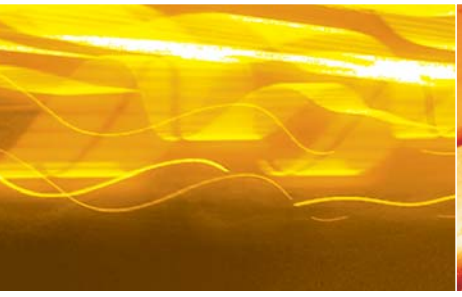
HATCH™

# HINGED LADLE LID SYSTEM

## HATCH TECHNOLOGIES GROUP



# DESIGN AND FEATURES

The automatic lid removal system and novel hinge design, together with a high strength refractory lid lining, are durable enough to withstand the rigorous demands of the steel-making shops. The system design is also very flexible and can be adapted to suit most shop configurations.

### SUCCESFUL SYSTEM

The lid handling system operates reliably, with few modifications and little maintenance.

Ladles typically require preheating between heats. With the Hatch Technologies system, the lid stays on the ladle at all times except during relining, initial ladle preheating, vessel tapping and ladle preheating, vessel tapping and ladle metallurgy. This eliminates preheating between the heats. The Hatch Technologies ladle lid system has the following features:

- The lid is automatically removed when the ladle is sent to the tap position and is automatically replaced before teeming.
- The lid cannot fall off the ladle during slag dumping or inspection.
- When slag is dumped, the lid opens before the slag reaches the lip of the ladle thereby reducing erosion of the lid's refractory.
- Porous plugs and slide gates are installed with the lid in place.
- The ladle interior can be inspected with the lid still attached to the ladle.
- The lid acts as a shield for oxygen lancing of argon plugs and nozzles. This enables the work to be performed at a slide gate make-up area.
- Lids are stored vertically reduction storage area.

## AN ENERGY SAVER

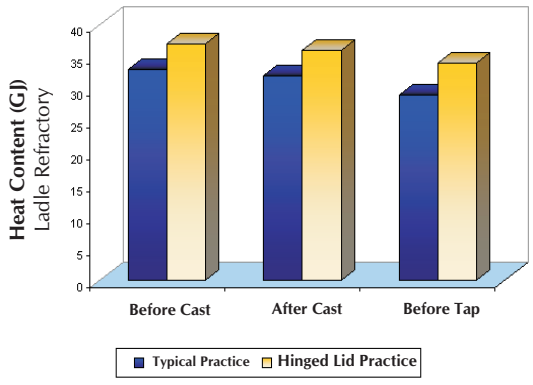
The idea of ladle lids for retaining heat is not new. Several steel companies have been using ladle lids for a number of years. But in most BOF and EAF shops, crane availability is limited by higher priority functions. Thus, handling problems tend to prevent the efficient and routine use of this energy saving feature.

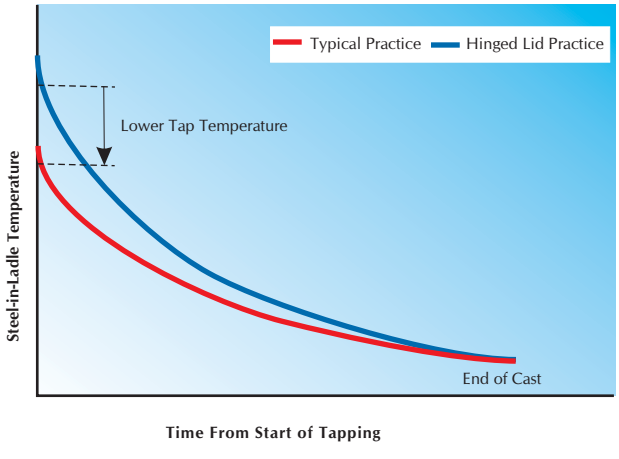
Hatch Technologies can provide a simple, but effective ladle lid handling system that minimizes reliance on overhead cranes and maximizes heat retention in the ladle. The lid can be attached to the ladle at all times except during tap, at which time it is automatically removed and replaced during transfer car movement. This design simplifies the use of lids during ladle cycling and therefore allows a higher degree of lid utilization resulting in significant energy savings.

## THE BENEFITS

The Hatch Technologies lid and handling system has stabilized the temperature/time profile of steel in the ladle for improved product consistency.

- reduced fuel consumption,
- more consistent ladle temperature
- less steel temperature variability
- better steel quality, lower tap temperature
- higher yield
- higher caster productivity, fewer aborts
- better vessel life, lower aluminum consumption
- lower caster breakout frequency
- better ladle life.




## HINGED LADLE LID SYSTEM

The patented Hinged Ladle Lid System is the most effective and inexpensive means of achieving an optimised hot ladle practice. The system retains heat in ladle refractories during critical time period; from start of casting throughout the tapping of the next heat of steel (period where surface of ladle is not fully covered by liquid steel).

The research behind the development of the Hinged Ladle Lid System showed that heat loss from a ladle can be divided into two components. First is the ongoing conductive loss through the refractory which occurs at a consistent rate as a result of the colder steel shell temperature of the ladle. The second component is radiant heat that escapes through the open top of a ladle which is the component that the Hinged Ladle Lid System addresses.

## CONTACT

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# HINGED LADLE LID

## HOW IT WORKS

The ladle lid system consists of a hinged lid that attaches to the ladle.
The lid is removed from the ladle automatically when the ladle is sent to tap position and is replaced automatically before teeming.
When slag is dumped, the lid opens before the slag reaches the lip of the ladle thereby reducing erosion of the lid's refractory.