



Vespel CR6100: Enhancing Efficiency and Reliability

www.mascotdynamics.com

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INTRODUCTION TO MASCOT DYNAMICS



Business Purpose

Support Process Industries to become cleaner, more efficient and operate uninterrupted



Solution

Offer Technically Advanced, Innovative and Reliable Solutions to reduce life cycle costs Substantially



Focus

Complete Domain of Rotating Equipment Packaging, Sales and Service



Partners

World Leaders and Reputed Brands like Sundyne, Dupont, Inpro, Chetra, Rexnord, GD Nash, Ingersoll Rand

OFFICES & WORKSHOPS



Head Office

403, Centrum IT Park, Next to Satkar Grande Hotel, Wagle Estate, Near Mulund Checknaka, Thane (W) - 400604. Maharashtra, India.



Workshop & Assembly Shop

B 32, MIDC, Ambernath, Maharashtra - 421506 India

Total: 1600 sq. meter

Built up: 1000 sq. meter with 5 TON Overhead Crane



Authorized Service Centre

W-89 & 90, MIDC, Ambernath, Maharashtra - 421506 India

Total : 2000 sq. meter

Service Floor: 500 sq. meter

Office: 1000 sq. meter

OUR NETWORK



33+

Sales
Personals

19

Service
Personals

5

Engineering
Team

22

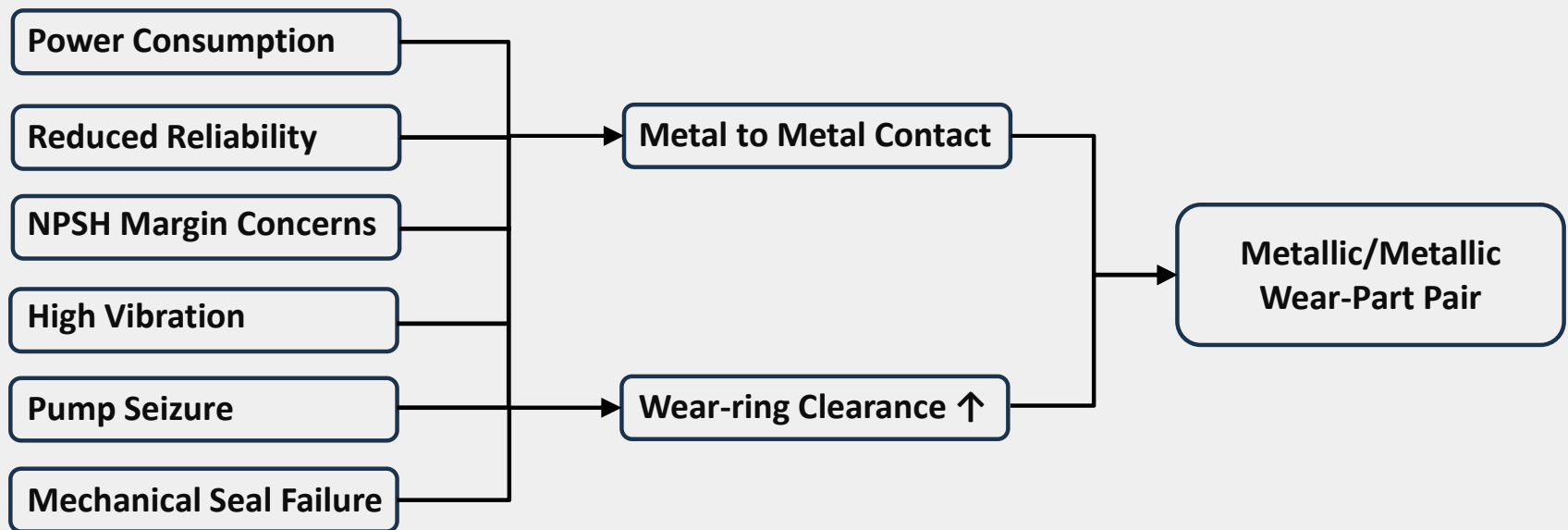
Application
Team

VESPEL CR6100

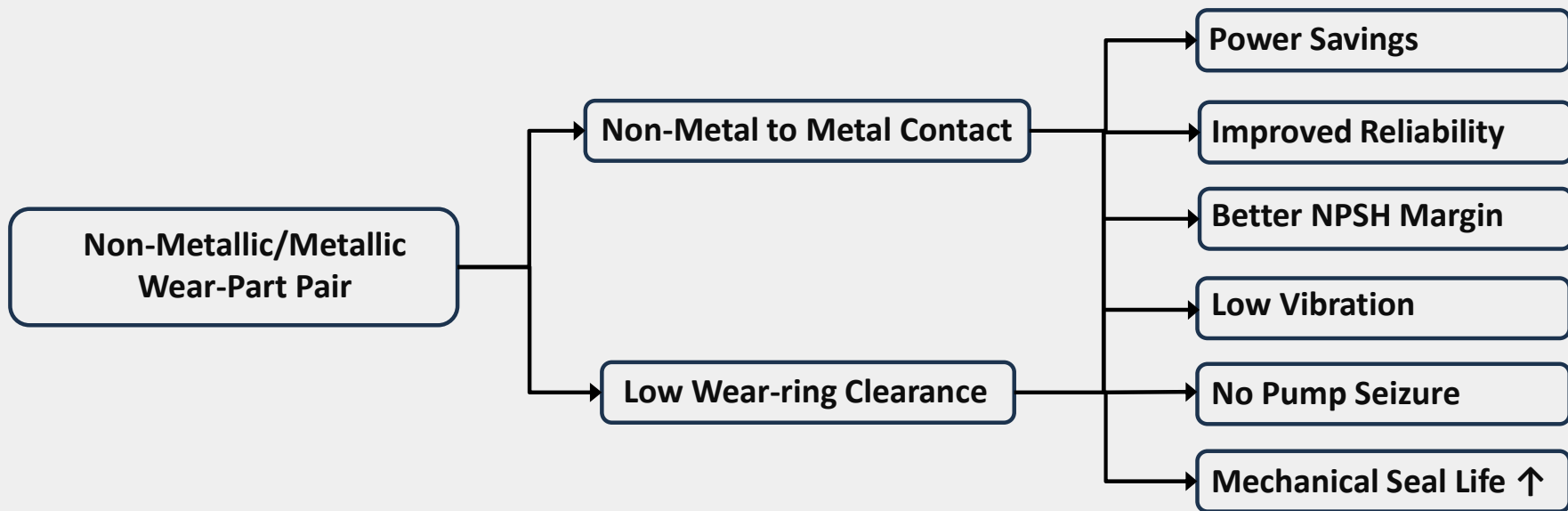


**Efficiency & Reliability Enhancement in
Centrifugal pumps with Vespel CR 6100
Non- Metallic Wear Rings**

EXISTING PROBLEMS & ISSUES IN PUMPS



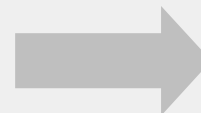
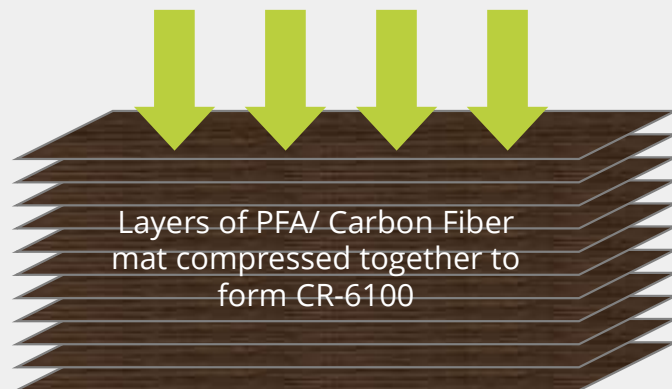
SOLUTION FOR PROBLEMS & ISSUES IN PUMPS



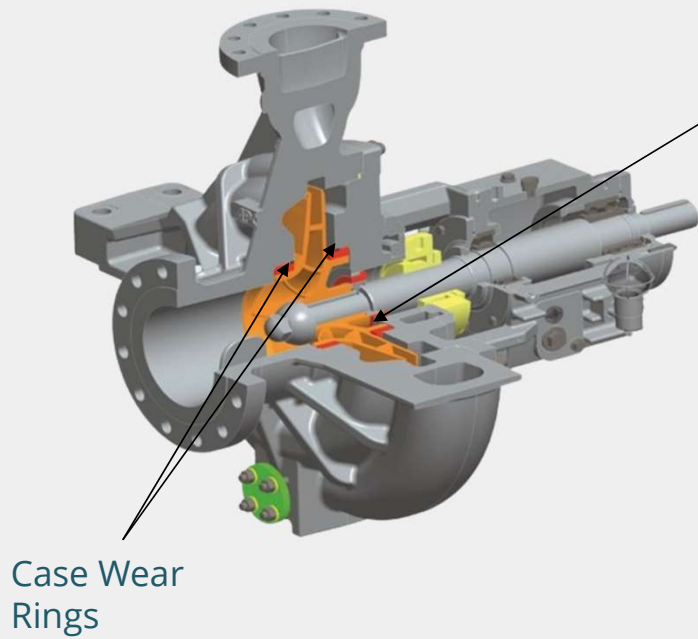
VESPEL CR6100

DuPont™ Vespel® CR-6100 has gained recognition under the ISO 13709 International Standard and the American petroleum Institute's API 610 Standard. Vespel® CR6100 is essentially a composite material consisting of carbon fibers held in Teflon® PFA resin Matrix and comes in plates, rods and tubes up to a maximum of 16 inches in diameter , used worldwide to enhance reliability and efficiency of rotating and mechanical equipment

- ◆ Sheets of **DuPont™ Teflon® PFA resin with 20% mass random X-Y oriented carbon fiber** molded with high pressure and heat
- ◆ DuPont™ patented manufacturing process

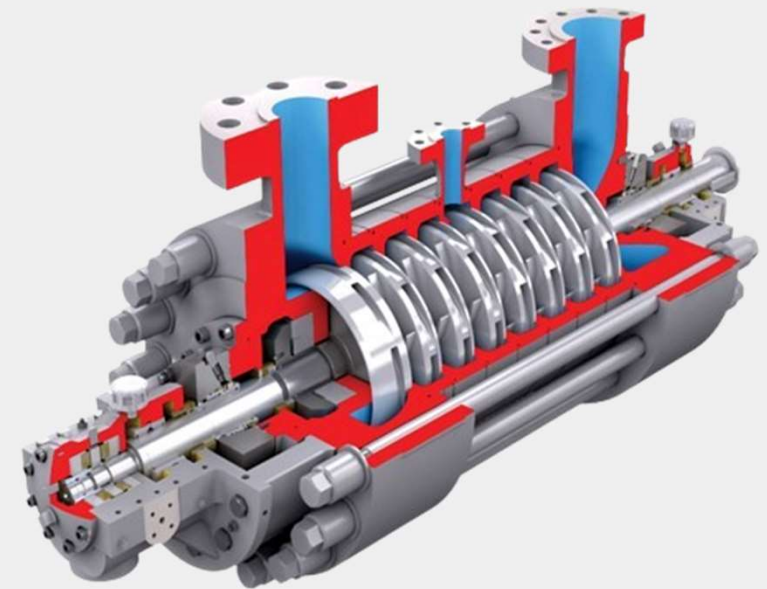


HORIZONTAL PUMP



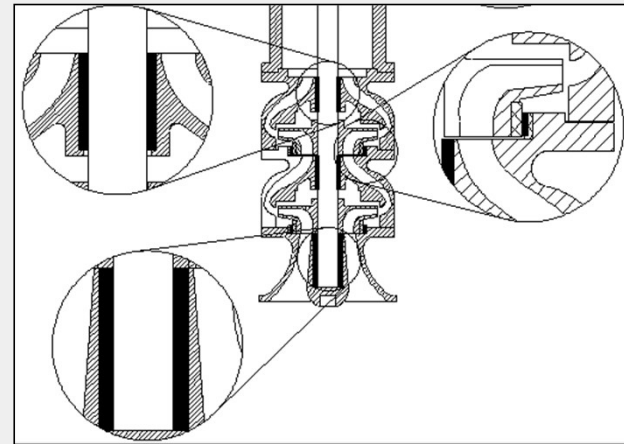
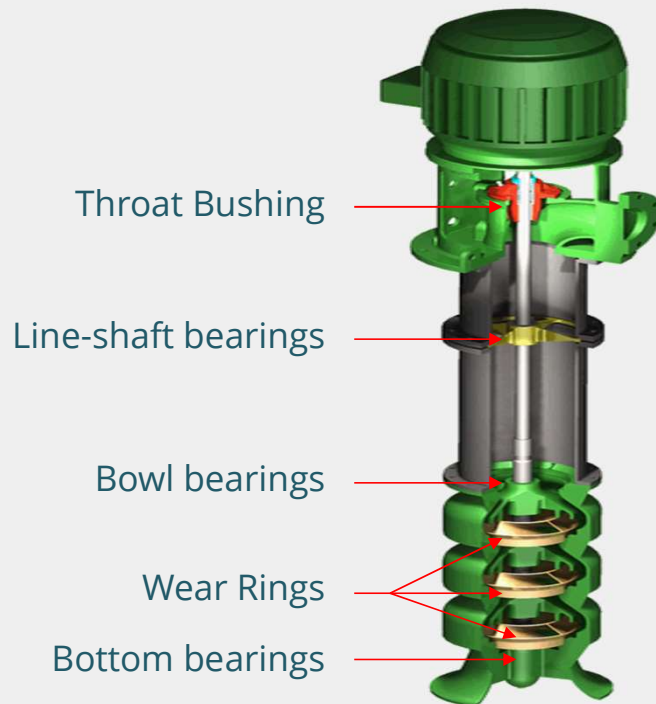
Throat
Bushing

- ◆ Inter-stage bushings
- ◆ Casing Wear Rings
- ◆ Throat Bushing



4 to 8 % Efficiency Enhancement Guaranteed with 40 to 50% reduced clearances

VERTICAL PUMP



Dry Run Capability
Minimum Double the life of Existing Parts

25 to 30 % Reliability Enhancement Guaranteed with 40 to 50% reduced clearances

VESPEL CR6100 PROPERTIES

- ◆ Chemical compatibility of Teflon® PFA and carbon fiber
- ◆ Temperatures from cryogenic to 500°F (260°C)
- ◆ Low coefficient of thermal expansion
- ◆ Low coefficient of friction
- ◆ Low wear rate
- ◆ High PV (pressure x velocity) capacity
- ◆ High impact strength

VESPEL CR6100 **ADVANTAGES**

- ◆ Anti-galling properties (Pump can survive dry running)
- ◆ Avoids power loading penalties by offering substantial savings with efficiency improvement
- ◆ Improves Pump MTBF (Extended Performance Warranties can be offered)
- ◆ Reduced NPSHr for pumps
- ◆ Easy to machine with standard machine tool
- ◆ Wear part can be offered with Metallic holder for larger cross section parts
- ◆ Better Feasibility at Test bed issues (Dry running , efficiency , cavitation)

Power Savings Calculations

MASCOT DYNAMICS PVT. LTD.			
POWER SAVING CALCULATIONS (Sample)			
Customer: Power Plant		Pump Make & Model no: XYZ	
Parameters	Unit	Existing Specs as per data sheet	Improved Projected Specs with Vespel wear parts
Capacity	m3/hr	XXX-	XXX-
Head per stage in Metres	m	YYY-	YYY-
Speed	rpm	2900	2900
Specific Gravity		0.95	0.95
Efficiency	%	80	84.00
Bkw (Input Power)	kW	2000	1905
Difference (Power Saving)	kW		95
Per Year No of Hours	Hrs.		8760
Total Unit Power Saving	kW-Hr		832200
Power Cost per Unit	Rs./kW-Hr		4
Total Power Cost Reduced Per Year	Rs.		33,28,800

Installation List **Pan India**



Area of Interest : Reliability		
Sr no.	Description	Units
a)	Total no. of pumps retrofitted	120+ units
b)	MTBF Pre-Installation of Vespel CR-6100 parts	04 to 06 months
c)	MTBF Post Vespel Installation	5+ years – Presently
d)	ROI	1 year

Area of Interest : Efficiency Improvement		
Sr no.	Description	Units
a)	Total no. of pumps retrofitted	20 + units
b)	Efficiency Improvement through Vespel parts	3 % to 5 %
c)	Annual Savings in Rs.	4 to 10 Lakhs
d)	ROI	10 months to 1 year

Key Customers :-

- Reliance
- ONGC
- KEPL
- RFCL
- Flowserve
- Dalmia Cement
- Sulzer

Key Customers :-

- Hindalco Industries Ltd.
- ACB Ltd.
- KSB Ltd.
- Grasim Industries Ltd.
- Reliance
- IOCL

Case Study & Appreciation Letters



Sulzer MD 80-260/13-BB 4 - 600 KW

Customer: ACB (India) Ltd (Chhattisgarh)

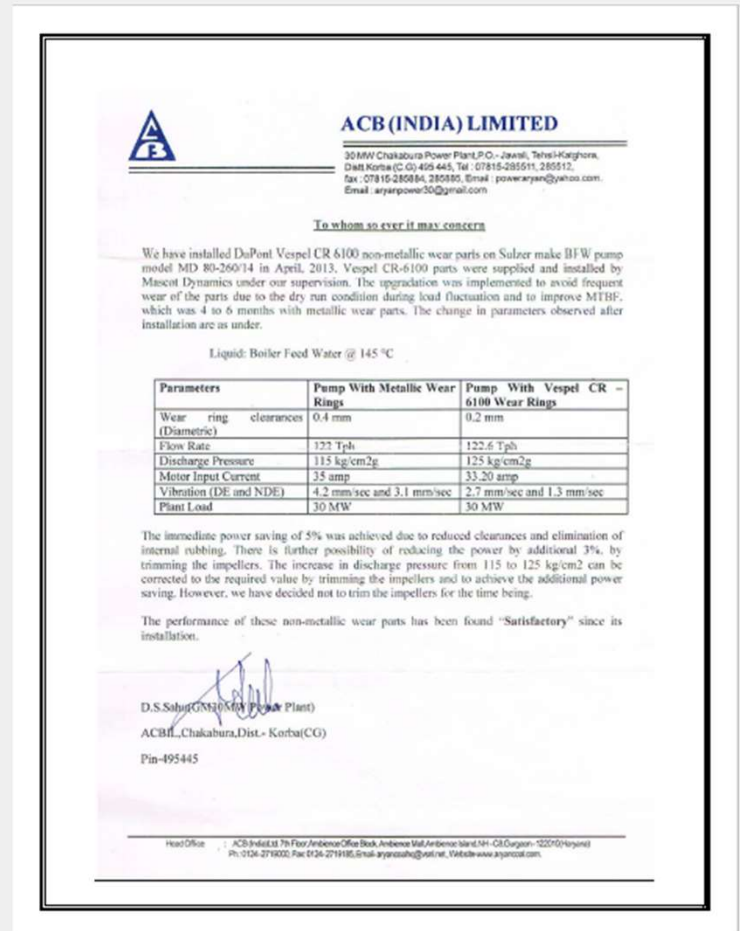
Problem: Failure in Metallic wear parts during dry running condition . Reduction in pump efficiency with increased motor power Input with substantial expense on spares parts every 3-4 months

Solution: Replacement of wear parts with Vespel CR-6100 Wear rings ,Interstage Bushings . Eliminates the repair cost and dramatically improve the performance of Pump.

Result: Immediate Power saving of 5% achieved. Also internal rubbing and seizure eliminated. Pump running successfully since 2014 without any failure and without any replacement of Vespel or any other parts

Parameters before and after Vespel Parts

Parameters	Pump with Metal Wear parts	Pump with Vespel CR-6100 Wear parts
Flow Rate	122 tph	122.6 tph
Discharge Pressure	115 kg/cm ²	125 kg/cm ²
Motor Input Current	35 amp.	33.20 amp
ROI (Years)	--	12 months



Case Studies

David Brown 24 x 24 HLTE

Customer: Reliance Industries Nagothane (Maharashtra)

Problem: Failure of existing PEEK Xytrex -451 bushing on regular interval. Resulting in complete plant shut down since it is single critical pump without stand-by

Solution: Replacement of wear parts with Vespel CR-6100 for bearing bush.

Result: No failure occurred and no more investment on spares .pump running successful with reduced vibrations since June 2019



Parameters before and after Vespel Parts

Parameters	Pump with Metal Wear parts	Pump with Vespel CR-6100 Wear parts
Reliability	4 Months	>28 Months

Flowserve – 6 x 11 DMXD-B/7 STG

Customer: Nayara Energy Ltd. (Gujarat)

Problem: Pump is having higher vibration issues due to excessive wear of metallic parts. Affecting heavy investment on spares

Solution: Metallic wear parts replaced with Vespel CR-6100 with reduced clearances .

Result: Vibrations reduced substantially. Pump is running successfully since 2018



Parameters before and after Vespel Parts

Parameters	Pump with Metal Wear parts	Pump with Vespel CR-6100 Wear parts
Vibration	High Vibrations	Low Vibration

Case Study & Appreciation Letters



Sulzer ZE 150-5450 - 430 KW

Customer: Reliance Industries Hazira (Gujarat)

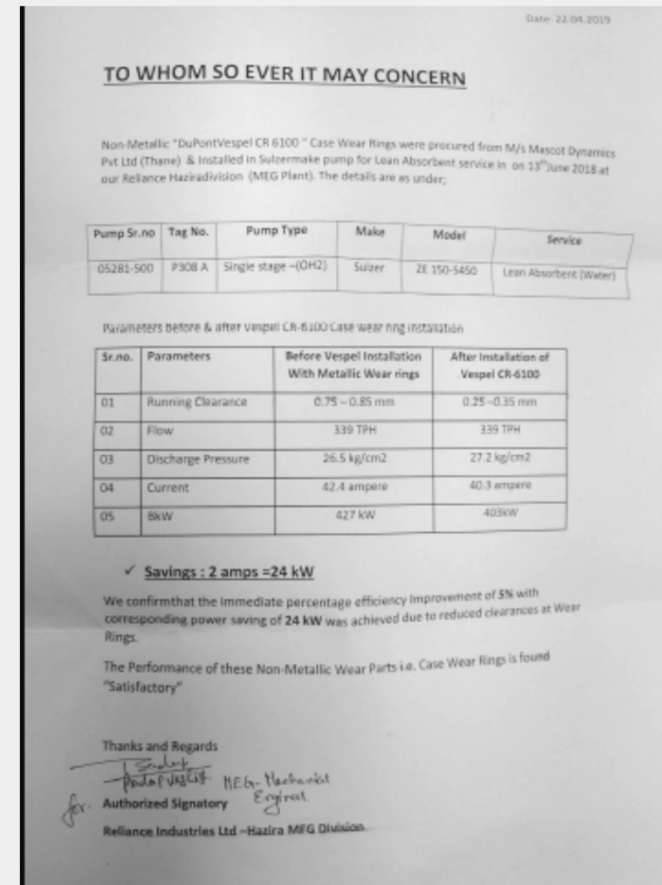
Problem: Seizure issue in one of their lean Absorbent pump which resulted in unscheduled downtime, higher maintenance cost. This problem were repeatedly occurring after every 3 months

Solution: MDPL Gave a preliminary selection based on Collected Datasheet and Curves. Guarantee the fitment and performance to Reliance .Convinced the Core Engineering Team .Support @ Site for Fitment and Performance

Result: Efficiency Improvement 5% with reduced vibration, Current reduced from 42.3 amps to 40.3 amps

Parameters before and after Vespel Parts

Parameters	Pump with Metal Wear parts	Pump with Vespel CR-6100 Wear parts
Flow Rate	344 m3/hr	344 m3/hr
Discharge Pressure	26.5 kg/cm2	26.5 kg/cm2
Motor Input Current	42.3 amp.	40.3 amp
ROI (Years)	--	3 months





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For more information contact us at Email : sales@mascotdynamics.com

THANK YOU _____