

Servo Oil- Electrical system

✧ Servo system principle

Servo oil-electrical system is called servo system for short. The combination of servo motor + servo motor drive + internal gear pump is adopted to achieve the effect of high efficiency, energy saving and stable operation. The servo system is a closed-loop control system. The stepless voltage regulation and speed regulation can be realized by adjusting the torque and speed of the servo motor, the stepless voltage regulation and speed regulation can be realized, so as to ensure the smooth operation of the equipment.

At the same time, the servo motor can be started instantaneously, and can achieve 2000 revolutions in 40 ms, so the servo motor is able to stop running during the period of pressure maintaining and loading and unloading, which greatly saves energy consumption.

✧ Advantages of servo system

- Energy saving can reach to 50-80%
- Flexibility pressing, no shaking
- optional position, pressure, speed can digital adjust on pressing
- Can reduce 30% oil usage amount
- No cooling required
- Can prolong life-span of hydraulic system and seal rings more than 50%
- Control the noise nearly 80 dB
- Servo system has long life with many safety control system like electricity, temperature to ensure the press normal

✧ Configuration of servo system



Servo motor
Italy Phasese



Servo motor driver
Japan Yaskawa



Internal gear pump
Germany Rexroth/ Eckerle/USA Sunny



✧ Why servo system saving energy?

HYPOTHESIS

NAME	UNIT	PARAMETER
Max. opening	mm	2400
Stroke	mm	1800
Closing height	mm	700
Fast down speed	mm/s	500
Slow down speed	mm/s	10-30
Pressing speed	mm/s	1-10
Slow return speed	mm/s	15-50
Fast return speed	mm/s	200

According to the assumed parameters:
 Cycle time for one piece: 90S
 If working 16 hours one day,
 Daily output: 640 pieces
 If working 220days one year,

CALCULATION

Name	One piece power consumption	Annual power consumption without heating	Annual total energy consumption
Servo system	0.292kW*h	37371kW*h	37371kW*h
Normal system	1.4399kW*h	184306kW*h	184306kW*h

CONCLUSION

TYPE	Electric energy			Oil		Maintains
	Power	Consume per year	Predict fee per year	Consume per year	Predict fee per year	Predict fee per year
	KW	KW/h	EUR	KW/h	EUR	EUR
Servo system	56	23,782	4,495	3,000	16,500	0
Normal system	90	184,306	34,834	6,400	35,200	2,000
Differences	34	146,935	3,0339	3,400	18,700	2,000

Note: the European industry electric fee 0.189EUR/ Kw*h is according to the average of each European countries in 2019. The oil price is according to 5.5EUR/L to calculate.

Summary	1000T servo system press can save cost in the first year nearly:	51,039
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