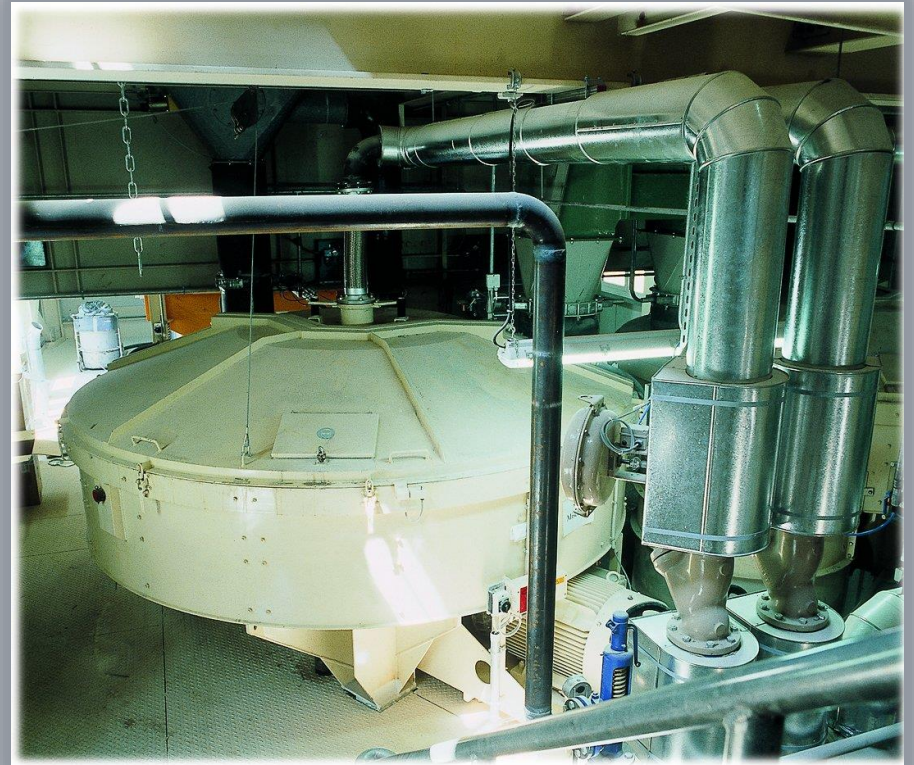
- Knowledge of correct granulometry and moisture required for the raw materials.
- Knowledge of proper weighing and transportation sequence of raw materials.
- Knowledge of proper Batch moisture, Batch temperature, Dry mixing time, wet mixing time and Batch transportation time.
- Knowledge of Batch Homogeneity Index and its implications.
- Knowledge of correct cullet size, sandwiching of batch and cullet for achieving optimum melting conditions.

Zippe has done extensive research and commercial trials to get expertise in all these areas, and with a vast knowledge base we are capable of optimizing the batch making process to get the best quality batch and very much suitable for maintaining proper melting conditions.

Batch mixing itself is a vast subject and can be discussed for days together. We would like to highlight just few points which are important for an efficient and homogeneous mixing –

- Selection of mixer size is very important. Mixer must not be over filled or less filled to achieve proper mixing. We have observed that 80 – 90 % filling of mixer give best results.
- Batch cycle time is important but at the same time sufficient time should be given for dry mixing, water addition and wet mixing. These three things are not fixed and vary based on mixer size, raw material granulometry and moisture etc. But ultimate aim should be to get a good homogeneity index and accordingly these parameter should be optimized. Zippe consider a standard deviation of Sodium Carbonate distribution from 20 samples (from one batch) less than 0.25 % as a good homogeneity index.
- Periodical cleaning, proper maintenance like timely replacement of worn out parts, periodical calibration of water dosing system are also equally important to achieve good mixing.

Steam addition for mixer



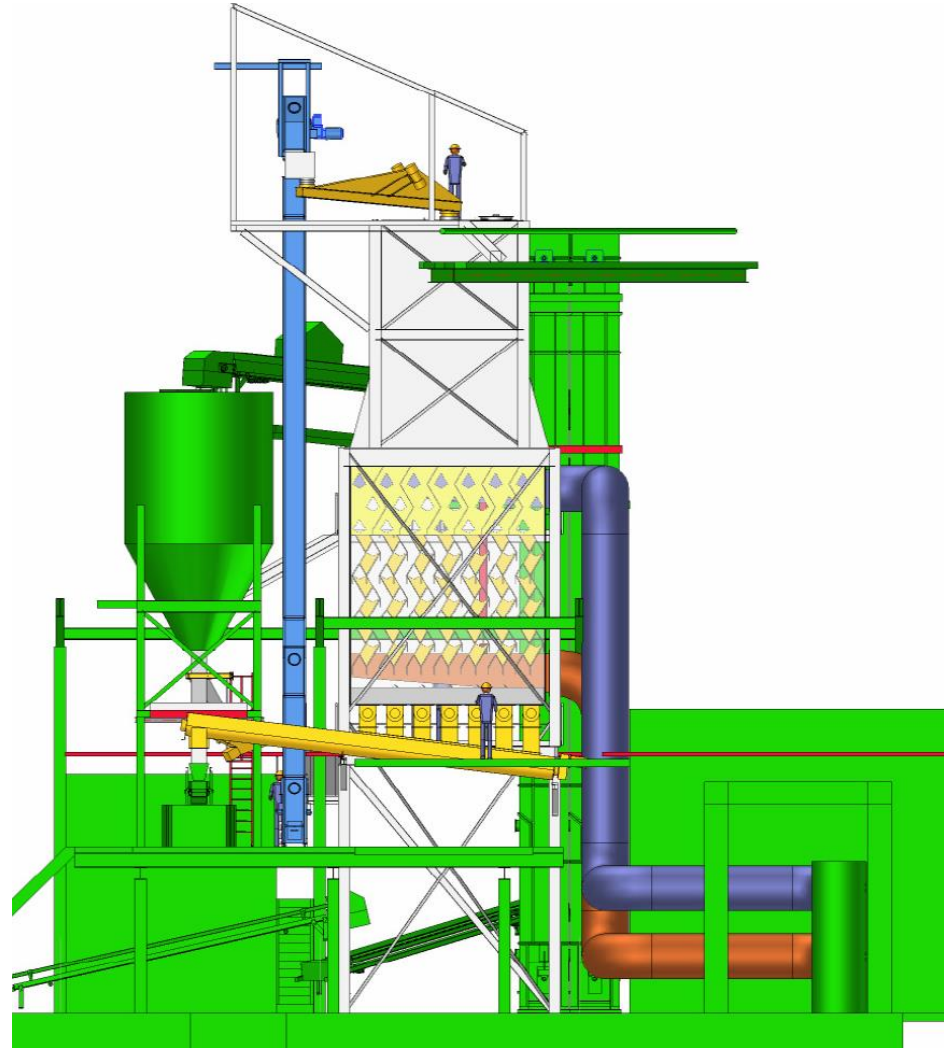


Proper Transportation of Batch and cullet is equally important to maintain homogeneity of batch.

- It should be avoided to transport batch for too long distance to prevent loss of moisture and segregation.
- There should not be many transfer points in the batch transport to prevent segregation of batch.
- Cullet should be equally distributed on the entire batch line for proper melting.
- Batch must not be stored for longer time to avoid loss of moisture and segregation.

Energy saving is the demand of the day. Its not only required to remain cost competitive in the market but also social responsibility to every industry to reduce emissions and contribute for a cleaner environment.

Zippe has done extensive research for energy saving and developed state of art Batch and Cullet preheating systems and at least 7 such small and big systems are in operation world wide contributing for a greener earth.



Typical Layout Of a Zippe Batch and Cullet Preheating Plant

Energy Saving by Batch & Cullet Preheating



Preheating system installed in 2010

- Furnace type: regenerative U-flame
- 1 DH
- Throughput: appr. 350 tons
- Sizing: 5x3x13m
- Flue gas inlet temperature: ~450°C
- Flue gas outlet temperature: ~220-230°C
- Cullet percentage: 75-90%
- Energy saving: ~13%

Energy Saving by Batch & Cullet Preheating



Preheating system installed in 2011

- Furnace pull: 400 tpd
- Sizing: 4x3x19m
- End fired furnace (incl. electric boosting)
- 1 DH
- Cullet percentage: 40%
- Flue gas inlet temperature: 370°C
- Flue gas outlet temperature: 210°C
- Energy saving: 10-12%

Batch making process has always remain last priority for most of the Indian customers. Only few professional organisations are giving it due importance and they are maintaining a distinct glass quality and negligible problems from batch plant.

- One should remember a good start is like half way through. Experienced glass makers say if you have supplied a good batch to the furnace you have already achieved 70 % of your glass quality.
- Glassmakers must remember that an improperly engineered and designed batch plant may be cheap in the beginning but turns out to be very costly in longer term because of heavy losses due to bad batch quality and lot of maintenance requirements.
- Indian glass makers must give it a thought to start exploring possibilities of energy savings by installing Batch and cullet preheating systems. Energy cost is increasing day by day and government regulations are also becoming tight to force industries for lesser emissions.

**Many thanks
for your attention**