

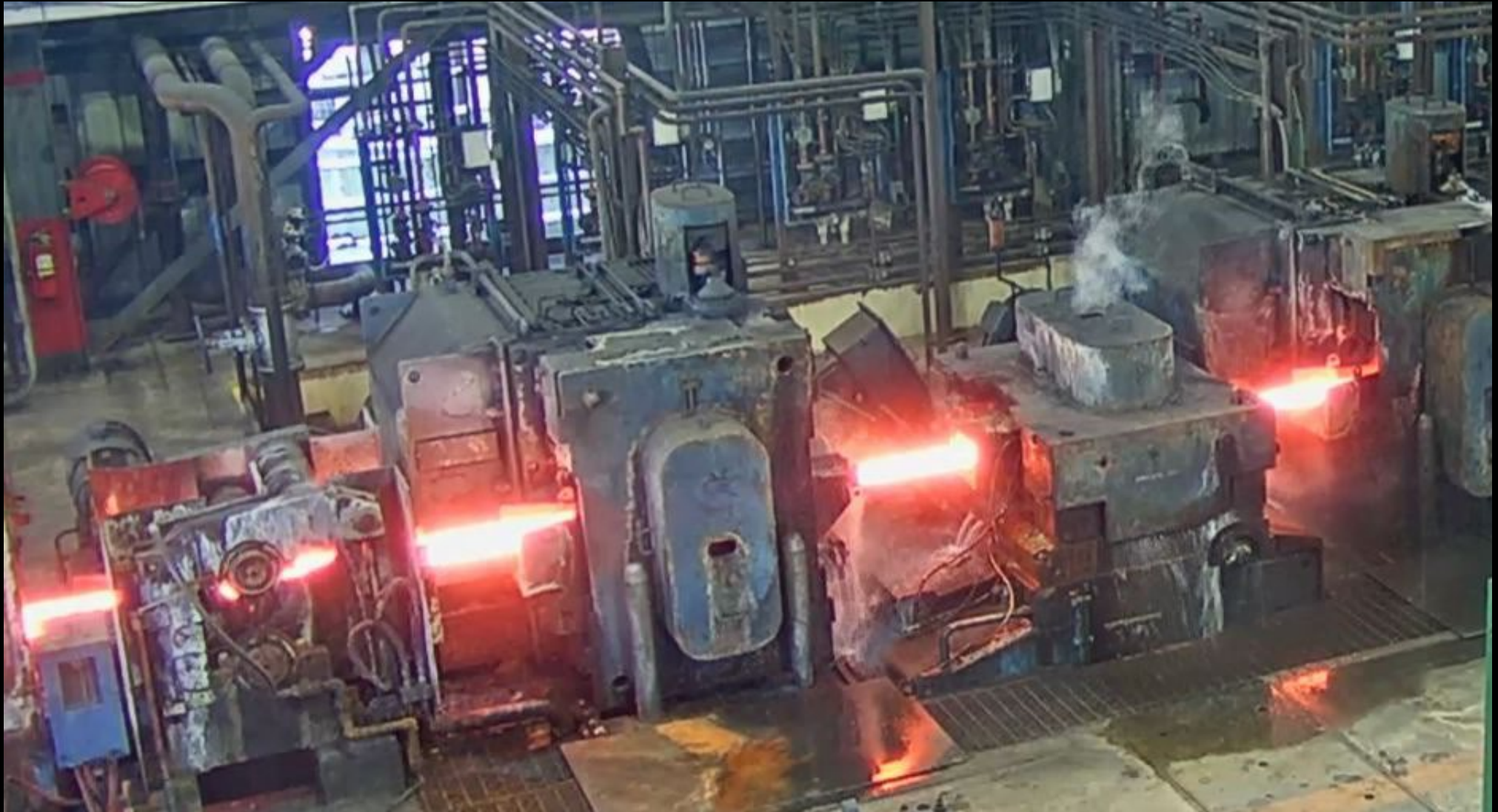
Nucor Steel Florida

Octagon Mold Upgrade

Presented by: Shane Hirst

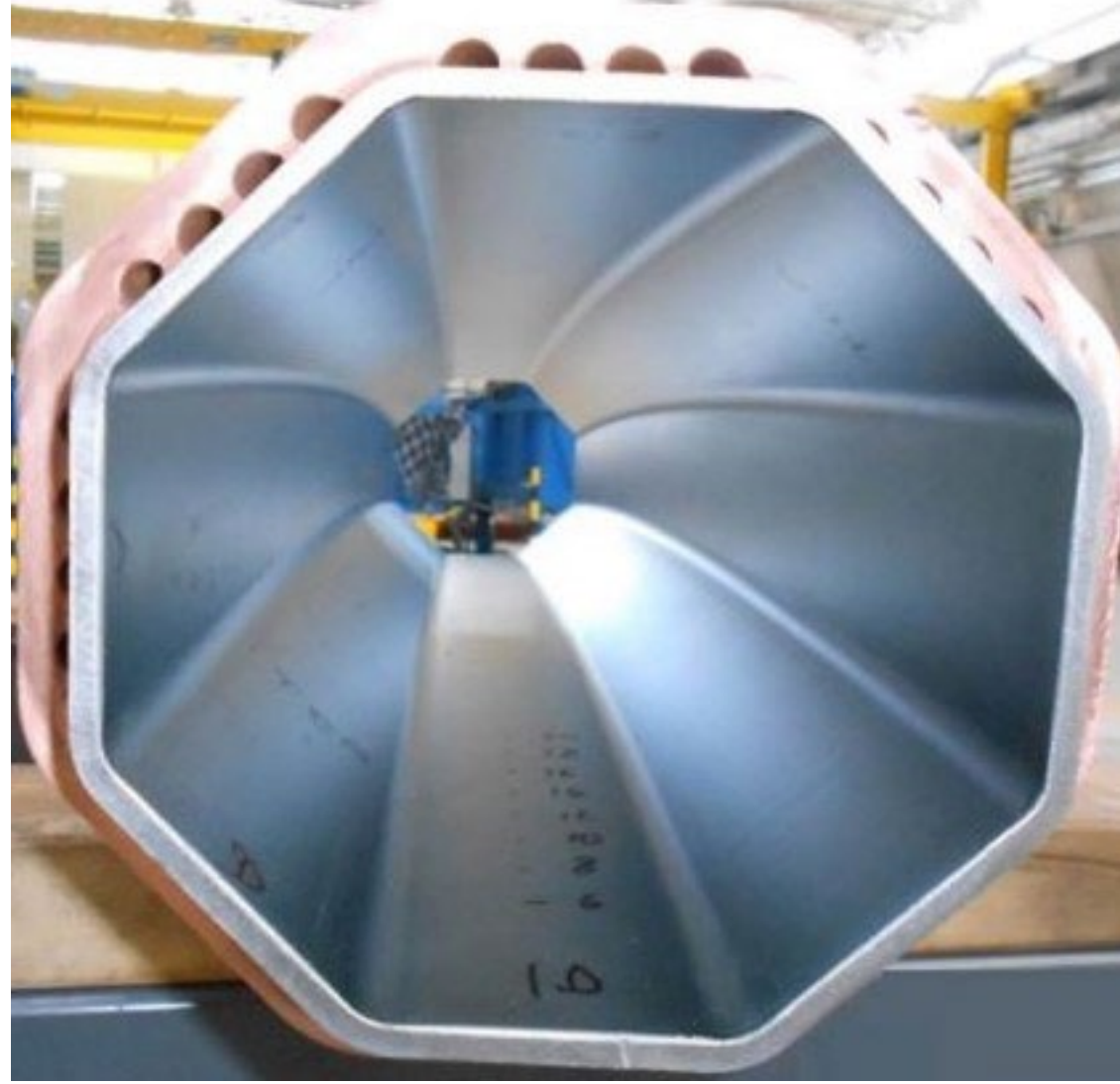
Purpose

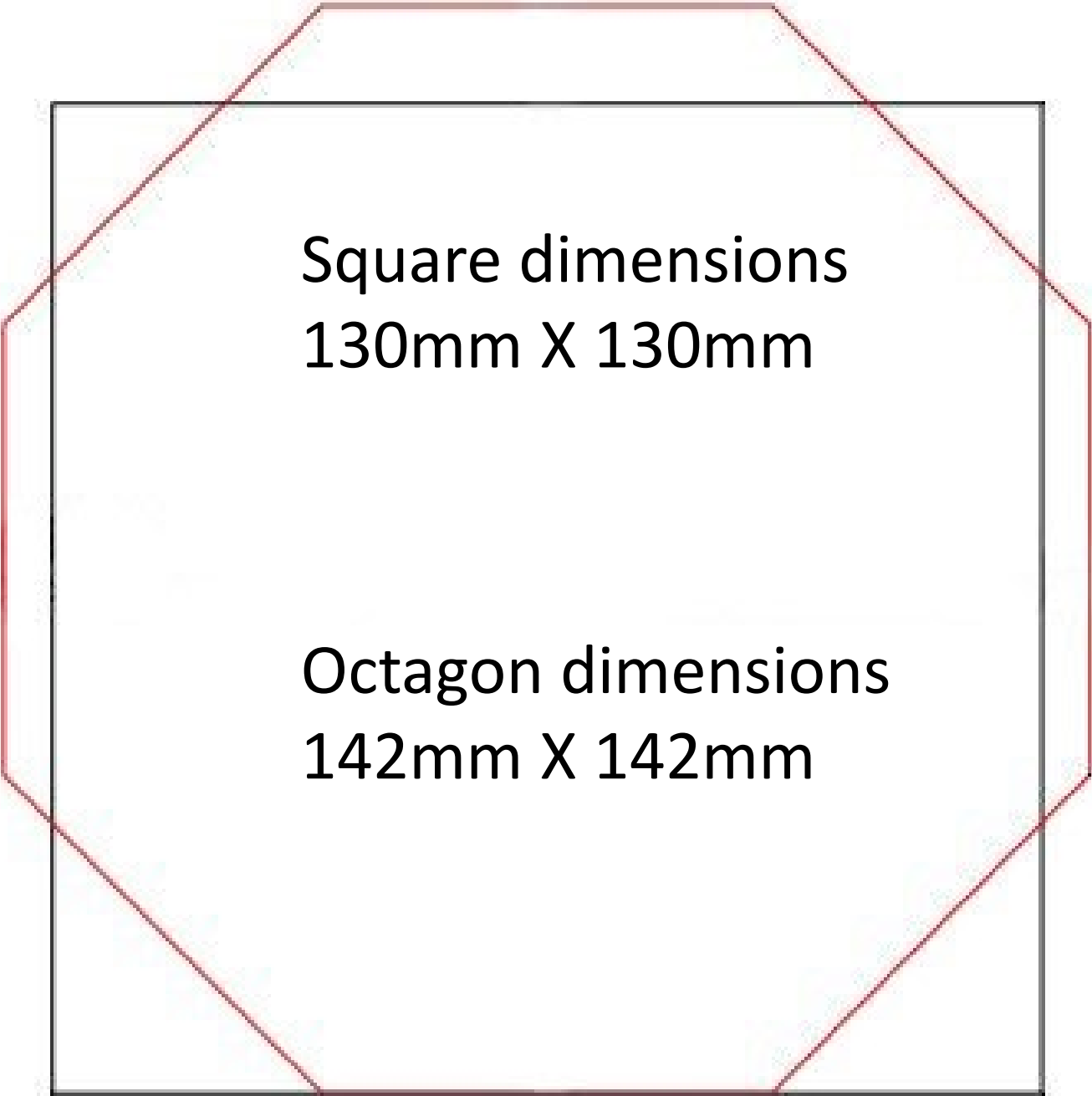
Safely maximize tph throughput



Mechanical changes

- Mold assembly
- Foot roll cages
- Spray bars
- Billet shear entry funnel
- Billet shear blades
- Stands 1-3 new pass design
- Modifications to entry and delivery boxes/guides for 1-4 stands.





The diagram consists of a large square with a black border. Inside this square is a red octagon. The octagon is formed by cutting off the four corners of the square. The text 'Square dimensions 130mm X 130mm' is centered within the square, and 'Octagon dimensions 142mm X 142mm' is centered within the octagon.

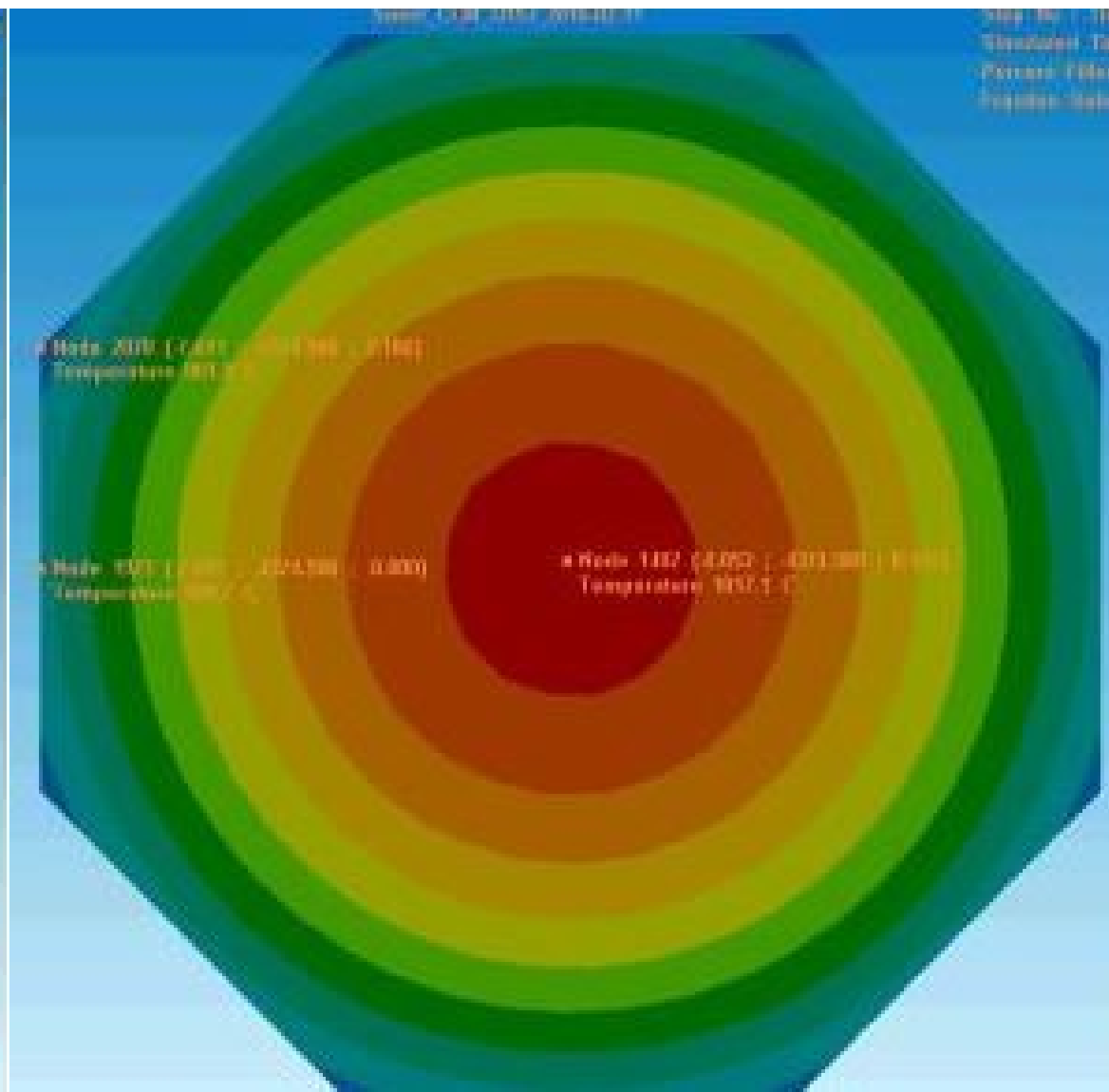
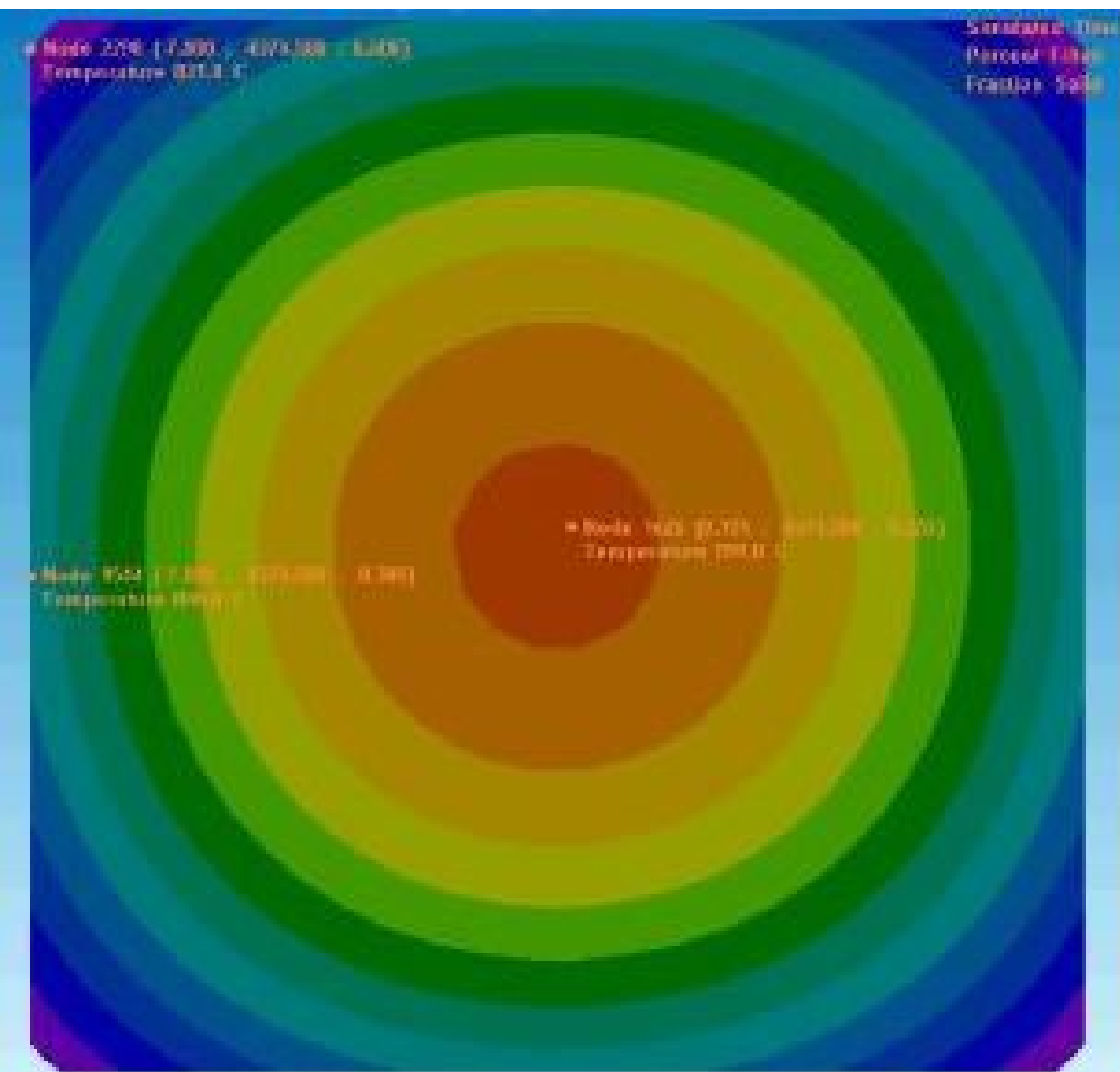
Square dimensions
130mm X 130mm

Octagon dimensions
142mm X 142mm

Benefits to the change of shape

- Shape provides more efficient cooling resulting in the ability to run at a higher speed, in a more safe and smooth manner.
- Less susceptible to billet imperfections during casting operations.
- More efficient reduction through the roughing mill stands by optimizing the pass design.

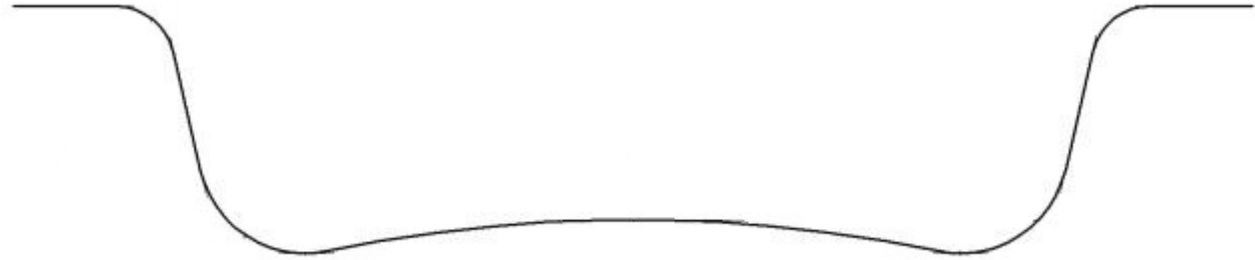
Temperature Comparison



Pass design changes

1 Stand Pass Design

Square billet



Octagon Billet

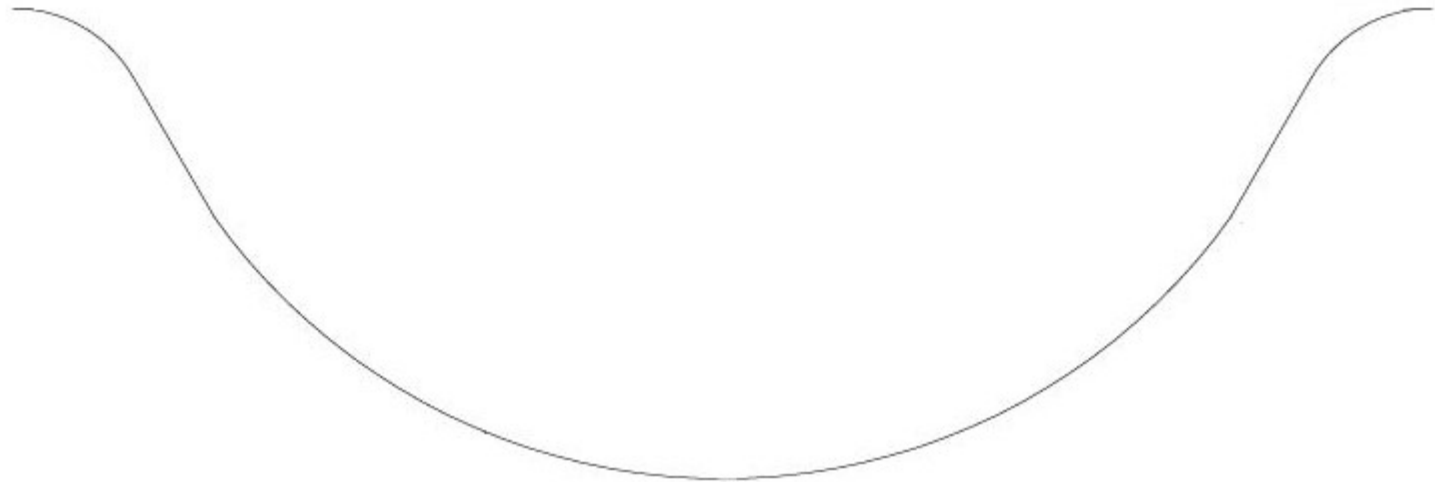


2 Stand Pass Design

Square billet



Octagon billet

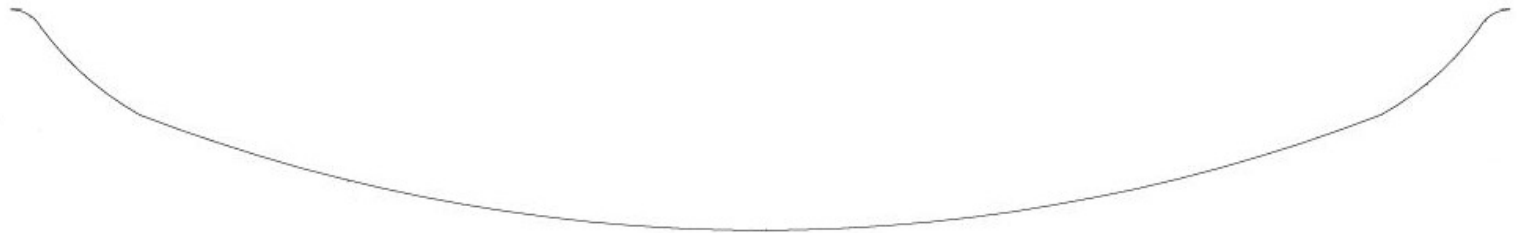


3 Stand Pass Design

Square Billet



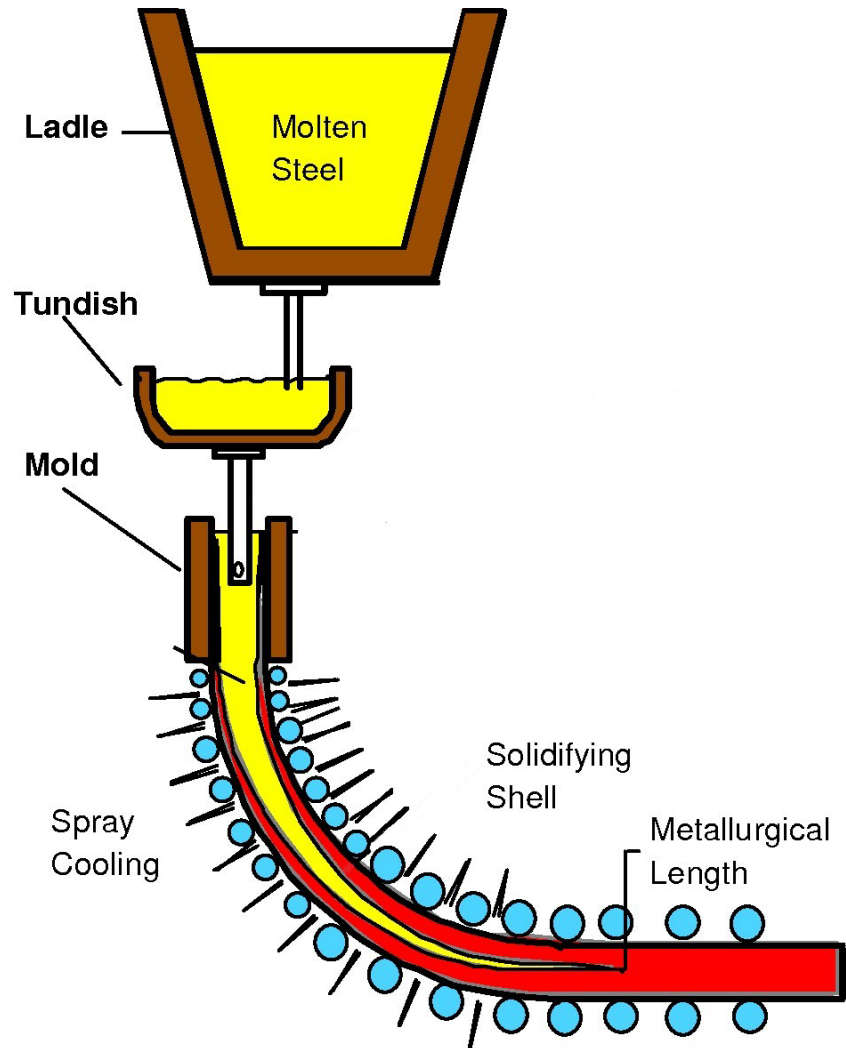
Octagon billet





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Programing changes



- Cut inhibit at the billet shear to prevent pipe out from metallurgical length
- Enabled at speeds averaging 268 IPM for 5 secs
- Disabled when speeds lower to 255 IPM for 30 secs
- When cast interrupt is triggered, Snap shear fires followed by Billet shear.



NUCOR®

Speed changes

- Max speed on square approx 270ipm cast speed
 - 350,000 / Year
- Max speed on octagon approx 300ipm cast speed
 - 425,000 / Year

*Projected Danieli nameplate numbers

Bottle necks so far

- Superheat at caster
- Mold friction and Delta T's
- QTB Limitations
- Shear max speed
- Revolver timing

A close-up photograph of a metal drill bit. The central part of the bit features a single flute with several rectangular chipbreakers. The outer sections of the bit have double-flutes. The metal surface is dark and shows signs of use.

Any Questions?