

USING **SCALE WATCHER™** AT BLAST FURNACES TO PREVENT CALCIUM DEPOSITS AND REDUCE MAINTENANCE

Channels and membranes for cooling water around blast furnace stay unobstructed longer

Sidmar-Arcelor enjoys considerable reduction in maintenance and idle time

The melting of iron ore in a blast furnace occurs under high temperatures in which maintaining a steady temperature level is extremely important. This is accomplished by means of an ingenious yet simple and effective cooling system around the blast furnace. Its only disadvantage is that the combination of high temperatures and hard cooling water causes Calcium deposits to accumulate in the channels and membranes of the cooling system around the furnaces and the cooling tower. These deposits result in frequent maintenance stops. Sidmar-Arcelor decided to install a *Scalewatcher™* Industrial 5 EP to test its effectiveness. And the results were amazing.

Sidmar-Arcelor has two blast furnaces in Ghent, Belgium being used in turns to process iron ore during an ongoing process. The heart of the blast oven is its furnace shaft that consists of three sections. From top to bottom, these sections are the stack, the bosh and the hearth. All three sections are constructed of refractory material so that the furnace can withstand the high temperatures occurring here. The exterior surface of the blast furnace consists of a kind of “armour”. To ensure that the walls of the shaft will not suffer extensive wear due to the high temperatures, a cooling system has been set into the brickwork of the walls. This cooling water is also needed for the furnace’s air supply.



The plant



The blast oven

Enormous cooling system

The hearth is cooled by being constantly sprayed with water. A company the size of Sidmar-Arcelor uses enormous quantities of water for this purpose every day. In addition, the cooling system, including the cooling water’s supply and discharge pipes, covers a circuit about 600 metres in length. The water that runs along the blast furnace has to pass through channels and membranes (see photos). At many places in this cooling circuit, Calcium deposits can accumulate and will then have an adverse effect on the capacity and operation of the cooling system. If these deposits accumulate to such a degree that the membranes become obstructed, or if the capacity in the channels decreases, the maintenance crew will have to remove the deposits. Frequently, this takes a toll in terms of production because the cooling towers will have to be cleaned (a time-consuming and expensive maintenance stop) or because the smelter cannot operate at full power.



Before



After

Big difference

People at Sidmar-Arcelor had decided to try and solve this problem and had thus learned about the **Scalewatcher**TM. They wanted to install one of these devices for a trial period to see if there would be any difference in the accumulation of Calcium deposits. The **Scalewatcher**TM was installed after the membranes and channels had been made fairly clean. During the testing period, two devices were installed: one on the supply pipe leading to the cooling tower, and one on discharge of cooling water to the blast oven (see diagram). The results after six months in operation with the **Scalewatcher**TM were, to put it mildly, amazing. The membranes and channels were just as clean as they had been at the beginning of the trial period.



Before



After

Extremely beneficial effect

To make the results of the effect of the **Scalewatcher**TM even more obvious, Sidmar-Arcelor and **Scalewatcher**TM removed the devices again after six months. Even after just one month following removal, the membranes and channels were completely covered with calcium deposits again. For the maintenance people at Sidmar-Arcelor, this was the indisputable proof that the **Scalewatcher**TM really does have an extremely beneficial effect when it comes to preventing the accumulation of Calcium deposits. By now, the blast oven's cooling system is not the only place where a **Scalewatcher**TM is in operation at Sidmar-Arcelor. The company also had the same device installed in the cooling system for its rolling mill at the location where the rollers roll the produced steel into thin plates.

Source:

Sidmar-Arcelor

Ghent

BELGIUM