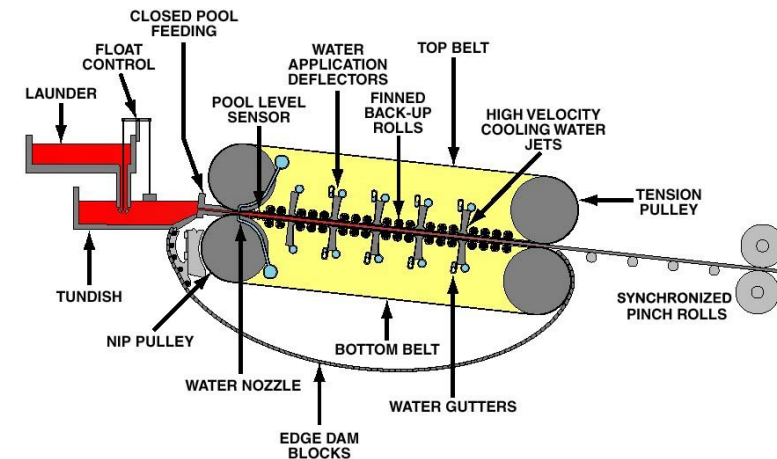


Hazelett Aluminum Casting and Rolling Lines

Start-Up Date	Company and Location	Strip Width	Estimated Annual Production (TPY)
1963	Tower Automotive Canada	660 mm 26 in	25,000
1970	Nihon Atsuen Japan	300 mm 12 in	10,000
1979	Commonwealth California	711 mm 28 in	40,000
1984	Nihon Atsuen Japan	450 mm 18 in	10,000
1985	Jupiter Indiana	1067 mm 42 in	100,000
1986	Commonwealth Ohio	1346 mm 53 in	210,000
1987	Vulcan Alabama	1320 mm 52 in	15,000
1991	Nichols Iowa	1320 mm 52 in	200,000
1997	Neuman Canada	380 mm 15 in	15,000
2001	Compania Valenciana Aluminio Spain	1320 mm 52 in	70,000
2002	Alcoa Texas	1930 mm 76 in	100,000+

HAZELETT® TWIN-BELT ALUMINUM STRIP CASTER

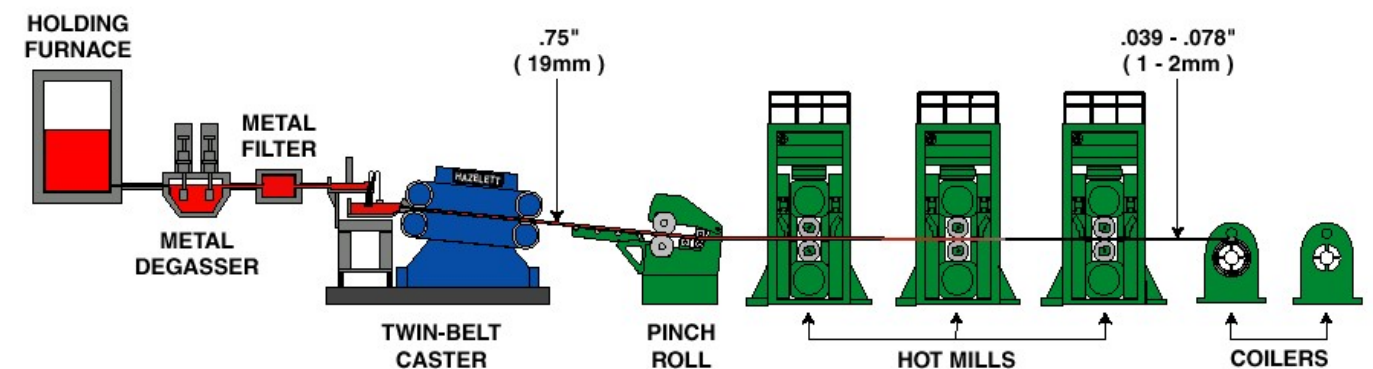


- Fully moving mold
- Casting thickness 12.5 - 38 mm (1/2" - 1 1/2")
- Casting widths to 2300 mm (90")

- Casting Speed:
6.1 - 9.1 mpm
(20 - 30 fpm)
- Casting Rate:
27 tonnes/meter width/hour
(1500 lb/inch width/hour)

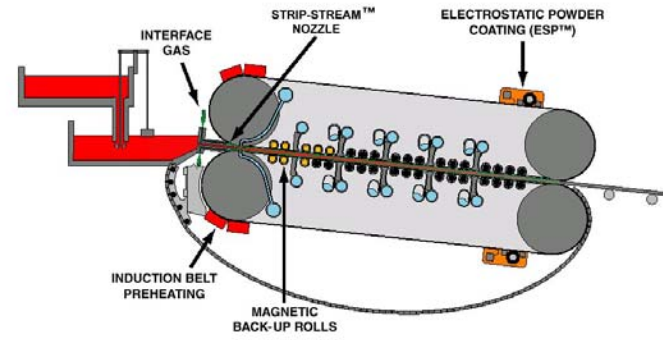


Integrated Continuous Casting and Hot Rolling

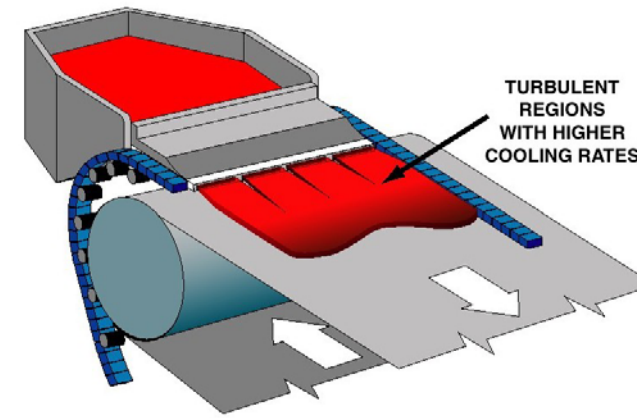


- Aluminum Minimills 10,000 - 300,000 Tonnes Per Year

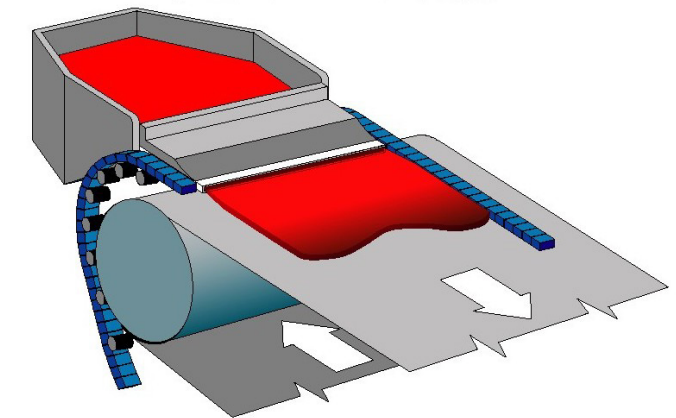
Advanced Technology



DIVIDED NOZZLE FLOW

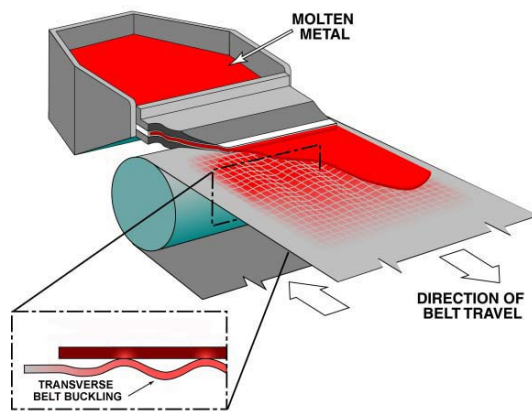


STRIP-STREAM™ FLOW

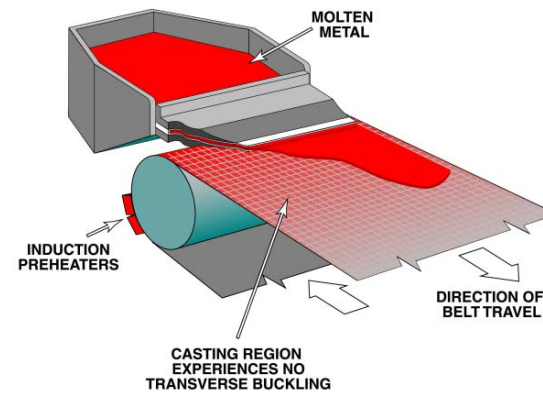


- Undivided Metal Flow Promotes Uniform Surface Solidification Rates

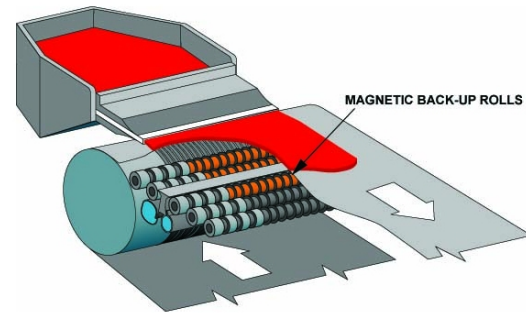
BOTTOM BELT WITHOUT PREHEATING



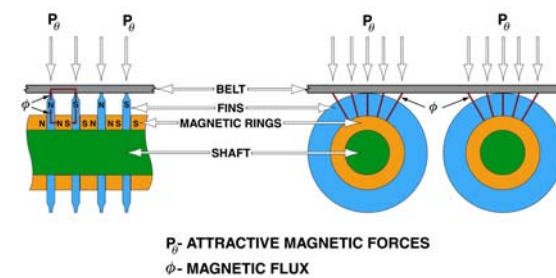
BOTTOM BELT WITH PREHEATING



- Casting Belt Preheating Eliminates Thermal Distortion at Mold Entry



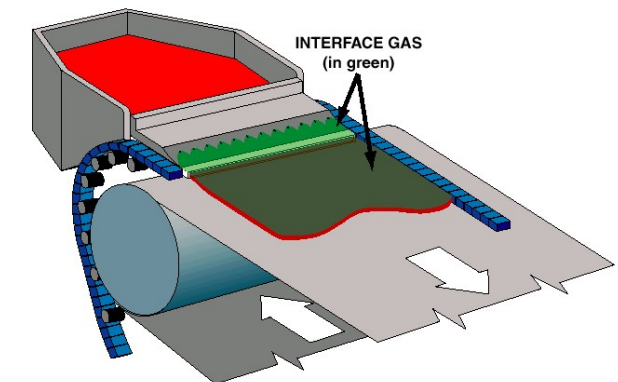
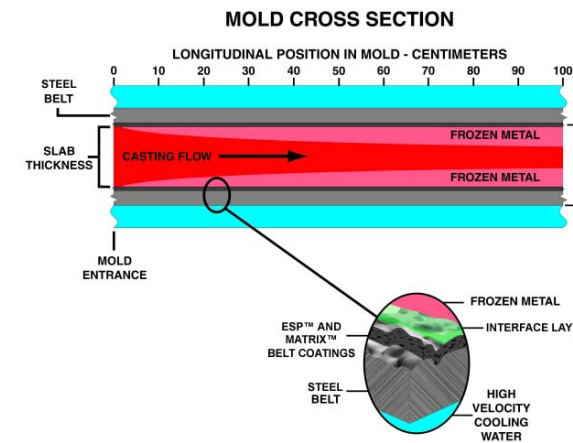
MAGNETIC BACK-UP ROLLS



- Magnetic Belt Restraint Prevents Belt Movement in Mold

Mold Interface Technology

Heat transfer is primarily regulated at the mold interface. The key components of the mold interface include: (1) the composition and topography of the permanent metallic/ceramic Matrix™ coating, (2) the uniform distribution and quality of the electrostatically applied ESP™ powder coating and (3) the conductivity and oxidation characteristics of the applied interface gas.



- Adjustable Heat Transfer
- Controlled Mold Wettability
- Interface Atmosphere Management

Aluminum Alloys Commercially Cast on Hazelett® Twin-Belt Caster

Alloy Series	Products
1000	Foil, Impact Extrusion Slugs
3000	Architectural, Utility Sheet, Welding Tubing, Foil
5000	Trailer Panels, Tab Stock, Utility Sheet, Welded Tubing, Forging Slugs
6000	Impact Extrusion Slugs, Tooling Plate
7000	Fin Stock
8000	Foil, Fin Stock