

### What is AM-converter™?

The AM-converter™ is a patented device that facilitates rapid melting of ingots, returns and other magnesium solids in a furnace.

The AM-converter can be incorporated in an existing furnace, or integrated into the design of a new melting furnace. It is easy to install and operate.

The AM-converter technology has been successfully operated in melting equipment for diecasting. It is also suitable for a range of other magnesium melting and casting operations.

The AM-converter increases melting rates, significantly reduces melt losses and cover gas consumption, and provides improved health and safety. The formation of sludge is virtually eliminated and production of dross is significantly reduced.

These features significantly improve the economics of magnesium melting operations.

### Why change to AM-converter™?

Conventional melting of magnesium for high volume diecasting applications involves the regular feeding of ingots into a melting furnace. Diecasting returns, such as biscuits or runners, are typically not fed into the melting furnace but are recycled separately. Depending on the volume of throughput and furnace design, high melt losses are often encountered in melting operations. This is due to the formation of dross and sludge.

AM-converter facilitates efficient melting of both ingots and returns with low melt losses and significantly lower operating costs.

#### The main operating principles of AM-converter™ are:

1. Minimisation of the melt surface area that is disturbed when magnesium ingots and solids are fed into the furnace.
2. Rapid melting sequence during which hot metal flows past the solids to be melted.
3. Maintenance of a uniform temperature throughout the volume of the melt.
4. Separation of oxides which can be easily removed from the melt surface.

#### AM-converter™ provides the following:

- direct reprocessing of runners and reject parts together with ingots
- strong melt movement in an isolated section of the crucible without surface disturbance for the majority of the melt
- no segregation in the melting crucible giving a homogeneous alloy composition for casting or further processing
- no precipitation of intermetallics or large oxides in the melting crucible (reducing or eliminating bottom sludge)
- rapid melting and increased furnace melting capacity
- minimum agitation of the melt surface
- extended crucible life
- reduced maintenance
- reduced cover gas consumption
- reduced metal losses during melting, holding and casting

### What makes AM-converter™ operate successfully?

The AM-converter can be adapted to most crucible and furnace designs, but works best when the design of the furnace/converter system is matched to the specific melt requirements of a given application. The metal level in the furnace should be kept constant and is used as a control parameter for automated feed of ingots/solids to the system.

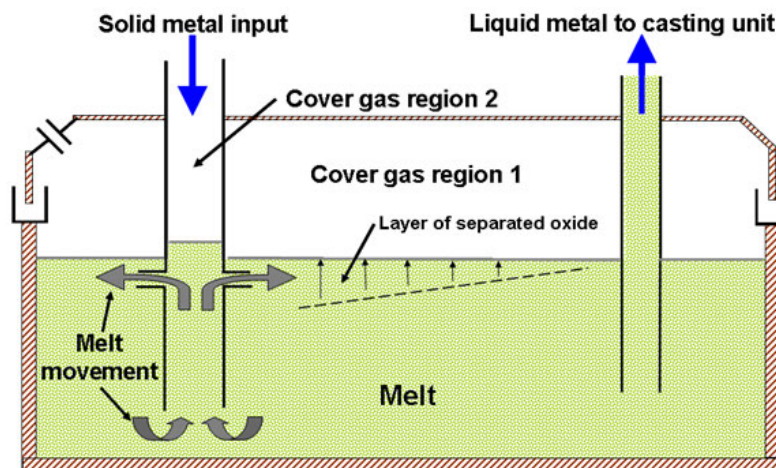
The AM-converter is not a complex piece of equipment, but it should be checked and maintained according to standard operating procedures. AMT strongly recommends that these procedures are followed in order to ensure optimum functioning of the converter.

As with all melt handling systems, proper education and training of operators is an important contribution to successful outcomes and safe operating practice.

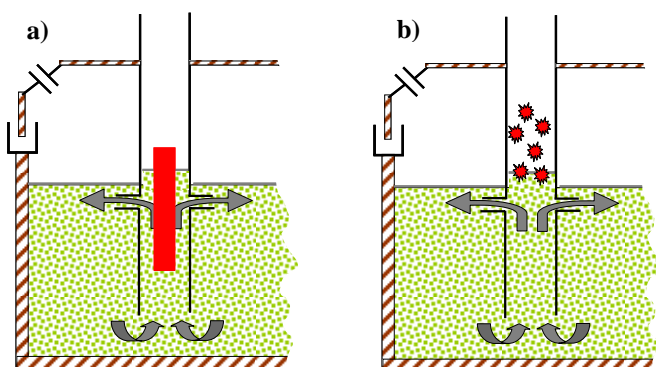
# The Solution for Efficient Magnesium Melting

## Working principle

The operation of the AM-converter is shown in the diagrams below:



Principles of operation



Feeding of  
a) ingots, and  
b) shredded material

## What about health, safety and environment?

- reduced hazards when introducing solid metal
- low consumption of cover gas due to a calm melt surface outside the converter and a simple crucible cover design
- substantially reduced - and easier - furnace cleaning due to absence of bottom sludge
- improved operator working conditions in the furnace area
- reduced melt loss giving a favourable life cycle impact through energy savings, decreased emissions and substantially reduced waste for landfill

## Patent

Applications have been made for international patents that cover the principles of operation of the AM-converter.

## Acquiring AM-converter™

The AM-converter is manufactured and sold to users by licensed equipment manufacturers. AMT can assist in evaluating user needs and provision of information on licensed manufacturers. For the time being, this technology is only available in Europe and North America until additional equipment manufacturers can be licensed in other parts of the world.

Advanced Magnesium Technologies has made every effort to ensure the information contained in this document is relevant and up-to-date, but makes no representation as to its comprehensiveness or accuracy. The information is general in nature, and is not intended for use without careful consideration of each specific application. Persons receiving this information should exercise their independent judgement in determining its appropriateness for a particular purpose, and should seek further information or advice as required.

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Further information on  
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