UBE / UBE MACHINERY CORPORATION,LTD.

IM TIMES ～Injection Molding Machine / Product Information～

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Energy-saving technology for barrel heaters
『e-Heating』

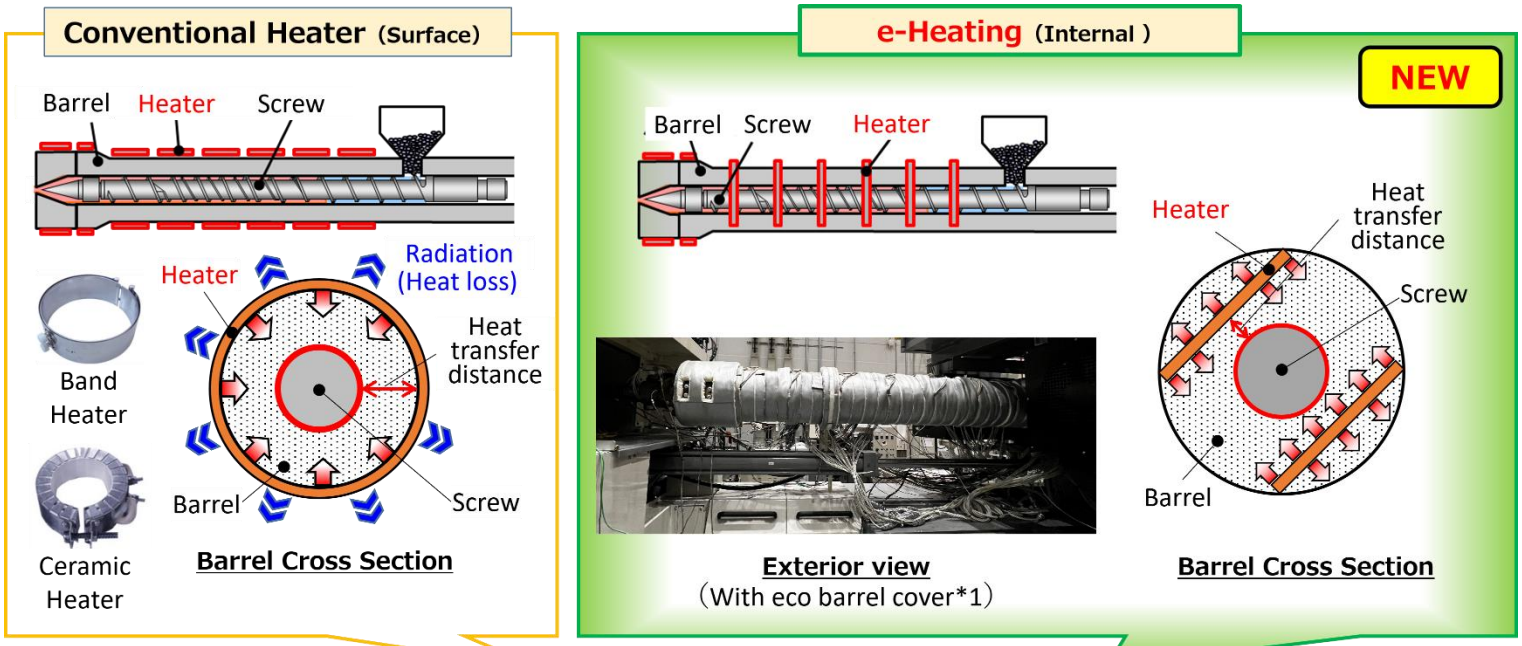
In general, electric injection molding machines have achieved a significant reduction in power consumption compared to hydraulic machines. However, simply by electrifying the drive mechanism, a significant reduction in power consumption of the heater, which is the heat energy used to melt the resin, cannot be expected.

In response to this issue, we have developed『e-Heating』(efficient heating), an energy-saving technology for injection molding machines that significantly reduces the amount of electricity consumed by heaters.

➢ Barrel Heating Structure

e-Heating is an internal heating structure in which a rod-shaped cartridge heater is inserted inside the barrel as shown in Figure 1.

This structure improves energy efficiency by reducing atmospheric heat radiation and shortening heat transfer distance.



Evaluation item	Surface Heating	Internal Heating
◆ Energy efficiency	Low	High
・Heat loss due to atmospheric radiation	Big	Small
・Heat transfer distance	Long	Short

Fig. 1 Barrel heating structure of e-heating

*1: Eco Barrel Cover: An insulation material covering the outer surface of the barrel that can keep the barrel warm.

➢ Energy saving effect of e-Heating

- Heater energy efficiency evaluation of『at temperature rise』
  ・e-Heating alone : 20% decrease (*2)
  ・e-Heating + Eco Barrel Cover : 24% decrease (*2)
  *2: Compared to our conventional band heater power consumption

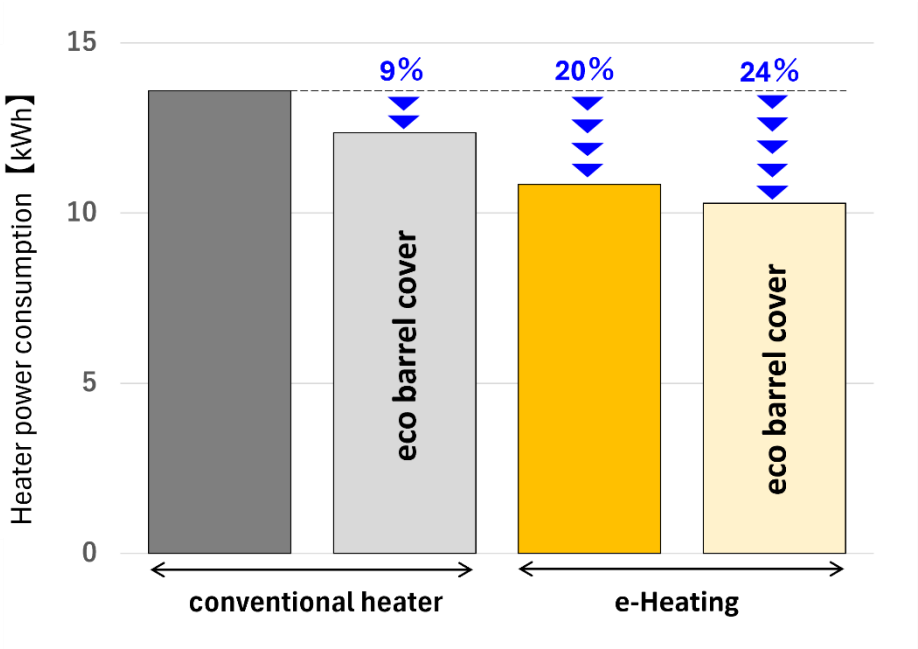


Fig. 2 Comparison of heater power consumption during temperature rise

- Heater energy efficiency evaluation of『at the time of molding』
  ・HDPE, ABS, and PC showed energy-saving effects for e-Heating alone.
  ・PP and PS showed energy-saving effects for e-Heating and Eco-Barrel Cover.
  ・e-Heating alone : Maximum 21% reduction (*3)
  ・e-Heating + Eco Barrel Cover : Maximum 57% reduction (*3)

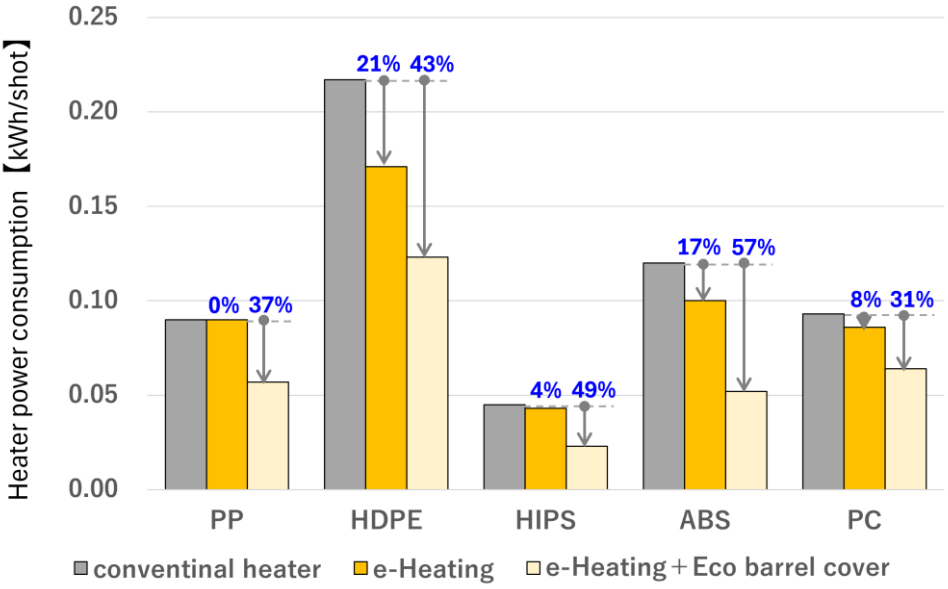


Fig. 3 Comparison of heater power consumption during molding by resin

*3: The e-Heating effect varies depending on the resin and molding conditions because the energy-saving effect depends on the heat-absorption characteristics of the resin and the heater operating rate in the molding environment.

Contact

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