

**Devanshi**

# Power Saving & Energy Efficient Servo System

for Inj. & Blow Moulding



- Danger of electrical shock.
- Read the manual before first installing and operation.
- Do not touch heat sink after power down for 10 minutes since power down.

## Energy efficiency and dynamic response

With the servo pump, Devanshi combines the advantages of hydraulic power transmission....

- High force and power densities, low inertias
- Robust and cost-effective drive elements

...With the advantages of a controllable energy source, in the form of electrical servo drive technology

- High efficiency
- High dynamic response, high precision
- Low noise levels due to use of internal gear pumps

## Profitability Analysis

- Induction Motor: 22kW
- Max. Motor Current = 39 Amps
- For Injection Molding Machine
- Average Motor Current = 30 Amps ,
- Power Consumption per hour = 17.25 Units
- Power Consumption per month = 10764 Units
- Electricity Charges (Approx.) = 10.00 per Unit
- Annual Electricity Charges = 12,91,680/-
- Power Saving due to Servo System = 30% (approx.)\*
- Saving = 12,91,680.00 x 30% = 3,87,504.00
- Cost of Equipment Servo < Rs. 4,00,000.00
- Return of investment (ROI) = 1 year (approx.)

### Notes:

\*The above calculations are based on the following assumptions:

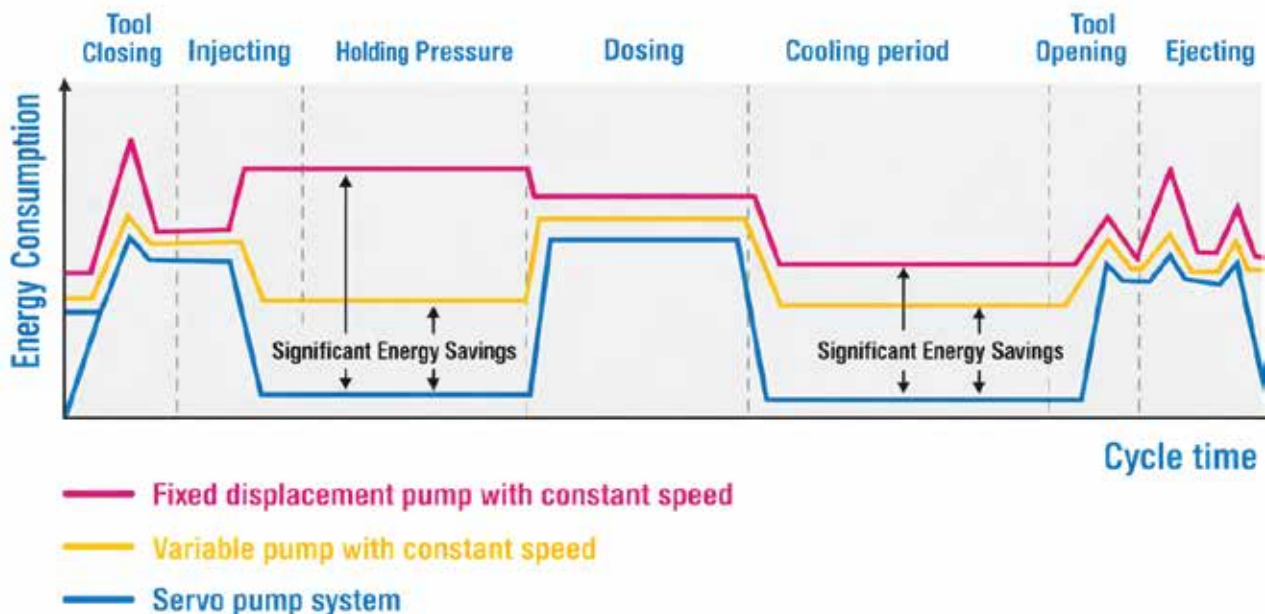
1. Above calculations are based on Induction Motor with Fixed Pump running on Injection Molding Machine
2. Injection Molding Machine is running for 24 hours per day
3. The Average Current of the Injection Molding Machine is used as 30 Amps. For calculation purpose
4. Actual current may vary depending upon the mold, shape, material of the article and the quality of mechanics

## Key benefits for Devanshi Customer:

- In house repairing & testing
- Competitive repair cost
- Shorter Lead time on drive repairs

## Apart from Power Saving, you will get the following benefits:

- Improved Accuracy with Longer life of machine
- High-response, high-precision positioning
- Position Control Using a Pulse Signal
- Speed Control by Analog Voltage
- Efficiency and low heat generation of the motor
- Energy conservation on power usage.
- Linear relationship between speed and electric control.
- Steady state stability.
- Wide range of speed control.
- Fast response with low mechanical and electrical inertia.



## Key benefits for Devanshi Customer:

### 160 Bar System

System		Pump			Drive			Motor						
Sr.No.	Flow	Pressure	Flow Cc	Drive Rated Power	Rated Current	Current Peak (60 Sec)	Drive Dimension (HxWxD)	Motor Rated Power	Motor Rated Rpm	Motor Rated Rpm	Motor Rated Current	Motor Rated Torque	Breaking Resistor	Choke Rating
(lpm)	(bar)	(Kw)	(A)	(Kw)	(A)	(A)	(HxWxD)	(Kw)	(rpm)	(rpm)	(A)	(Nm)	(Nm)	(Ohm, Kw, Qty)
1	60	160	32	15	30	48	325x210x190	12	2000	2000	24.3	58	30Ω, 1kW, 1	46A
2	80	160	40	18	37	59.2	325x210x190	18	2000	2000	36.7	87	30Ω, 1kW, 1	60A
3	100	160	50	22	45	72	325x210x190	20.4	2000	2000	40.8	96	30Ω, 1kW, 1	75A
4	125	160	63	30	60	96	400x250x224	28.3	2000	1985	42	122	30Ω, 1kW, 1	95A
5	150	160	75/63	37	75	120	400x250x224	36.7	2000	2000/2400	73.7	175	30Ω, 1kW, 2	124A
6	180	160	80	37	75	120	400x250x224	36.7	2000	2250	73.7	175	30Ω, 1kW, 2	124A
7	200	160	100	45	91	145.6	520x340x275	44	1800	2000	96.5	232	30Ω, 1kW, 2	156A
8	250	160	125	55	112	179.2	520x340x275	55	1700	2000	106	304	30Ω, 1kW, 3	192A
9	300	160	160	75	150	240	566x355x290	67	1800	1875	146.5	357	30Ω, 1kW, 3	192A

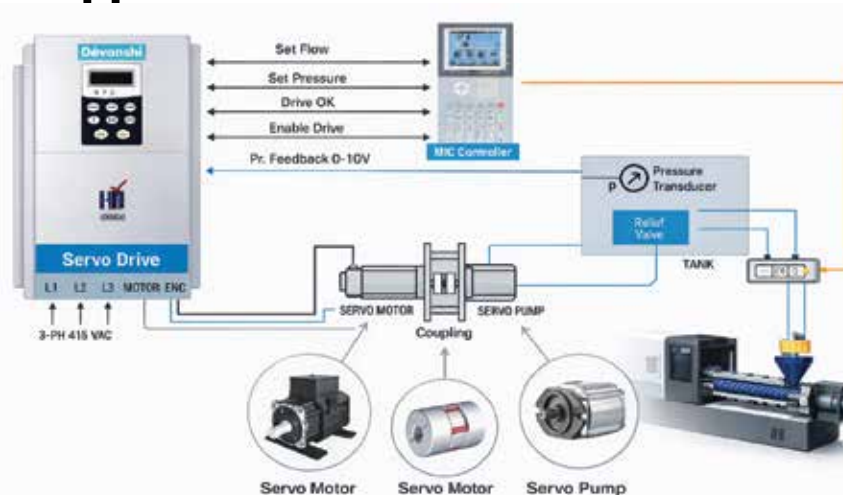
Upto 150lpm/160 Bar, Settima and Eckerle pump is standard, for above 150lpm systems Eckerle is standard pump.

### 210 Bar System

System		Pump			Drive			Motor						
Sr.No.	Flow	Pressure	Flow Cc	Drive Rated Power	Rated Current	Current Peak (60 Sec)	Drive Dimension (HxWxD)	Motor Rated Power	Motor Rated Rpm	Motor Rated Rpm	Motor Rated Current	Motor Rated Torque	Breaking Resistor	Choke Rating
(lpm)	(bar)	(Kw)	(A)	(Kw)	(A)	(A)	(HxWxD)	(Kw)	(rpm)	(rpm)	(A)	(Nm)	(Nm)	(Ohm, Kw, Qty)
1	60	210	32	18	37	59.2	325x210x190	18	1800	2000	36.7	87	30Ω, 1kW, 1	60A
2	80	210	40	22	45	72	325x210x190	20.4	1800	2000	40.8	96	30Ω, 1kW, 1	75A
3	100	210	50	30	60	96	325x210x190	28.3	2000	2000	42	122	30Ω, 1kW, 1	95A
4	125	210	63	37	75	120	400x250x224	36.7	2000	1985	73.7	175	30Ω, 1kW, 2	124A
5	150	210	63	37	75	120	400x250x224	36.7	2000	2000/2400	73.7	175	30Ω, 1kW, 2	124A
6	180	210	80	45	91	145.6	400x250x224	44	1700	2250	96.5	232	30Ω, 1kW, 2	156A
7	200	210	100	55	112	179.2	520x340x275	55	1700	2000	106	304	30Ω, 1kW, 3	192A
8	250	210	125	75	150	240	520x340x275	67	1800	2000	146.5	357	30Ω, 1kW, 3	192A
9	300	210	160	90	180	288	566x355x290	91	1800	1875	196	481	30Ω, 1kW, 4	250A

Make of pump : Eckerle / Settima | Make of Motor : Phase / Devanshi

# Servo System Application



## Product advantage

Significant reduction in energy consumption

Excellent response characteristics and reproducibility

Minimum response time at high and low pressures

Noise reduction by up to 20 dB (A)

Integrated closed-loop control in converter: compensation for hydraulic non-linearities

Close partnership with pump manufacturer for optimal system design

Servo control increases degrees of freedom in the machine design

Clearly arranged operator interface for simple parameterization

Significantly improved efficiency when compared to an asynchronous motor with variable displacement pump

Large range of air and water-cooled motors and converters (up to 250 kW)

## Customer benefit

Amortization of initial costs for servo motor and servo drive usually within 1 year

Improved process and product quality

Easy replacement of variable-displacement pumps and reduction of cycle times possible

Less effort required for noise protection measures

Ability to connect to machine controller without difficulty (Plug & Play)  
Retrofits can be made without adapting the control system

Optimal configuration with respect to costs, noise, energy efficiency and mechanical system

Minimum operational and life cycle costs

Simple commissioning, machine-specific requirements are taken into consideration

Saving of components, such as servo valves, and other innovative concepts are made possible

Cost-effective solution adapted to the customer's specific requirements

# Devanshi

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