

# Can your furnace rollers outlast standard rollers by four times?

**By utilizing furnace rollers made from Kanthal APMT, an iron-chromium-aluminum (FeCrAl) alloy, roller hearth furnace owners can boost productivity, reduce maintenance costs, improve produced tubes' surface quality and contribute to a cleaner environment.**

## The challenge

A Swedish tube mill regularly produces approximately 200 tons of stainless steel tubes per week. With an estimated value of 10 euro per kilo of stainless steel, the mill's furnace rollers manufacture the equivalent of about two million euro per week.

Within two years of installation, four of the rollers started cracking at the welds and showed extensive oxidation, causing surface problems. To overhaul the furnace rollers, the owners needed to shut down the furnace, which cost their operation up to two million euro a week.

Many mills face similar challenges: the furnace environment causes excessive oxidation on traditional nickel-chromium (NiCr) alloy rollers. Consequently, furnace rollers can only be used six to twelve months before reconditioning. This means frequent maintenance stoppages as well as costly storage of large numbers of spare rollers.

Moreover, the rough and uneven surfaces formed on these furnace rollers can cause surface defects on the tubes. This produces a poorer yield and adds extra production costs. Furthermore, traditional rollers require a fair amount of water for cooling purposes, using higher energy and creating a less than clean environment.

## The Sandvik solution

Sandvik is introducing furnace rollers made from Kanthal APMT, an iron-chromium-aluminum (FeCrAl) alloy, that significantly outperform conventional NiCr rollers. Kanthal APMT is a powder metallurgical dispersion strengthened alloy that offers a unique combination of high creep strength and resistance to oxidation at high temperatures – critical for high-performance furnace rollers. It also features high mechanical strength at temperatures up to 1250°C (2280°F). These unique properties make Kanthal APMT uniquely suitable for furnace rollers among a number of other high-temperature applications.



*NiCr (nickel-chromium) standard rollers after one year of service.*



*Rollers made from Kanthal APMT after four years of service.*

## The result

The Swedish tube mill installation shows that furnace rollers made from Kanthal APMT have a service life of up to four times longer than that of conventional furnace rollers. The new material, together with a new roller design, ensures a surface that actually improves the quality of the manufactured tube products.

By installing the new furnace rollers from Kanthal APMT, the tube mill has also been able to reduce maintenance costs and increase productivity. Maintenance stoppages have been reduced significantly. In fact, since 2004 when the tube mill started utilizing furnace rollers made from Kanthal APMT, the rollers have not only increased their service life by four times, they have reduced the need for storing spare rollers.

Despite the higher temperature capabilities, these rollers require less (if any) water for cooling purposes, reducing energy requirements and making the furnace rollers a greener approach to tube manufacturing.



*Furnace rollers made from Kanthal APMT in a Swedish tube mill installation proved to have a service life of up to four times longer than conventional furnace rollers.*

*Since the tube mill started using furnace rollers made from Kanthal APMT in 2004 maintenance stoppages has been reduced and productivity increased. On top of that the rollers provided a surface that improved quality of the manufactured tubes.*