

Energy Efficient Pumping Solutions by NEMO® Progressive Cavity Pumps



BEE 3LWorkshop on “Adoption of Energy Efficient Process Technologies & Practices and Implementation of EC Act 2001 in Pulp & Paper Sector”

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Assembly unit - Goa
Production Unit (to start shortly)
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Verna, Salcette, Goa - 403 722

- Diversified German Business Group in existence since 1873
- Pump division established in 1952 with production facilities in Germany, Brazil, USA, China, Japan and now in India.
- World leader in Progressive Cavity Pump business with >25% market share and presence in >65 countries.
- Established player in Pulp & Paper with strong recommendations from global consultants Voith, Metso Paper, GAW, Arjun Technologies and many more.
- Strong presence in India with clients ITC Paper, JK Paper, NR Agarwal Group, Shree Bhawani Paper ...
- Presence in chemical division of Pulp & Paper Industry with strong recommendations from OEM's - NALCO, CIBA, Arjun Chemicals, IVAX Paper Chemicals ...

- Continuous, smooth and almost pulsation free conveyance of fluids independent of pressure and viscosity
- High dosing accuracy even at low rotational speed
- High suction lift and pressure capability up to 72 bar
- Large capacity - flow rates up to 700 m³ / h
- Reversible direction of rotation and thus flow
- Ability to handle fluids with high % of dry solid content as in the case of medium / high consistency pulp
- Low internal velocity for gentle handling of fluids with least damage.
- Continuous, smooth and almost pulsation free conveyance of fluids independent of pressure and viscosities

NEMO[®] Progressive Cavity Pumps are specifically designed for pumping fluids with the following characteristics:

- Low to high viscosity (1 to 3 million m Pas)
- High solids content up to 50% (size up to 150 mm) and free of solids
- Shear sensitive
- Thixotropic and dilatant
- Lubricating and non - lubricating
- Toxic, fibrous, adhesive
- Abrasive, corrosive and aggressive (pH 0 -14)
- High gas content as in the case of very low consistency pulp.
- varying temperatures (from - 20 to + 200 0 C)

- Pulp transfer at different consistencies up to 15% and even more
- Transfer of mediums in recovery plant like Black Liquor, Green Liquor and White Liquor ... (with or without solids)
- Dosing of Chemicals for
 - Pulping - steaming & boiling aids, additives for steaming and boiling, defoamer, antiseptic, de-inking agent ...
 - Paper making - sizing & strengthening agents, retaining & filtration aids, dry & wet strengthening agent, defoamer in pulp, softeners, dispersants, colouring, fluorescent brightener, resin control agent
 - Processed paper - coating filler, densifier, bond for coating, coating aid, oil & adhesive preventing agent, waterproof agent, anti-static agent, lotion, antirust, lubricant, model removing agent...
- Transfer of sludge from different stages of processing including dehydrated sludge and for pumping milk of lime and other flocculating agents.

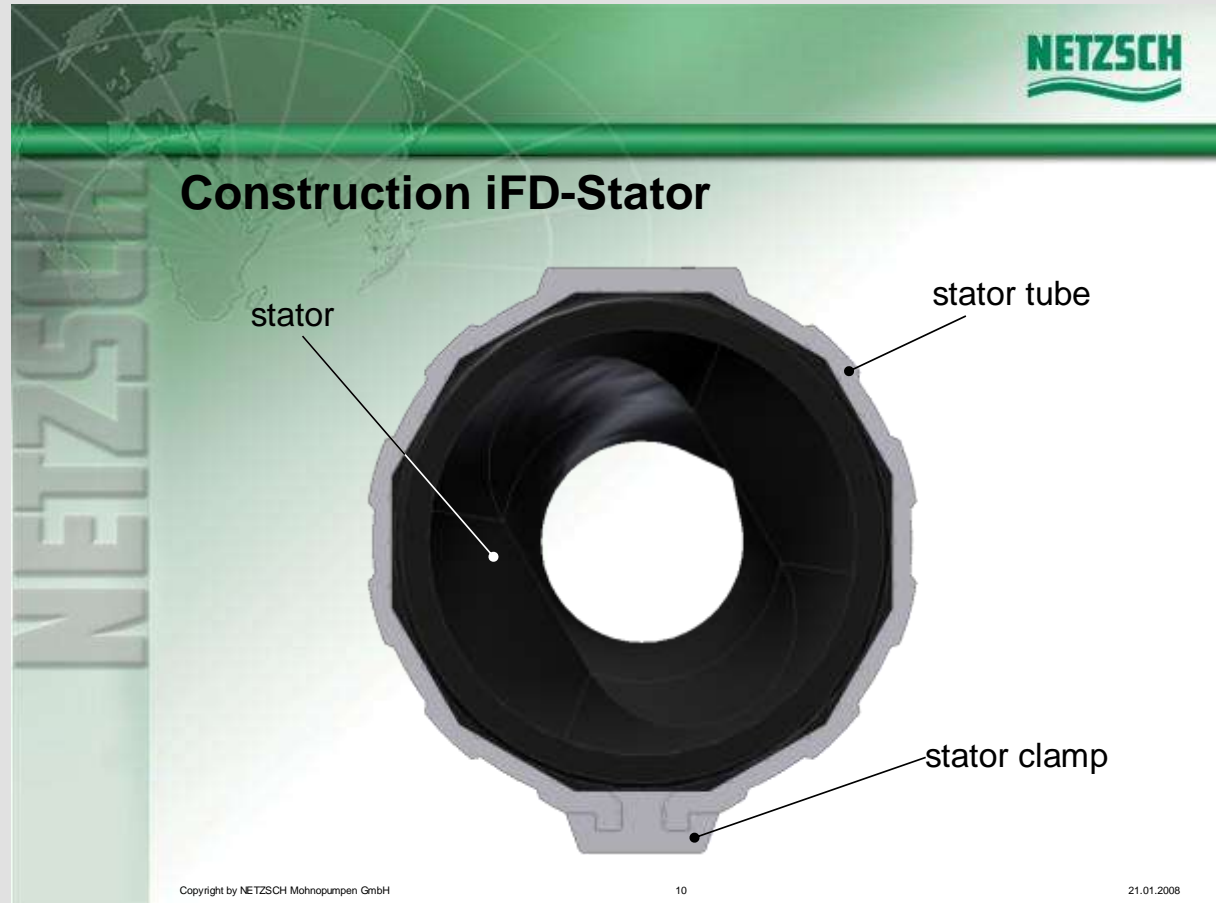
iFD -Stator®



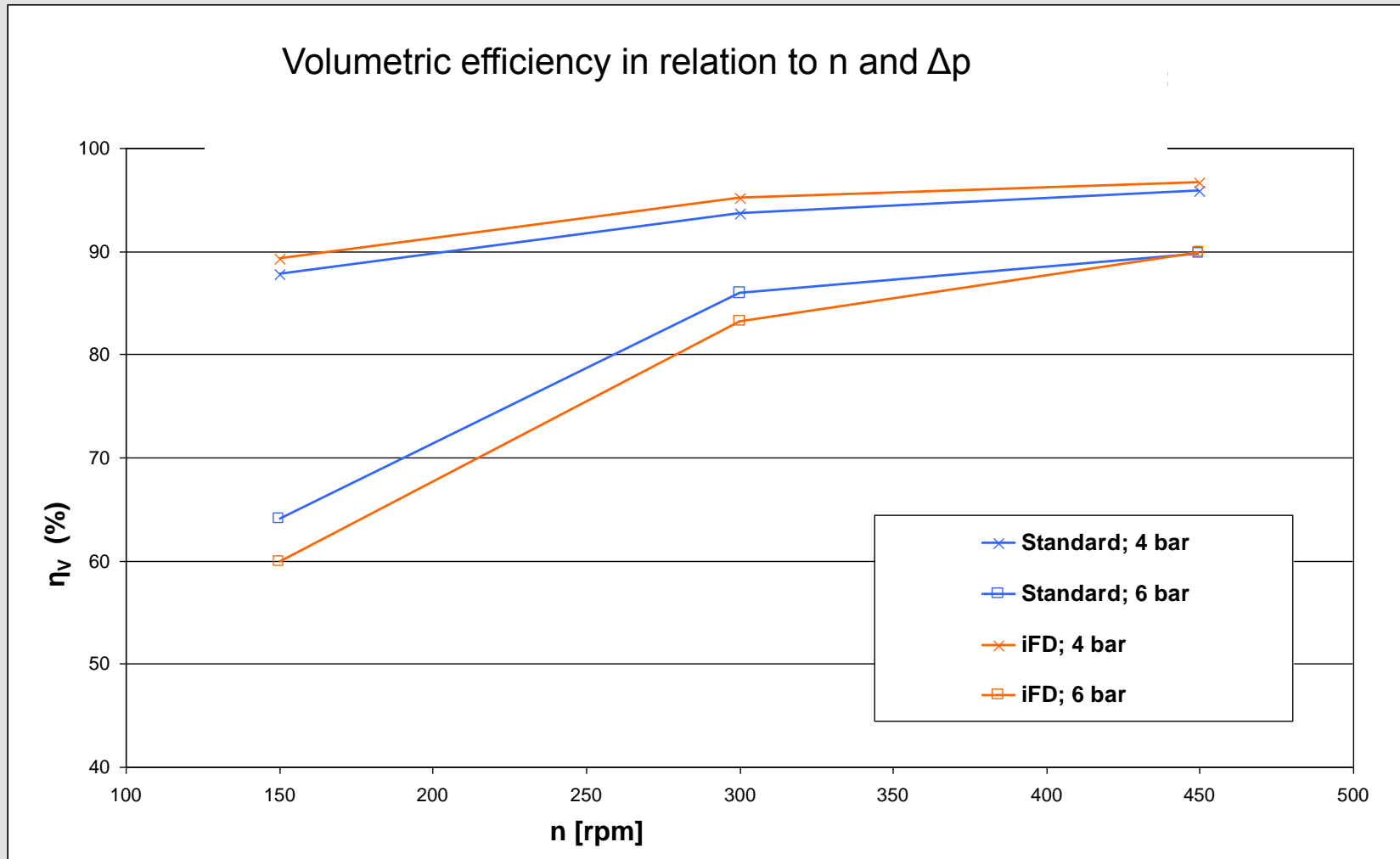
- Overall Efficiency of the Pump is improved significantly
- Flexibility of stator prolongs lifetime and capacity
- It reduces life cycle and energy costs
- Low starting torque and low power consumption than standard stator
- Changing of stator is quick and easy
- Pulsation is reduced and flow behaviour is improved
- Replacement of stator is less expensive & housing reusable

iFD -Stator®

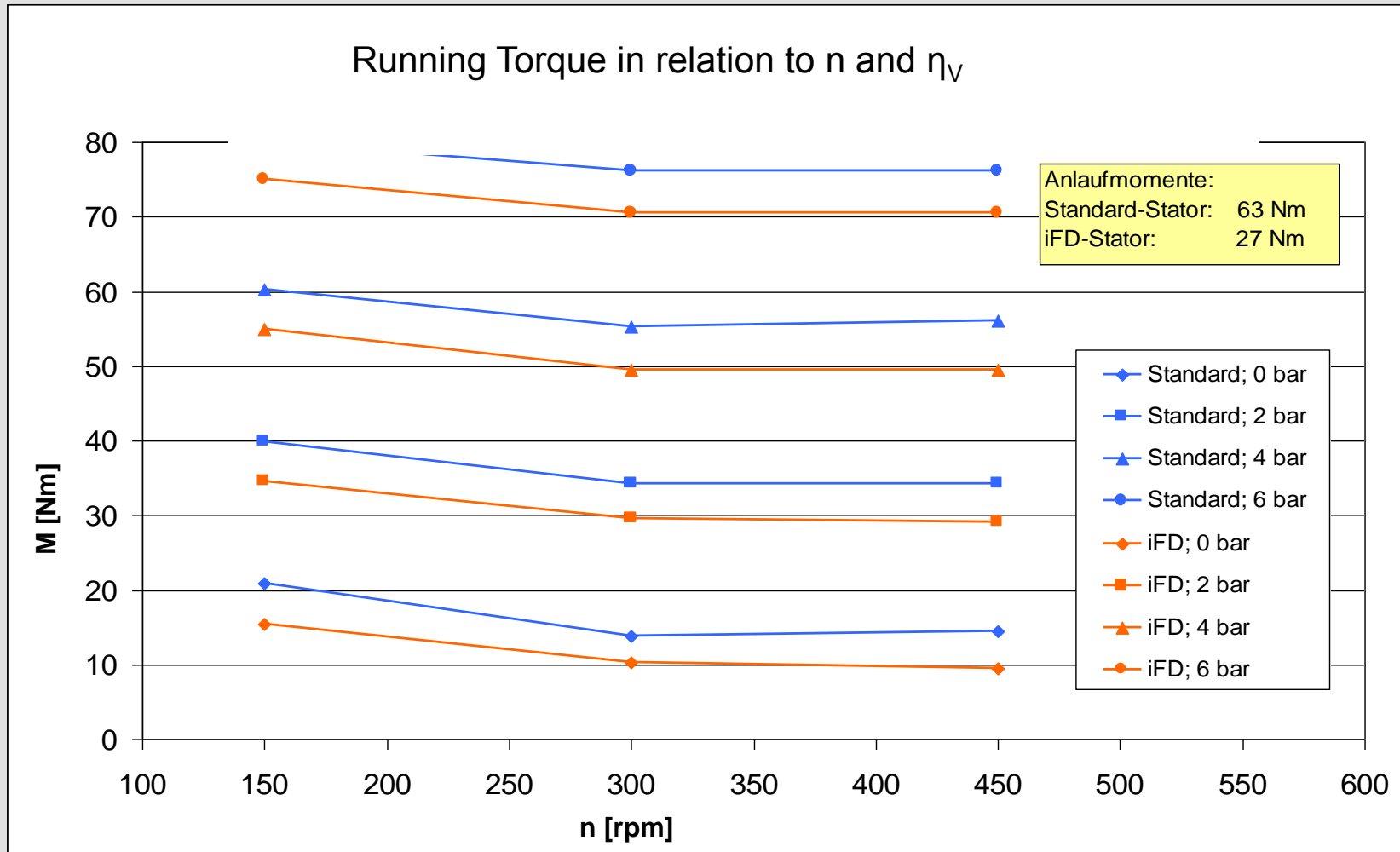
- Energy efficient
- Economic
- Eco friendly



iFD-Stator[®] to Conventional Stator



iFD-Stator[®] to Conventional Stator



Assembly of iFD-Stator®



1. Take off the stator



2. Clamp the stator housing and remove the rail



3. Remove the NEMOLAST[®] stator from the housing and put a new stator in



4. Clamp the stator housing and replace the stator rail



Assembly of iFD-Stator®

5. Slide the stator on to the rotor and tighten the stator bolts



Operating Parameters

Fluid	:	MC Paper Pulp
Consistency	:	10 - 13 %
Specific Gravity	:	1.02
Pumping temperature	:	90- 95° C
Flow	:	75 m ³ /hr
Suction condition	:	Flooded
Discharge pressure	:	11 bar

Experimental Case Study

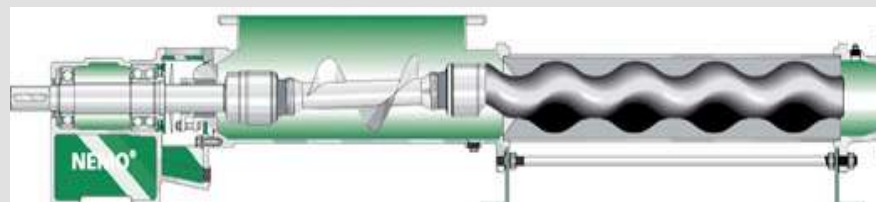
Standard MC Pump Parameters

Pump speed : 960 rpm
Output : 75 m³/hr
Absorbed Power : not known
Recommended Power: 90 kw (min)



NEMO[®] PC Pump Parameters

Pump speed : 195 rpm
Output : 75 m³/hr
Absorbed Power : 38 kw
Recommended Power: 55 kw



Power Consumption per hour

Standard MC Pump : 90 kw

NEMO[®] MC Pump : 55 kw

Energy Saving with NEMO[®] MC Pump: $90 - 55 = 35$ kw / hour

Power Consumption per day

Standard MC Pump = $90 * 24 = 2160$ kw

NEMO[®] MC Pump = $55 * 24 = 1320$ kw

Energy Saving per day = $2160 - 1320 = 840$ kw / day

Operating Costs

Considering average unit charge @ Rs. 5.50 / kw

Standard MC Pump: 2160 Kw / day ----- Rs. 11,880.00/ day

NEMO[®] MC Pump: 1320 Kw / day -----Rs. 7,260.00/ day

Saving with NEMO[®] MC Pump = 11,880.00 - 7,260.00 = Rs. 4,620.00/ day

Total Saving in a Year = . 4,620.00 * 365 = Rs. 16,86,300. 00 / year

Note: The above benefits are based on recommended kw instead of bkw and pump running at uniform consistency, pressure and output only.

NEMO[®] MC pumps are more efficient & offer power saving to the tune of up to 50% when compared to existing standard MC pumps.

In addition to direct benefit of Rs.16.86 lakh / year NEMO[®] PC pump provides the following additional benefits which are not considered for calculation:

- Pump running at varying pressures due to change in consistency
- Low installation cost because no strand pipe required instead provision of wide hopper for easy entry of pulp into the pump suction
- No need of vacuum pump for removal of gases.
- Zero operating and maintenance cost of auxiliary pumps.
- Negligible damage to paper fibres.
- Ability to achieve still higher consistency up to 14% & even high density pulp of 17% to 25% since volumetric output of pump remain constant

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NEMO® Pumps
in Paper and Pulp Manufacture

NETZSCH The heart of your process

NES200B- pumping 10-12% paper pulp from the vibro-split to the storage silo

Copyright by NETZSCH Wehrpumpen GmbH

11.08.2002

St. Regis Paper, UK (1994)

Installation Pictures for References



Shree Bhawani Paper Mills Ltd., Rae Bareilly, UP (2007)

Installation Pictures for References



ITC Paper, KOVAI, Tamil Nadu (2006)

Installation Pictures for References

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Mondi Paper, South Africa (2002)

Installation Pictures for References



BVR Papers, Andhra Pradesh (2008)

NEMO[®] PC pump -Trial

NETZSCH



- The paper industry can reap the benefits of NEMO® progressive cavity pumps to increase efficiency and power saving.
- Low cost solutions when compared to existing MC pump suppliers.
- NEMO® pump will pay back for its entire cost in less than 12 months.
- Every paper mill can improve their profit margin by replacing their existing MC pump with NEMO® PC pump and contribute your own in saving our Mother Nature.

Thank you all !!!

Looking forward to your cooperation in use of
Energy efficient technology in Pulp & Paper sector