

## Eco-SMS Specifications

Model		Eco-SMS-200	Eco-SMS-250	Eco-SMS-350	Remarks
Chip melting capability	kg/h	~500	~1,000	~3,000	
Agitating capability	ton/min	Approx. 25	Approx. 50	Approx. 77	Calculated value
System O.D.	∅mm	387	457	570	
Vortex chamber O.D.	∅mm	600	800	1000	
Power consumption	kW	5.0	7.0	9.0	1/5th - 1/8th of a Miyamoto SMS
Spare heat insulating shell (¥ / excluding shipping cost)		Approx. 250,000	Approx. 400,000	Approx. 500,000	1 replacement every 6~12 months
System weight	kg	500	1000	1500	
Rotating speed	r/min	120~360			
Cooling method		Air cooling			Cooling water not required
Applications		Immersion melting of chips (dry powder), UBC, silicon metal, etc. Agitation of molten aluminum, semi-immersion melting of briquettes.			

\*Melting tests can be carried out at our Kurobe factory.

Immersible Melting System  
for Molten Aluminum



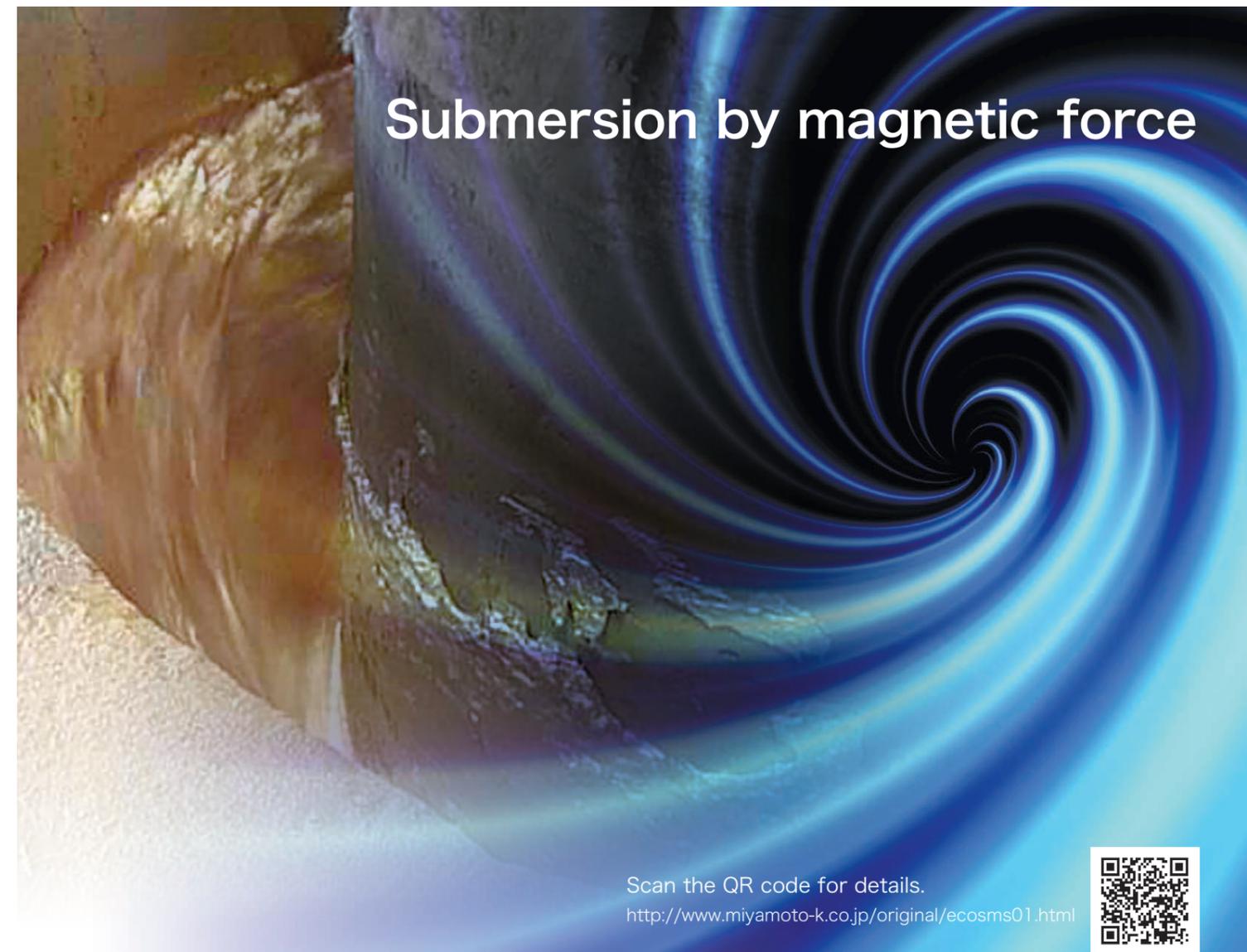
The 42nd  
Invention grand prize  
Devised meritorious award



The 33rd  
Molding Material Industry Technology Award  
Small and Medium Enterprise Agency Director General Award

# Eco-SMS<sup>®</sup>

Ecology Smash Melting System



Submersion by magnetic force

Scan the QR code for details.  
<http://www.miyamoto-k.co.jp/original/ecosms01.html>



**MIYAMOTO KOGYOSHO** [www.miyamoto-k.co.jp/](http://www.miyamoto-k.co.jp/)

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ISO 14001 accredited



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November 2016

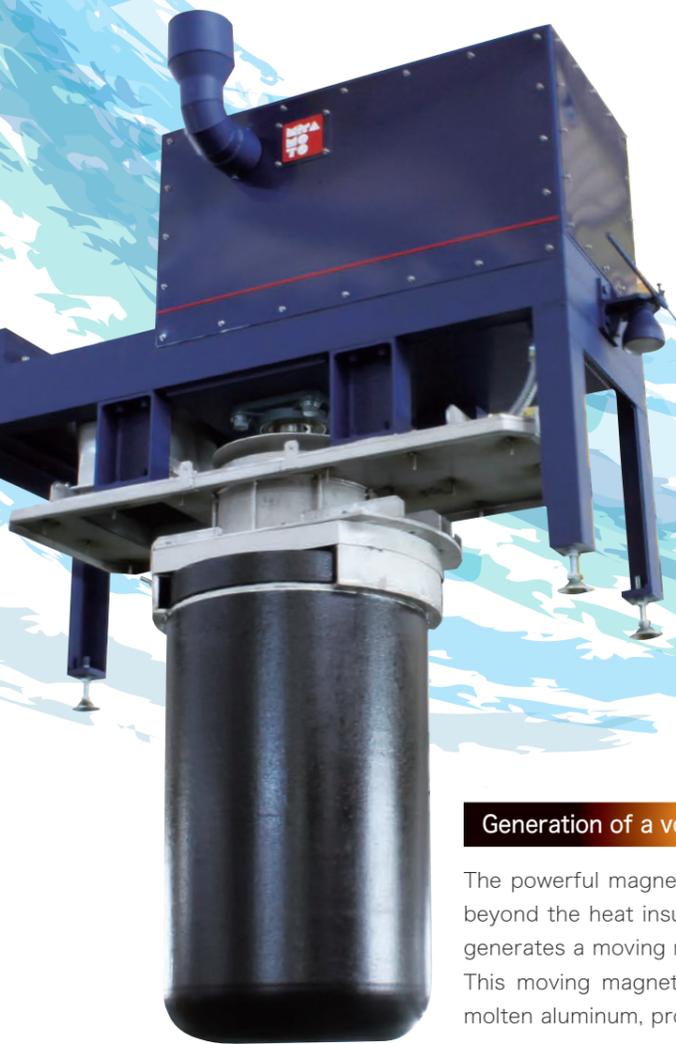
**MIYAMOTO** Pursuing Thermal Technology and a Green Future

Patented

# Eco-SMS Swirls Material in Impressively with the Power of a Permanent Magnet!

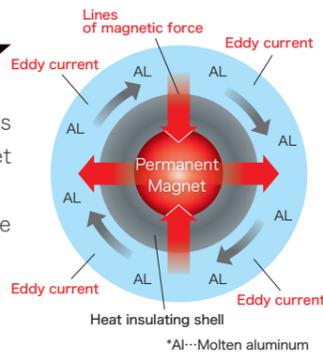
When melting material that has a low specific gravity and is susceptible to oxidation, such as aluminum chips, the key point is to immerse it quickly in the molten aluminum.

The Eco-SMS immerses material quickly with the world's most powerful vortex, and realizes high yield with a large agitation force.



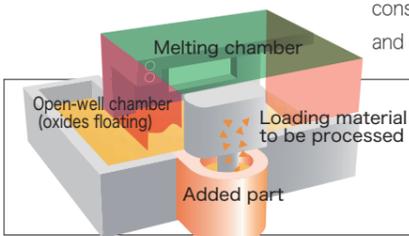
## Generation of a vortex force using magnetic force

The powerful magnetic force of the permanent magnet acts beyond the heat insulating shell, and rotation of this magnet generates a moving magnetic field around the case. This moving magnetic field induces an eddy current in the molten aluminum, producing a strong molten metal flow.



## Advantages of a Simple Construction

To maintain the performance of the aluminum immersible melting system reliably over a long time frame, a simple construction is essential. Systems with a complex construction are difficult to clean, and therefore have unstable melting performance and a short system life. The vortex chamber and connecting holes of the Eco-SMS are constructed simply, with consideration for stable melting performance and maintainability.



## Eco-SMS with an Existing Melting Furnace

The Eco-SMS can be installed on an existing melting furnace. As the first step, please consult us.

## MIYAMOTO's Eco-SMS Offers Rapid Flow Unique in the Industry

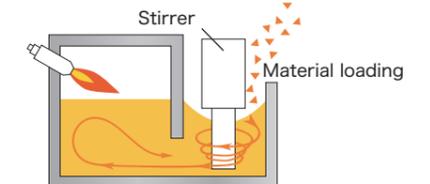
### Conventional Method

Method	Disadvantage
Manual loading method (forklift)	<ul style="list-style-type: none"> <li>Deterioration of the in-plant environment</li> <li>Dangerous, tough and dirty work, plus heat</li> <li>Decreased yield (substantial oxidation loss)</li> <li>Inclusion of Fe content from the agitating fixture</li> </ul>
Impeller method	<ul style="list-style-type: none"> <li>Sudden operation stops due to impeller damage (Resetting takes time.)</li> <li>Spare impellers are expensive. (Manufacturer's special-purpose items, so no competition)</li> <li>The shape of the melting chamber is complex, which causes blockages, shortening the system's life. (Cleaning is difficult.)</li> </ul>
Pump method	<ul style="list-style-type: none"> <li>The shape of the melting chamber is complex, which causes blockages, shortening the system's life. (Cleaning is difficult.)</li> <li>The pump is expensive, and if it fails, recovery takes months.</li> </ul>

### Eco-SMS

Eco-SMS has the greatest agitation force in the industry. Even materials with a low specific gravity are swirled in impressively.

- Yield of 98% or higher
- Continuous melting of max. 3,000 kg/h possible
- Easy maintenance
- Simple construction (cleaning is easy)
- Homogenization of molten metal temperature
- Homogenization of molten metal components
- Briquette melting also possible



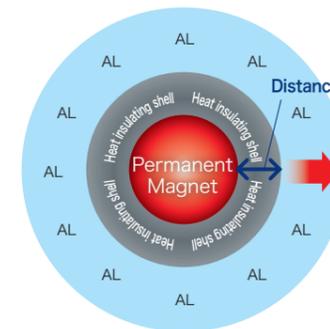
The agitation capability is achieved through the stirrer's rotary force.



## Powerful Magnetic Force

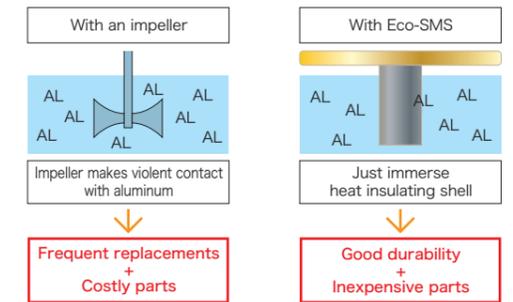
Field efficiency increased with thinner case!

The molten metal agitation force (thrust) is proportional to the magnetic flux density. And the magnetic flux density is inversely proportional to the "square of the distance" from the magnet. With Eco-SMS, the distance between the permanent magnet and molten aluminum is small, so an extremely large molten metal agitation force can be generated.



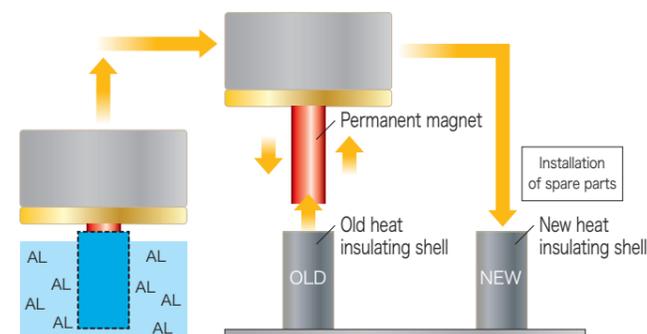
## Durability

Aluminum immersible melting systems up until now have been rotated with an impeller in direct contact with the molten aluminum. This meant that the parts in contact had to be replaced frequently, and the cost of repairs was not insignificant. With Eco-SMS it is just a matter of immersing the heat insulating shell in the molten aluminum, so durability has been substantially improved.



## Maintainability

The construction for mounting the Eco-SMS on a furnace is simple and parts can be replaced easily too.



## System's Protection Mechanism

If the heat insulating shell becomes damaged, a system internal temperature error is detected and the system is automatically raised, preventing burnout of the magnetic circuit.

