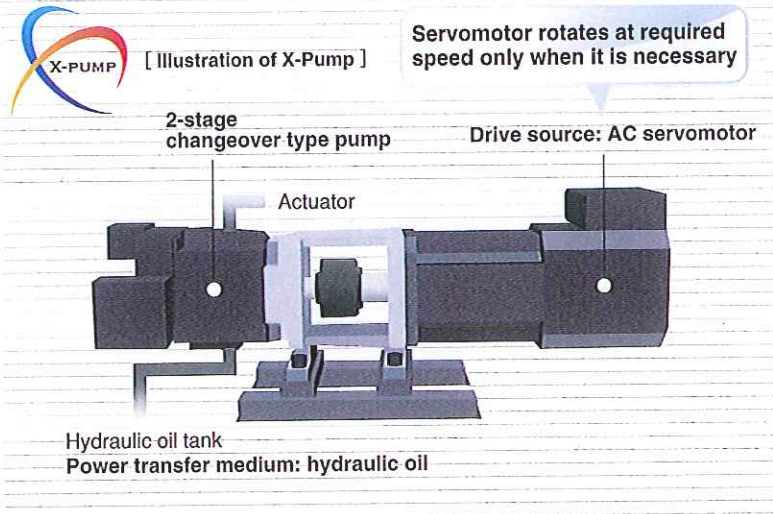


## About X-Pump System

Hybrid pump system "X-Pump" is a combination of 2-stage pump and electric servomotor. The servomotor rotates at required speed only when it is necessary to control the output volume and pressure of the hydraulic oil.

- ◎ Substantial energy-saving is possible since the motor is at rest during unloading. It stops idling after certain duration of inactivity.
- ◎ Injection control mode changeover permits wide-ranging injection from ultra low-speed to high-speed.
- ◎ Injection holding pressure control (pressure controlled state) can be sustained for a long period.

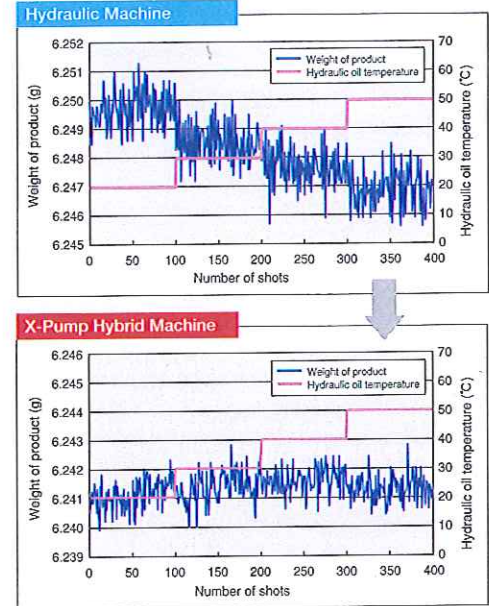


## High-Tolerance in Oil Temperature Fluctuation

X-Pump equipped machines have a high tolerance for hydraulic temperature change, and the product weight deviations are half compared to the hydraulic machines.

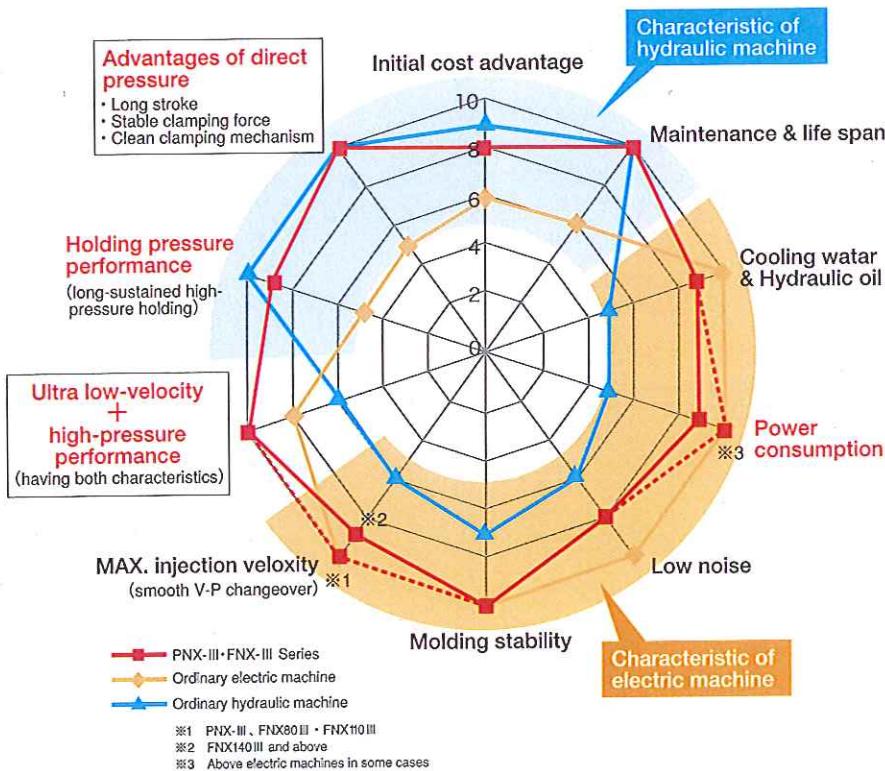
### Hydraulic oil temperature and product weight (oil temp: 20 → 50°C)

We purposely raised hydraulic oil temperature from 20°C to 50°C during continuous molding operation and measured fluctuation in product weight.



## Well-Balanced Performance... Possessing the Advantage of Electric and Hybrid Machines

Comprehensive Evaluation of X-Pump Hybrid Machines (Comparison diagram)



### Performance that evolved from hydraulic type injection molding machine

- Electric machine level of energy saving
- Stable motions, minimized influence from oil temperature fluctuation (high tolerance in oil temperature fluctuation), and stable mold open/close positions
- Improved injection rise time response speed
- Stable injection in low-speed/low-pressure range
- Excellent mold protection functions and low mold clamping pressure controllability
- Improved molding stability by precision metering control

### Characteristics that excel electric type injection molding machine

- Ideal for injection high-load molding (thick-wall molding, etc.)
- Excellent workability (mold change and maintenance) and easy molding condition setting
- Low equipment cost and maintenance cost
- No used grease collection necessary
- Long mold open/close stroke that is easy for deep cavity & hot runner molds
- Highly durable (long service life)
- Uniform contact pressure that minimizes the warpage of platen and is gentle to the mold (excellent for sustaining mold clamping under external disturbance factors, such as mold temperature and weight)
- Compact mechanism and space-saving