



WEL COME

NETZSCH PUMP : SUGAR SEMINAR

On 19th June 2019

Venue:

Hotel Sayaji, Shahupuri, Kolhapur

PAPER ON-

**" Technological Advances in the Rotary Positive Displacement
Pumps Industry "**

**Innovative combine development for 'A' Mascuite at Pandurang Sugar,
first time in India**

By Shree R.B.PATIL (Works Manager)

Shree Yashwant Kulkarni (Managing Director)

Shree Sudhakar pant Paricharak

(Chairman)

Shree Vasant Rao Deshmukh

(Vice Chairman)

Shree Pandurang Sahakari Sakhar Karkhana Ltd.

Shreepur , Tal-Malshiras,

Dist- Solapur,

State -Maharashtra

Necessity of rotary positive displacement screw pump instead of Rota pump

All of us having non gravity sugar plants are using Rota pump to convey “A” masquite from “A” crystallizer to “A” batch machine pug mill.

Disadvantages of Rota pumps

- ▶ More maintenance cost of the pump
- ▶ More wear and tear of rotating parts of pumps
- ▶ More masquite leakages through shaft sealing
- ▶ Consuming more electric power (more than twice)
- ▶ More Crystal Damage
- ▶ More Dust formation
- ▶ Polluted & Dusty working environment
- ▶ Obstacle in getting uniform sugar crystal and its size
- ▶ Noise & Sound Pollution
- ▶ Reduces Sugar price due to dusty and non-uniform crystal sugar

Innovative Designing & development steps of new NETZSCH pump for 'A' Mascuite

Considering disadvantages of Rota pump, NETZSCH pump team and Pandurang Sugar technical team, under able guidance of [Shree Yashwant Kulkarni Managing director](#), unitedly decided to develop a best quality and proven technology **“Rotary Positive Displacement Screw Pump”** to overcome the Rota pump disadvantages.

After long meetings, discussions for removing Errors and Difficulties this new pump was designed with proper automation for using it to lift 'A' Mascuite without any disturbance. Role of automation for control and smooth performance was very important.

Pandurang Sugar given an opportunity to develop and supply this pump on trial basis and it was decided that after proven performance and trial for more than two weeks Pandurang Sugar will place purchase order. In India, such type of screw pump was first time designed and used for 'A' mascuite successfully.

For the discussion & inspection of the pump Pandurang Sugar technical officers & M.D Saheb visited to NETZSCH technology at their works at Verna industrial estate Goa.

Length of pump-18 ft, weight of pump- 2 MT

This German make NETZSCH pumps are widely used all over world in Europe, Brazil, Thailand, Indonesia for B, C, A Molasses and for B & C mascuites.

'A' Mascuite Screw Pump Specification's

- ▶ Capacity- 75 m³/Hr
- ▶ Make- NETZSCH
- ▶ Pump Head- 12 to 15 Mtrs.
- ▶ Temp of 'A' Mesquite- 60⁰ c to+ - 5⁰ c
- ▶ Bricks of 'A' Mesquite- 90 to 93⁰
- ▶ Viscosity- 20000 cps
- ▶ Motor- 30 KW

Automation for Smooth and Safe Operation

- ▶ Pump Motor is driven by AC VFD
- ▶ PID controller used to control motor speed
- ▶ Ultrasonic level transmitter fitted to know suction gutter level
- ▶ Alarm system used for low level of crystallizer gutter (40%) detection as crystallizer doors are manually operated
- ▶ We have made provision of low level alarm at which pump RPM should be minimum (20%) to avoid cavitation and safeguard of stator
- ▶ We have provided temperature sensor to detect stator temperature, as temperature reaches to set point (70⁰ c), Temperature controller cuts the signal fed to VFD and in turn VFD stops and safeguards the stator to avoid dry run
- ▶ We have provided pneumatic actuated gate to maintain gutter level automatically by using PID control
- ▶ Hot water connection provided to avoid pump chocking and stator damage
- ▶ Provided 2 ½” - 2 nos. drain plug
- ▶ Logic- As level of crystallizer gutter reduces motor RPM reduces, as gutter level reaches to set point motor RPM should be increased proportionally

Advantages of NETZSCH PCP-NM148SY02S08J against ROTA Pump

1) Power Saving: (60%)

- ▶ 1 No of NETZSCH NEMO NM148SY02S08J (15 KW-18 KW) replaced 2 No's of Rota pumps with total absorbed power of 40 KW (Installed power 22 KW each 2 Motors) of Rota pumps & total power saving of around 22-25 KW
- ▶ Per season power saving- 1,00,000 units.

2) Crystal Damage:

- ▶ Crystal Damage reduced by 20-25 % (Dust collection)
- ▶ Better crystal quality which enhanced uniform Sugar crystal
- ▶ Sugar dust free, Clean & Non-Hazardous working environment
- ▶ We can get minimum Rs.3 to 5/- more per quintal of sugar

3) Smooth & Noise Free Operation:

- ▶ Noise Free Operation with Non Pulsating Continuous un-interrupted smooth flow

4) Leakage & Wastage Free:

- ▶ Leakage free pump operation from Shaft sealing saving high purity "A" Mascuite

5) Automated Control System:

- ▶ Ultrasonic level sensor control to maintain suction level and to avoid pump cavitation
- ▶ Dry Run Protection to avoid stator dry running

6) Reduction in Maintenance cost

- ▶ Stator life is long (2 Crushing season)

Observation:

Sr. No	Flow (m³/Hr)	Flow (TPH)	Diff. Pressure (Bar)	Frequency (Hz)	RPM	Power Consumption (KW)
1	70	102	1.5	50	91	18
2	64	93	1.5	45	82	16
3	36	81	1.5	40	73	15
4	49	71	1.5	35	64	15
5	43	62	1.5	30	55	14



THANK YOU!