

# AC Servo Pump System

## Customers Merits of AC servo pump system

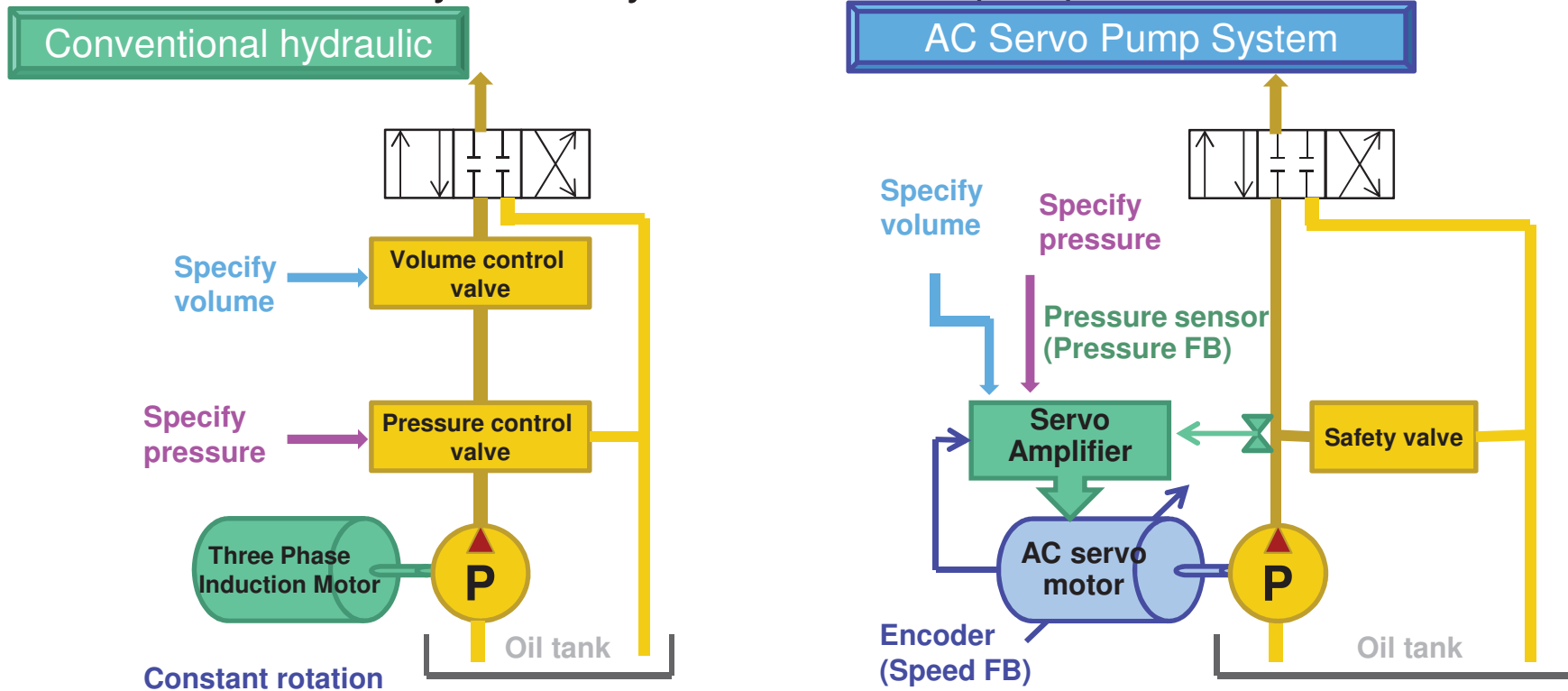
- **Energy saving, low running costs**
- **Stable machine operation**
- **Lower hydraulic fluid temperature**
- **Longer lifespan of hydraulic fluid**
- **Decreased volume of oil cooling water**
- **Lower maintenance costs**

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Replacing the drive motor of the Hydraulic Injection Molding Machine with the AC servo motor as well as optimal rotation control facilitate energy saving.

Difference between hydraulic system and servo pump



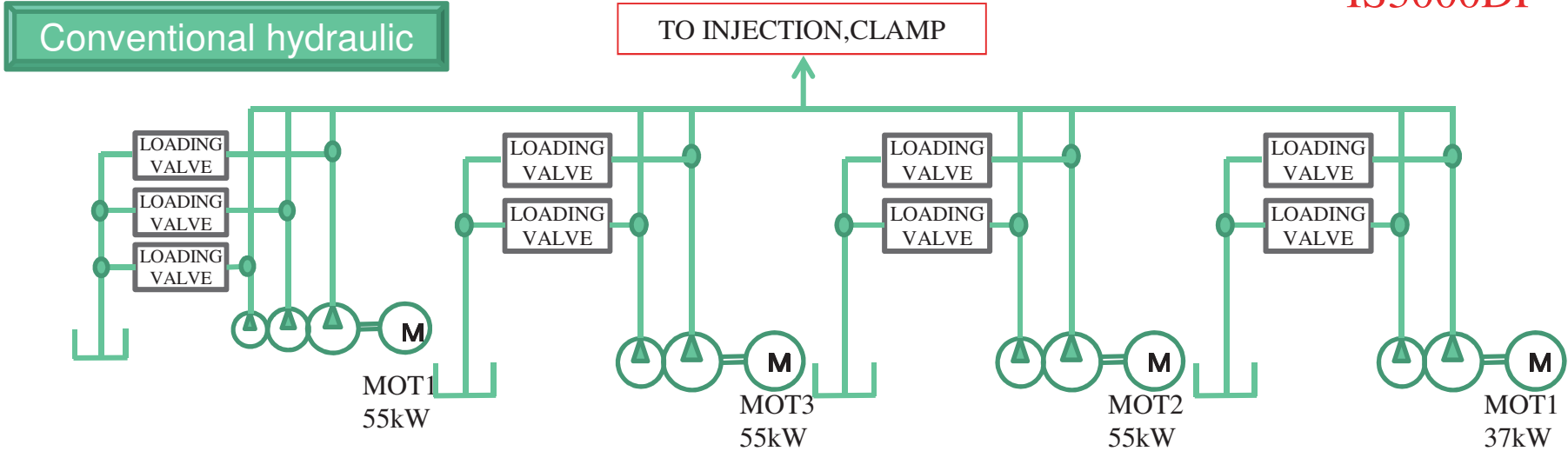
- Three Phase Induction Motor controls **constant rotation speed**.
- Speed and pressure are controlled by the oil release valve with the specified volume and pressure.

- AC servo motor controls **variable rotation speed** (rotates as needed).
- Speed and pressure are controlled by the servo system with the specified volume and pressure.

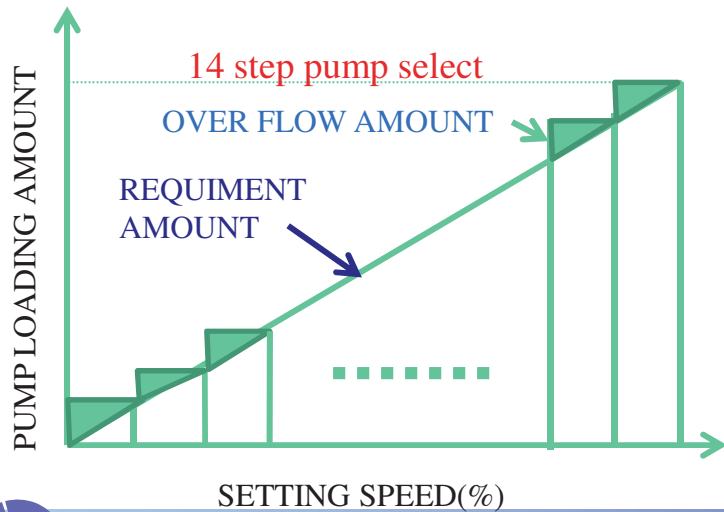
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Difference between hydraulic system and servo pump

IS3000DF

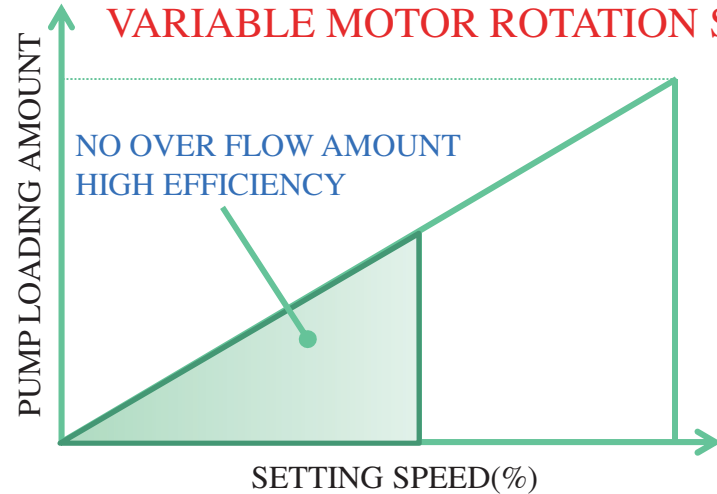


CONSTANT MOTOR ROTATION SPEED



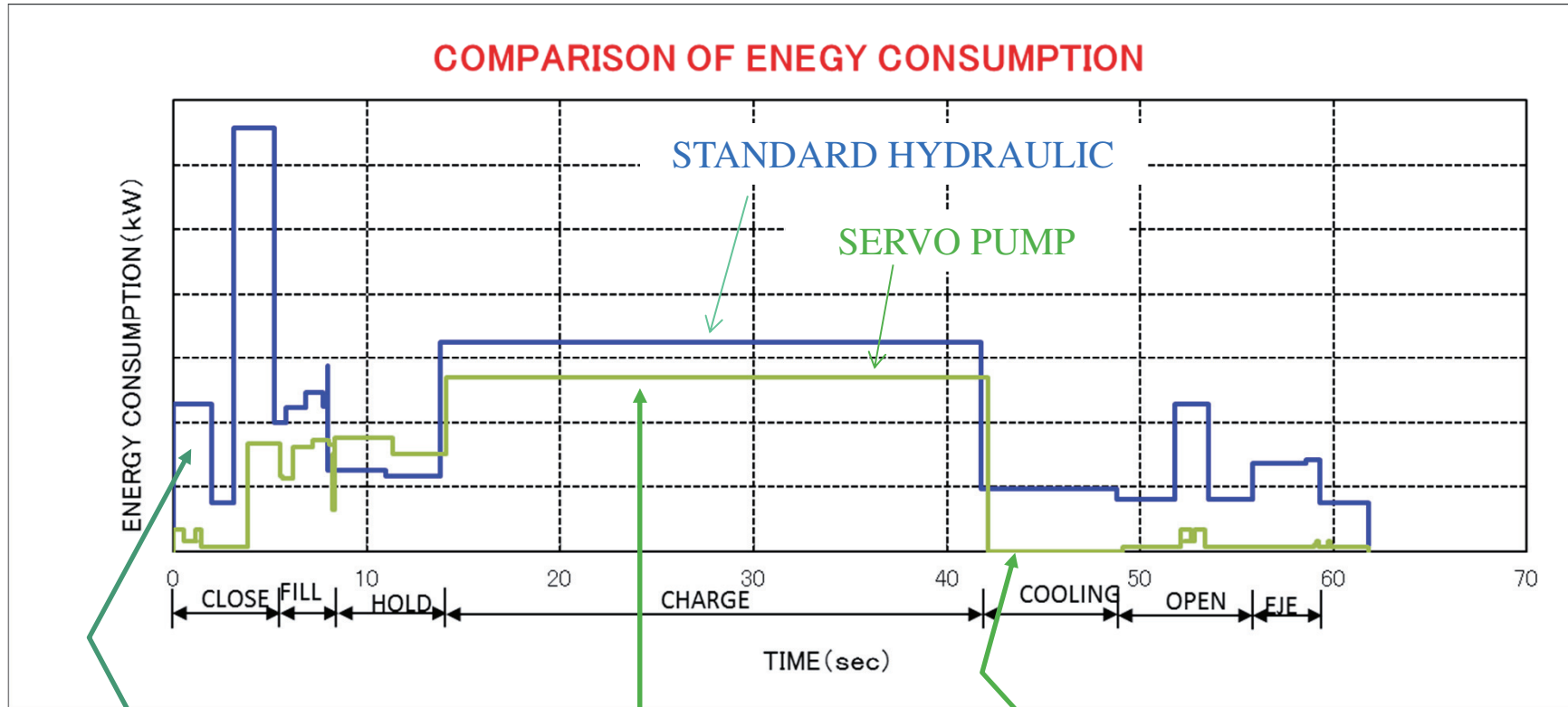
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VARIABLE MOTOR ROTATION SPEED



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## DIFFERENCE OF ENERGY CONSUMPTION



WHEN PUMP SELECT IS FEW, OTHER PUMPS WORK WITH UNLOADING PRESSURE

SERVO PUMP WORKS WITH VARIABLE SPEED

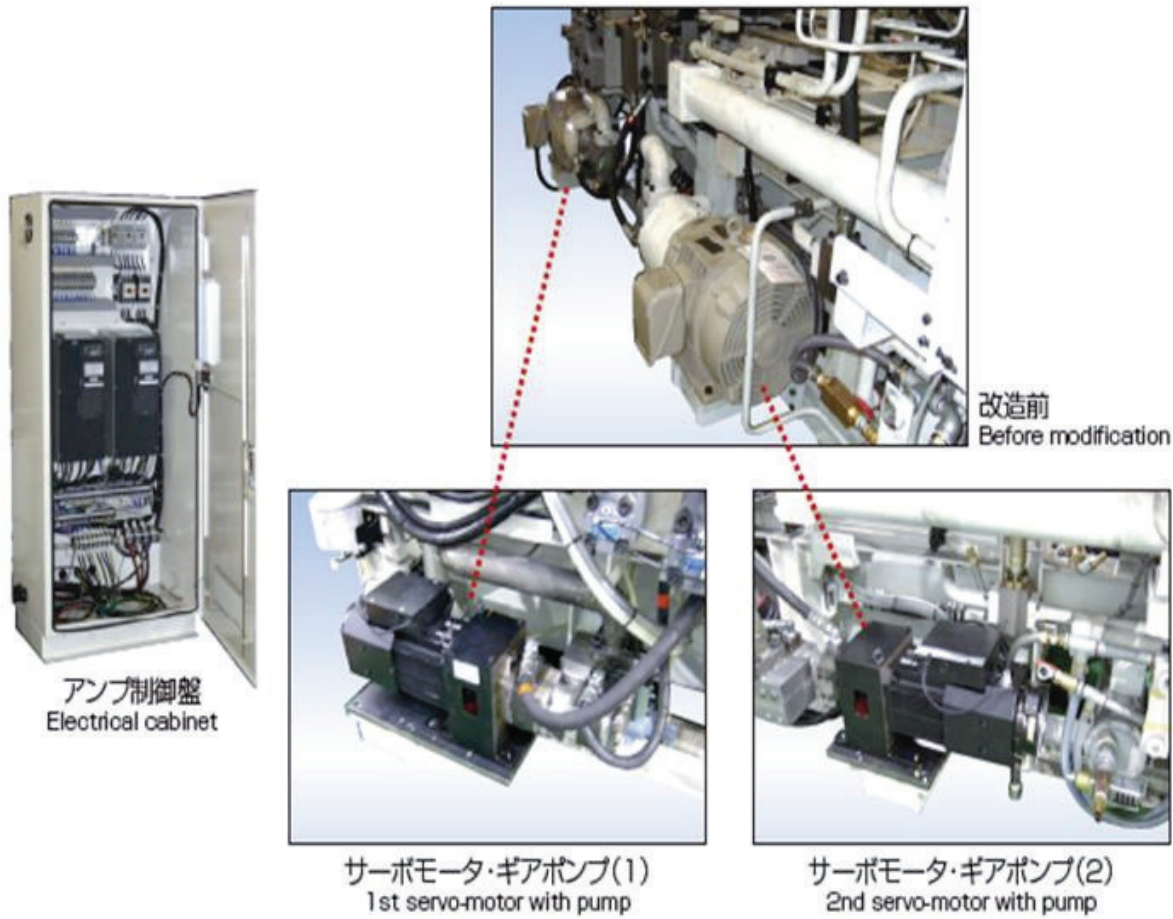
SERVO PUMP IS COMPLETELY STOPING

# AC Servo Pump System

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## ■ Modification details

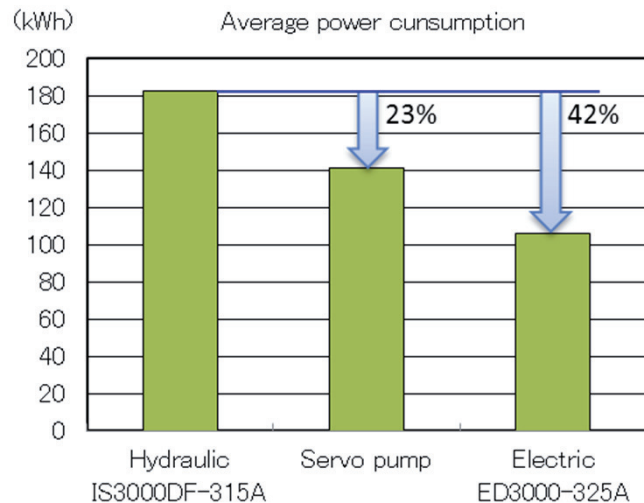
- Three Phase Induction Motor + Oil Pump → Servo Motor + Gear Pump
- Servo amplifier built-in control panel
- Diversion of hydraulic piping as much as possible



# Comparison of power saving between Hydraulic machines and Servo pump machines and electric machines

Product :Bumper Cycle time:51s

	Cycle time	production per year	Average power consumption	Electricity cost reduction rate	
	s	shot	kWh	/1shot	
Hydraulic IS3000DF-315A	51	425283	182.7	standard	
Servo pump	51	425283	141.0	23%	standard
Electric ED3000-325A	51	425283	106.2	42%	25%



## 【Calculation conditions】

Operating time(1 year): 20h x 25days x 12months

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[Estimated saving per machine size]

- 1 cycle: Power saving estimation - 60SEC (1TR=16sec, 3TR=24sec)
- Operation time per year: 6000H

Model	STD/Servo	Power consumption per hour (kwh) TD/Servo	Power saving per hour (kwh)	Energy-saving rate (%)	Power saving per year (kwh)
IS280GS	STD	11.8	7.5	63.6%	45,000
	Servo	4.3			
IS350GS	STD	16.1	9.5	59.0%	57,000
	Servo	6.6			
IS450GS	STD	25.2	13.5	53.6%	81,000
	Servo	11.7			
IS550GS	STD	36.2	18.1	50.0%	108,600
	Servo	18.1			
IS650GT	STD	45.0	25.5	56.7%	153,000
	Servo	19.5			
IS850GT	STD	62.4	27.4	43.9%	164,400
	Servo	35.0			

[Energy saving amount per year for each machine size]

- Electricity rate: 12 yen/kwh

Model	Energy saving amount in 6000h/year operation (yen)
IS280GS	540,000
IS350GS	684,000
IS450GS	972,000
IS550GS	1,303,200
IS650GT	1,836,000
IS850GT	1,972,800

[CO2 reduction per year for each machine size]

- CO2 emission: 0.555kg - CO2/kwh  
(Law Concerning the Promotion of the Measures to Cope with Global Warming, Article 3)

Model	CO2 reduction in 6000h/year operation (kg-CO2)
IS280GS	24,975
IS350GS	31,635
IS450GS	44,955
IS550GS	60,273
IS650GT	84,915
IS850GT	91,242