



Tata Steel's novel Anti Bleed System for detecting liquid steel breakouts in continuous casting has resulted in a huge increase in the company's revenues.

## THE CONTEXT



One of the biggest problems in the continuous casting of steel is the leakage or bleeding of liquid steel from a solidified shell. Called breakouts, they are a major cause of productivity loss and reduced equipment life. Every hour of stoppage by a caster causes a revenue loss of Rs 69 lakh. Also, workers are exposed to hot and humid conditions while cleaning the breakout.

Since there was no system available globally for detecting and preventing breakouts, the Tata Steel team decided to take up the challenge.



## KEY CHALLENGE



**TO ACCURATELY DETECT BLEEDING AND PREVENT IT FROM LEADING TO A BREAKOUT**

The team analysed over 150 cases of bleeding breakouts to find an optimum multi-variant function that could detect the bleeding. The next step was to conduct rigorous trials to inspect all the slabs -- this helped to determine the threshold value for triggering an alarm and then the optimal deceleration rate, which can prevent the bleeding from progressing into a breakout, without any negative impact on the machine or quality.

## THE INNOVATION



The Tata Steel team found that there very little research on the correlation between key variables and breakouts in continuous casting. Hence, the development of an accurate system to detect and evaluate breakout was a complex challenge.

The team developed a logic-based Anti Bleed System (ABS), which helps a caster to prevent bleeding breakouts. ABS is a real-time system for detecting bleeding of liquid steel while casting at high speed. It uses a continuous anomaly detection-based algorithm to spot a bleed and initiate remedial action. While it operates independently, the ABS system is part of a multi-system strategy for controlling breakouts at Tata Steel.



## THE IMPACT



ABS has increased Tata Steel's revenues by  
**₹45.35 CR PER ANNUM**

The company has reduced the incidence of breakouts from a monthly average of 4.36 in FY18 to 2.9 in FY19.