

## Super Eco Pump (MEI ≥ 0.70)

### Features

- ◆ Reduces the power consumption of pumps for manufacturing plants (air conditioning and water treatment) and buildings (air conditioning), as well as reduces GHG (CO<sub>2</sub>) emissions
  - 1) Achieved the highest grade of the European Pump Efficiency Standard, MEI ≥ 0.70, for all models
  - 2) Standard feature: impeller trim to eliminate waste (outer diameter machining of the impeller)
- \* Features described above **significantly reduce energy consumption, while securing the required performance**

### Overview & Principles

Super Eco Pump is a series of highly efficient pumps that achieved the highest grade, for the advanced European Pump Efficiency Standard of “MEI ≥ 0.70\*” for all models released for sale since October 2023. These pumps not only offer the features of conventional economical pumps, but also achieves a pump efficiency that dramatically improves that of conventional products, made possible by utilizing AI to undergo rigorous learning of high pressure pumps, which are required to provide high efficiency and large pumps with an enormous amount of hydraulic data, to create new design data, leading to the development of products offering an even higher performance to achieve a pump efficiency significantly better than conventional products.

Using these pumps, with increased pump efficiency, can consistently reduce power consumption and save on electricity costs, reduce CO<sub>2</sub> emissions, downsize motor capacity, thereby contributing to the solutions of energy saving issues at manufacturing plants, of our customers.

- \* An acronym for Minimum Efficiency Index, used to represent minimum efficiency index in Europe. MEI is expressed in numbers between 0.10 and 0.70, the larger numbers indicating greater efficiency values. Statistics were taken on the efficiency value information for pumps distributed within the EU, by industry groups, under the EU Directive. The MEI values are quantified classifications based on the statistics.

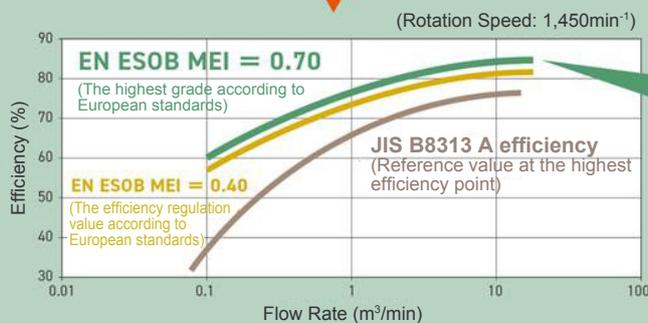
## Torishima’s Super Eco Pump Efficiency Achieves MEI ≥ 0.70, the Highest Grade in Europe, across All Models

Japan-Europe Pump Efficiency Index (international comparison)

Area	Pump	Motor <sup>*1</sup>		
Japan	JIS B 8313 Efficiency A (since 1958)	IE3 (Top Runner regulations) (since 2015)		
Europe (ErP Directive)	MEI (≥ 0.40)	IE2 (since 2011)	IE3 (since 2015)	IE4 <sup>*2</sup> (since 2023)

\*1: This information is for reference only. For details, please refer to JEMA (Japan Electrical Manufacturers’ Association) documents and other sources.

\*2: The IE4 motor has a rated output of 75 to 200 kW.



The efficiency of Super Eco Pump has been developed with the goal of achieving MEI ≥ 0.70, the highest grade in European pump efficiency standards, which is a leader in energy conservation.

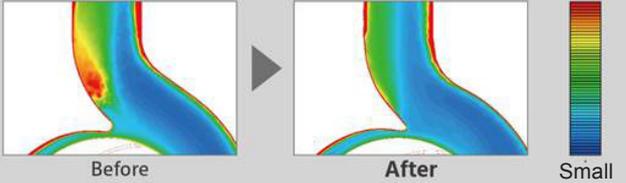
\* MEI is the acronym for the Minimum Efficiency Index, representing the minimum efficiency index used in Europe. It is expressed in numbers between 0.10 and 0.70, with the larger numbers indicating greater efficiency values.

# The Quality of Super Eco Pump

## New Design with AI

### Improving Fluidity in the Casing

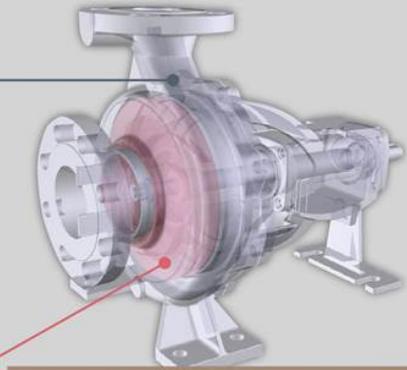
The internal geometry has been optimized to improve water flowability.



### Impeller (rotor blades) shapes optimized



\* 3DM impellers are designed with enhanced manufacturing precision. Many Super Eco Pump models use this 3DM impeller.



### Reduction of Losses by Improving Surface Roughness



### Impeller Diameter Trim to Eliminate Waste



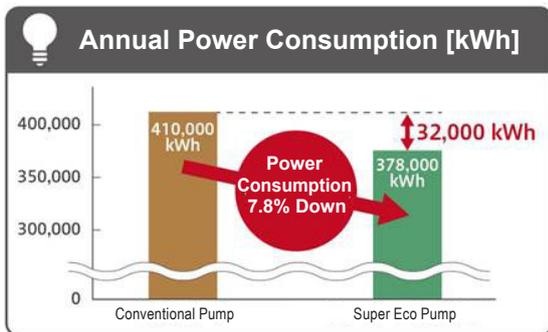
## Energy-Saving Effects & Special Remarks

This product was awarded the “Minister of Economy, Trade and Industry Award”, which is the highest honor in the electricity demand optimization field for the “Product and Business Category of the FY2024 Energy Conservation Grand Prize”.

## Economic Effect of Energy Savings with Super Eco Pump

An example of comparing Super Eco Pump (CAL125-400E) and a conventional pump of the same diameter (CAL125-400) is shown below.  
 <Pump Specification> Flow Rate: 4.5 m<sup>3</sup>/min, Total Head: 45 m

	Conventional Pump (CAL125-400)	Super Eco Pump (CAL125-400E)	Difference
Pump Efficiency	74 %	81 %	7.0 %
Shaft Power	44.7 kW	40.8 kW	-3.9 kW
Power Consumption	46.8 kW	43.2 kW	-3.6 kW



Approximately 13 million yen saved in 15 years!

### Annual Electricity Bill

Conventional Pump: 11,107,000 yen

Super Eco Pump: 10,240,000 yen

**Annual electricity bill savings: 867,000 yen**

### Motor Capacity

Conventional Pump: 55 kW

Super Eco Pump: 45 kW

**Improve pump efficiency and downsize motor capacity by one grade**

- Reduce initial costs
- Downsize electrical equipment

### Annual CO<sub>2</sub> Emissions

Conventional Pump: 175.9 t/CO<sub>2</sub>

Super Eco Pump: 162.2 t/CO<sub>2</sub>

**Annual CO<sub>2</sub> emissions reduction: 13.7 t/CO<sub>2</sub>**

\* Operating time: 8,760 hours/year  
 \* Electricity unit price: 27.09 yen (Actual unit price from February 2024, for electric power (low-voltage) according to the "Electricity Rate Trends" of the New Power Network at the Energy Information Center)  
 \* CO<sub>2</sub> emission factor: 0.000429 t-CO<sub>2</sub>/kWh (FY2022 substitute values for emission factors by electric power companies, published by the Ministry of the Environment)

## Installation Track Record and Plans

**Domestic** Numerous units delivered to various manufacturing plants and buildings

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<https://www.torishima.co.jp/en/> (English)