

# Flextreme™ Caster

Novelis continuous casting technology for ready-to-forge stock. State-of-the-art technology that combines versatility, simplicity and value. **Now available for the forging industry.**



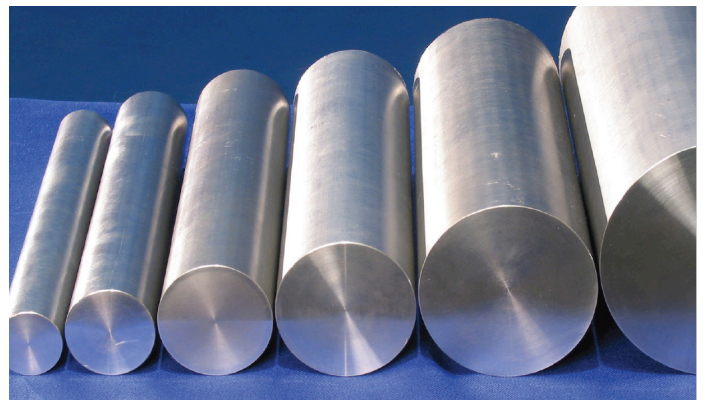
Flextreme™ is Novelis' proprietary technology for continuous horizontal casting of ready-to-forge aluminum billets. This new technology decreases the cost, time, energy and CO<sup>2</sup> emissions in the manufacture of forgings because the as-cast stock does not need to be extruded, homogenized or scalped. Further, it

allows for recycling of process scrap. Most commercial alloys can be produced in rounds and simple shapes of 25-150mm diameter. Advantages compared to extruded forging stock include fine microstructure, mechanical property isotropy and low variability, and excellent resistance to grain growth during heat treatment. Each module has two independently-controlled molds. Multiple modules can be installed to match production requirements, and added to for future expansion. The system is fully automated and requires minimal labor in its operation. Novelis offers Flextreme casting modules and ancillary equipment for sale with a technology license, and is committed to the continued development and support of this technology.

Recognized as a worldwide leader in aluminum recycling, casting and rolling, Novelis now applies its art of casting and knowledge of aluminum to the forging market. The Novelis Flextreme caster technology, originally developed by Wagstaff Inc., is a revolutionary patented continuous casting process for the production of high quality ready-to-forge stock.

Specifically developed as a flexible and economical alternative for forgers to produce their own billets, the Flextreme caster is compact and easy to install and operate. Its modular design allows for additional incremental capacity as required. Specialized features provide forging operations the ability to produce various diameter forging stock. The Flextreme caster line, which includes a remelt furnace, allows the forger the opportunity to recycle internal as well as external process scrap, further reducing operating costs.

The Flextreme caster technology is a very cost-effective method for manufacturing high quality ready-to-forge stock. Offering superior metal integrity compared to conventional processes, the Flextreme caster produces fine and uniform grain structure throughout the forging stock and good surface quality. These features eliminate homogenization and scalping operations for most forging applications. When these advantages are combined, the Flextreme caster technology offers forgers a lower cost opportunity for producing their own forging stock in the range of 25mm (1 inch) to 150mm (6 inch) diameter billets.

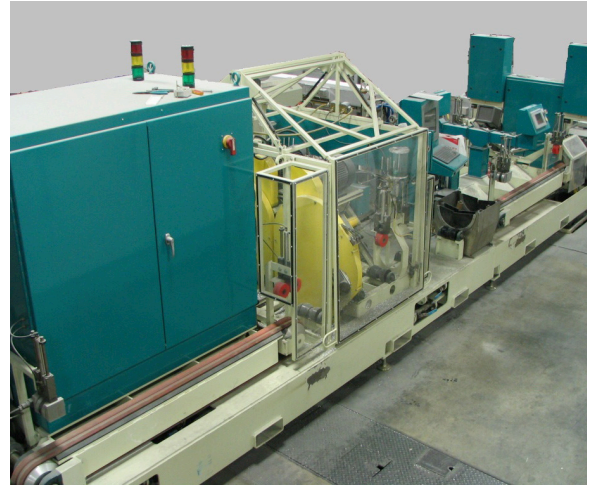


**Not just aluminum, Novelis Aluminum.™**

# Novelis

## Flextremer Caster Capabilities and Features:

- The Flextremer caster design is modular with one module containing 2 molds. This feature allows for easy incremental capacity expansion as needed at a low incremental cost
- Modules are equipped with quick change molds and the capability to cast a wide range of alloys
- Casting flexibility
  - Machine can cast billets ranging from 25 mm to 150 mm (1 to 6 inches) in diameter
  - Each mold runs independently and various diameters can be cast
  - Ability to cast simple shapes
  - Casting capacity ranges from 1000 to about 6000 tpa per module depending on diameter and alloy. Up to 6 modules can be connected together.
- Casting modules include
  - Proprietary mold technology
  - Automatic drive system
  - In-line quality control (Ultrasonic testing and surface roughness)
  - In-line automatic “soft start” saw



**For further information regarding Novelis Flextremer caster technology, please contact a Novelis representative.**

## Benefits for Users:

- In-house production of low cost ready-to-forge stock
- Low cost alternative to other forging stock
- Fully automated, requires minimal labor to operate
- Compact size allows for minimal installation infrastructure
- Modular equipment design for easy low cost expansion
- Produces fine and uniform grain structure that requires no homogenization for most forging applications
- Excellent surface quality that requires no scalping for most forging applications
- Added value from on-site recycling of forging scrap
- Mechanical properties of forging are more uniform and isotropic.

## Novelis Advantages:

- Leader in casting and aluminum conversion
- Strong technical support and excellent customer service
- Innovations and value-creating solutions

Novelis Inc. is the global leader in aluminum rolled products and the world's largest recycler of aluminum. The company operates in 11 countries, has approximately 10,900 employees and reported revenue of approximately \$10 billion for its 2014 fiscal year.

Novelis supplies premium aluminum sheet and foil products to transportation, packaging, construction, industrial and consumer electronics markets throughout North America, Europe, Asia and South America. The company is wholly owned subsidiary of Hindalco Industries Limited, part of the Aditya Birla Group, a multinational conglomerate based in Mumbai, India.

For more information, about Novelis, visit [novelis.com](http://novelis.com) and follow us on Facebook at [facebook.com/Novelis Inc](https://www.facebook.com/NovelisInc) and Twitter at [twitter.com/Novelis](https://twitter.com/Novelis).

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