

# rolling

## The Challenges

In hot, cold, or bar shape rolling (single or multi-stand configurations), the process and automation challenges are considerable. The protection of mechanical systems and sensitive electronic monitoring and control devices from massive vibration, heat, quenching devices, machine backlash, and even physical damage inherent in high speed rolling is critical.

## Smart Solutions

All AMETEK Automation and Process Technologies mill-duty smart solutions are application driven. Whether we use standard products or special engineered solutions, you can depend on five things: accuracy and repeatability, survivability, easy installation, and service. Here are a few examples in rolling:

### 1 Walking Beam Furnace

- Resolver and mill-duty Linear Displacement Transducers (LDTs) for charger, walking beam and extractor lift and traverse positions
- CATRAC™

### 2 Coil Box

- Linear Displacement Transducer (LDT) for top bending roll frame position
- Resolver-based PLC encoders for cradle roll frame position

### 3 Side Guide Position

- Resolver-based rotary position encoders monitor screw actuator position
- Mill-duty Linear Displacement Transducers (LDTs) monitor actual side guide position

### 4 Work Roll/Backup Roll Position

- Resolver-based PLC encoder modules monitor screw down position
- Linear Displacement Transducers (LDTs) monitor roll position

### 5 Looper Position

- Resolver-based looper arm position sensor

### 6 Automated Roll Change Mechanism

- Linear Displacement Transducer (LDT) monitors roll position during change-out
- CATRAC™

### 7 Down Coiler

- Resolver-based wrapper roll gap adjustment
- CATRAC™
- LDT with Mill-Duty Housing

## More Mill-Duty Solutions

Medium/Large Section Rolling  
Mill-duty Linear Displacement Transducer (LDT) monitors position of forming rolls.

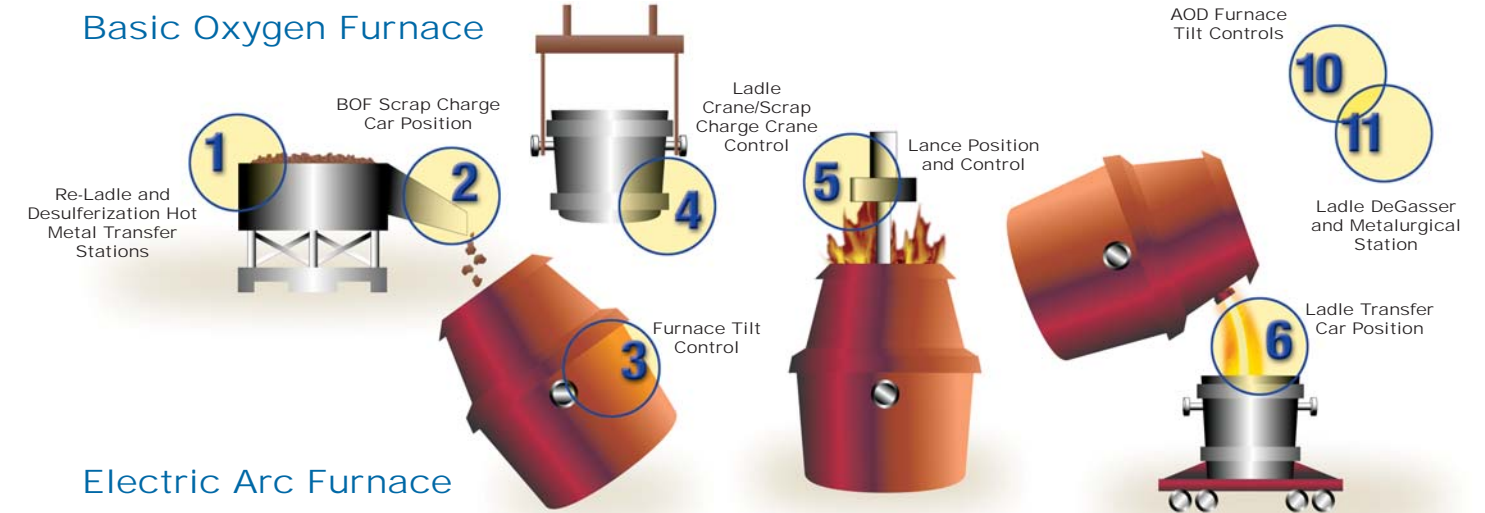
Flying Shear Control  
Resolver-based high speed Programmable Limit Switch (PLS) measures length and triggers shear. Similar applications also use LDTs with Quadrature or Analog output.

### Control Products

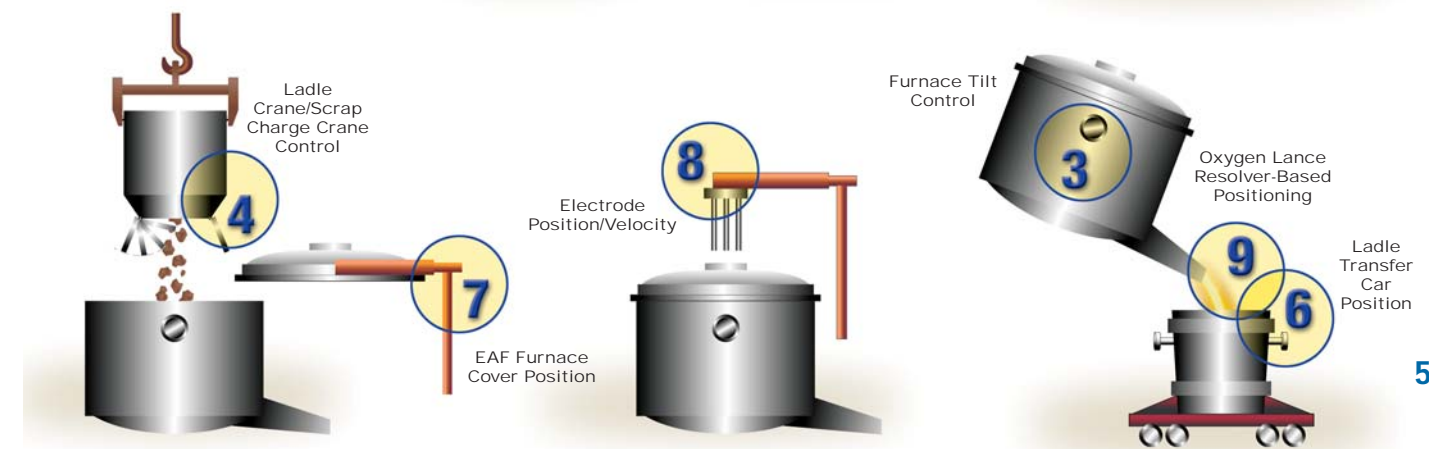
In this area of the mill, AMETEK Automation and Process Technologies also offers mill-duty GEMCO hydraulic, electric, and electro-thrust brake systems, CATRAC™ cable and hose carriers, LDTs, Resolvers and B/W point level control of cooling water systems.



## Basic Oxygen Furnace



## Electric Arc Furnace



## application notes

### More Efficient Burns

**Accurate EAF Electrode Positioning and Movement Maximizes Charge Burn and Eliminates Electrode Crash**

The Challenge: To improve carbide electrode positioning and descent rate accuracy during a charge burn

Most EAF furnace electrode positioning and descent mechanisms are controlled by an encoder attached to a complex drive, gear and chain assembly. These encoders monitor the drive mechanism-not the electrodes. You cannot effectively or repeatedly position the electrode or monitor its descent with this system. The results are less than efficient burns and potential electrode crashes into the charge.

The Solution: The Mill-Duty Series 925 Linear Cable Reel Sensor

This sensor can be mounted away from furnace hazards with the actuation cable attached directly to the electrode descent mechanism. As the electrodes descend, the cable pulls out to accurately record the linear movement. The sensor's assembly converts linear to rotary motion to turn its internal resolver. The electronic signal from the resolver, which is highly resistant to electrical noise, is sent via cable to our Series 2120 Resolver Module in a safe location. The module produces continuous digital position data accurate to 0.02" (0.5 mm) and a simultaneous analog output of electrode velocity.

Consult factory for application details.