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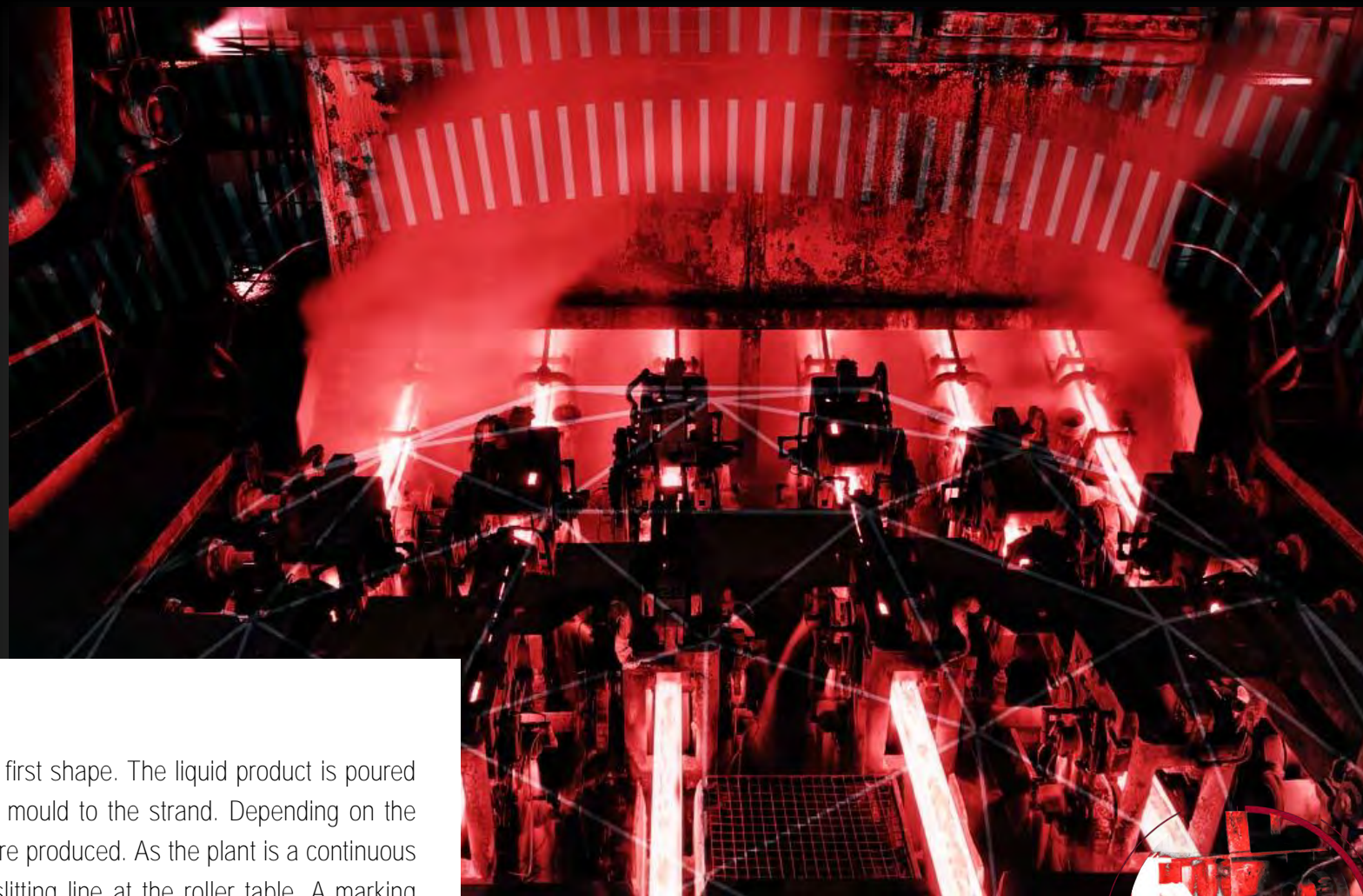
FROM ORE TO STEEL

SMART SOLUTIONS FOR THE STEEL INDUSTRY

CONNECTED

THE CONTINUOUS CASTING PLANT

STEEL

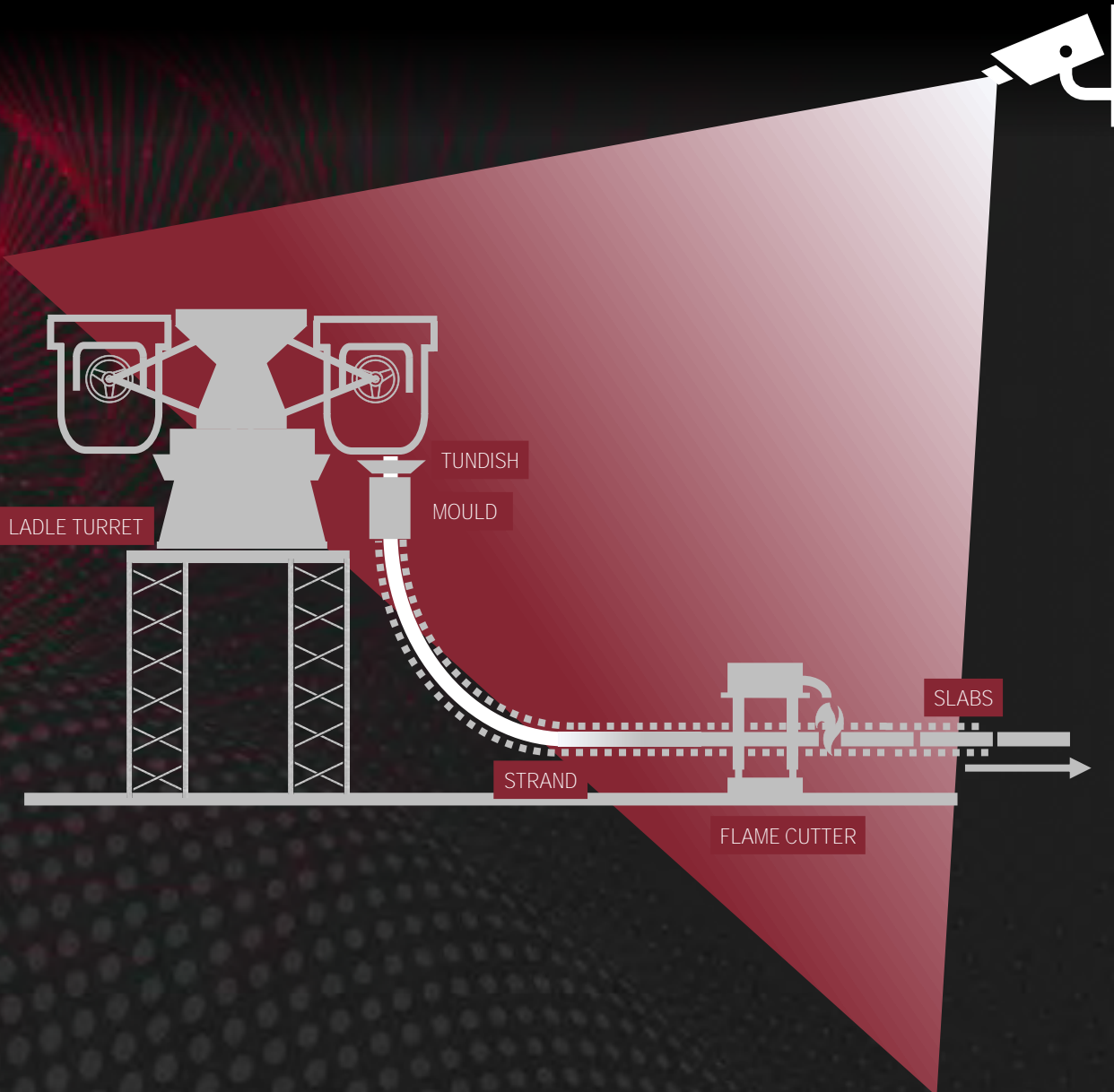


THE CONTINUOUS CASTING PLANT

In the continuous casting plant, the crude steel is given its first shape. The liquid product is poured via the ladle turret into the tundish where it is fed via the mould to the strand. Depending on the casting mould, rectangular slabs and billets or round bars are produced. As the plant is a continuous casting process, the steel is fed through a cross and/or slitting line at the roller table. A marking machine ensures clear identification with regard to steel quality and the planned further processing.



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OVERVIEW CAMERAS

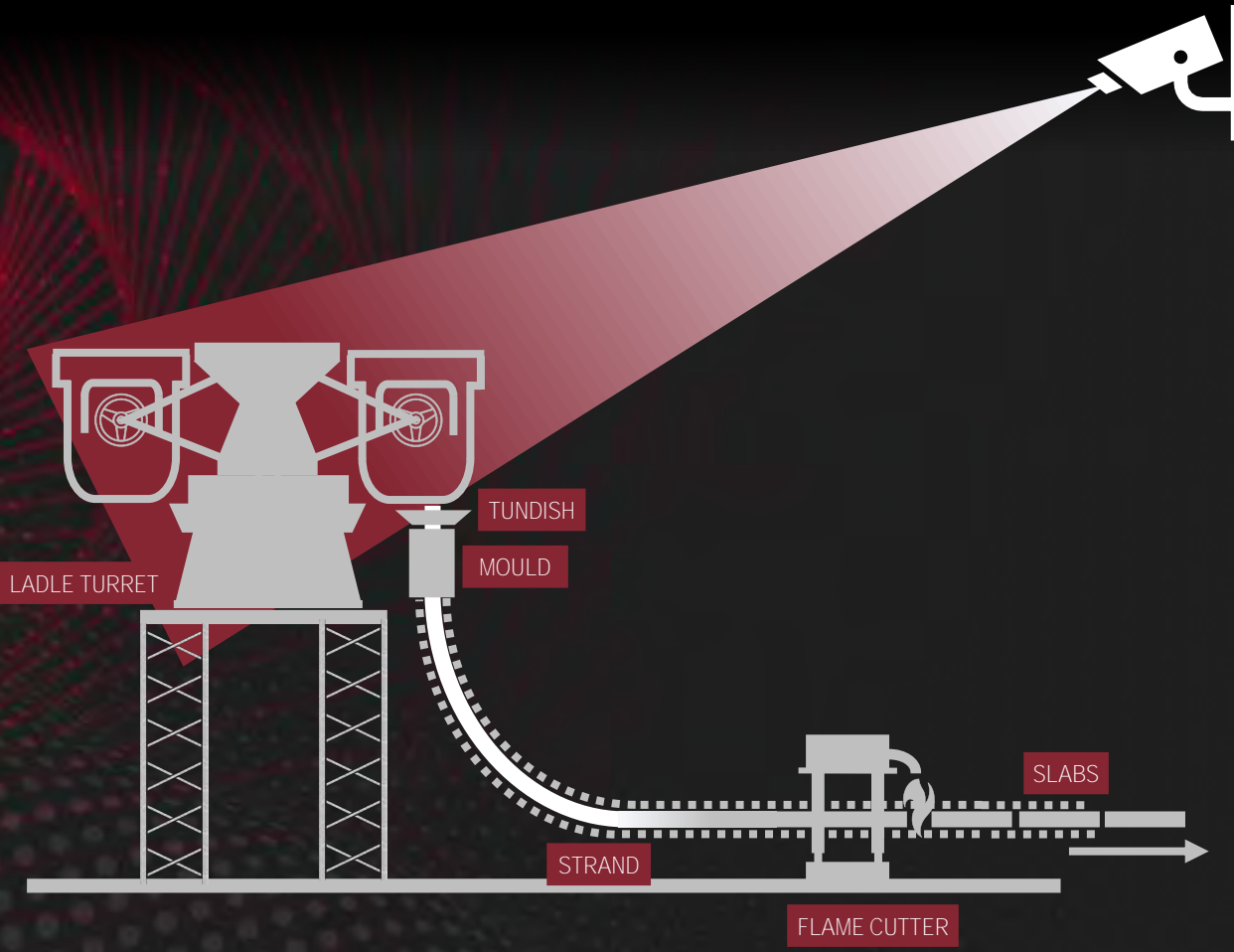
In **process monitoring**, which is geared towards detailed inspection and evaluation within a production chain, visual observation of the entire plant **shouldn't** be neglected. For this purpose, overview cameras are installed at strategic positions that they provide an **overall picture of the current production**. The images thus generated are transmitted live to the control center, so that any imminent malfunctions are detected at an early stage.

In addition to **avoiding cost-intensive production downtimes**, the environment also benefits here: a defective filter system can be detected more quickly, for example, as a change in the color of the exhaust gas often indicates a malfunction. The control center can thus take **immediate action and counteract dangers**.

At the same time, the use of surveillance cameras increases **work safety** for the specialist personnel directly working at the plants: The early detection of a malfunction, which the employee on site may not even be aware of, **reduces the risk of an accident to a minimum**.

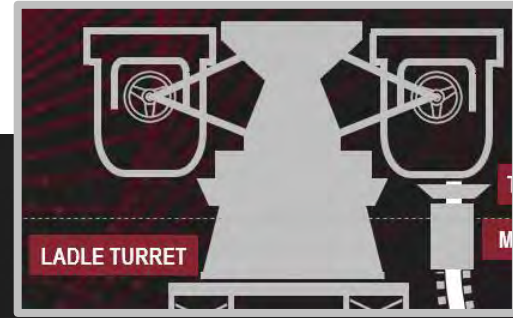


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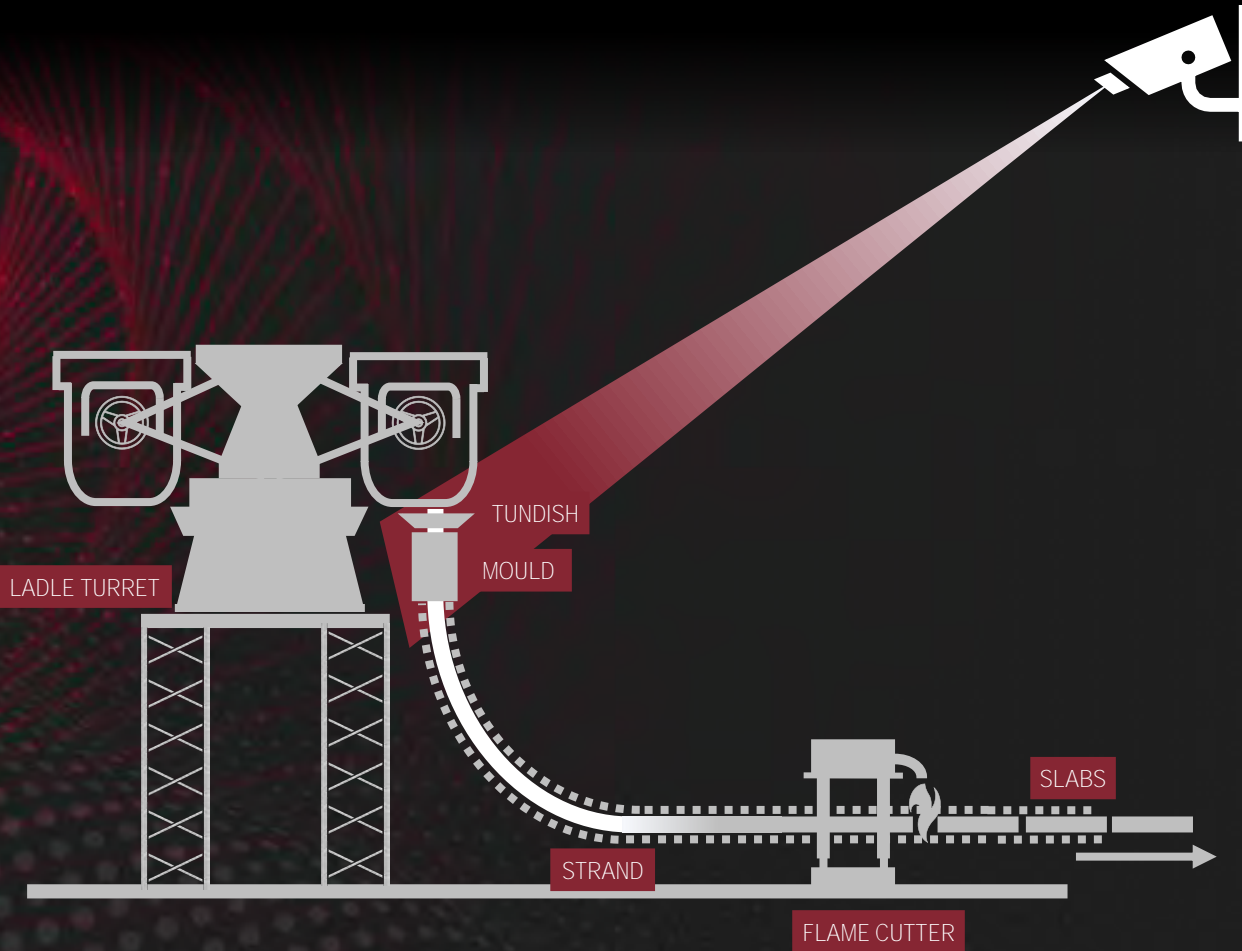


OVERVIEW CAMERAS LADLE TURRET

In addition to the general overview of the entire plant, visual cameras are used to monitor the movements of the ladle turret and the correct position of the ladles. Just as with the observation of the entire plant, the cameras can be used to detect imminent malfunctions at an early stage.

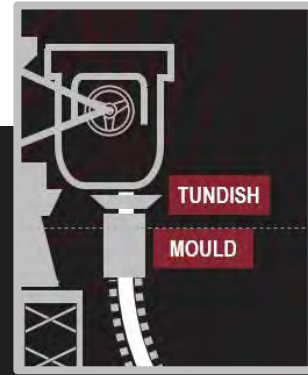


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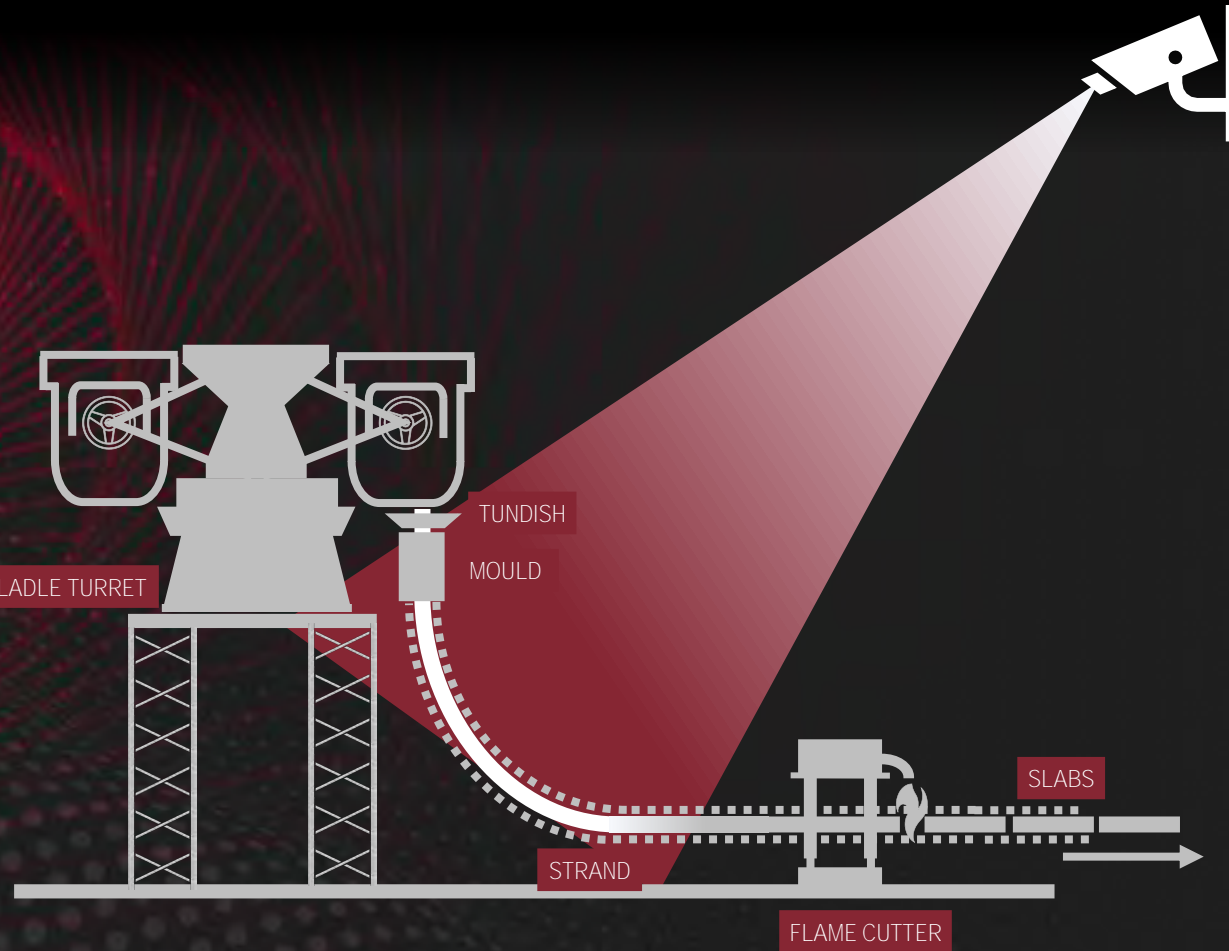


TUNDISH

To prevent the molten steel from reacting with the oxygen in the air and to prevent undesired inflammations, casting powder is added to the tundish at regular intervals. This produces slag, which serves as a lubricant for the mould on the one hand, but can also absorb any remaining impurities from the steel on the other. Visual cameras support this process and permanently show the filling level as well as the position of the ladle slide to avoid an interruption of the casting process



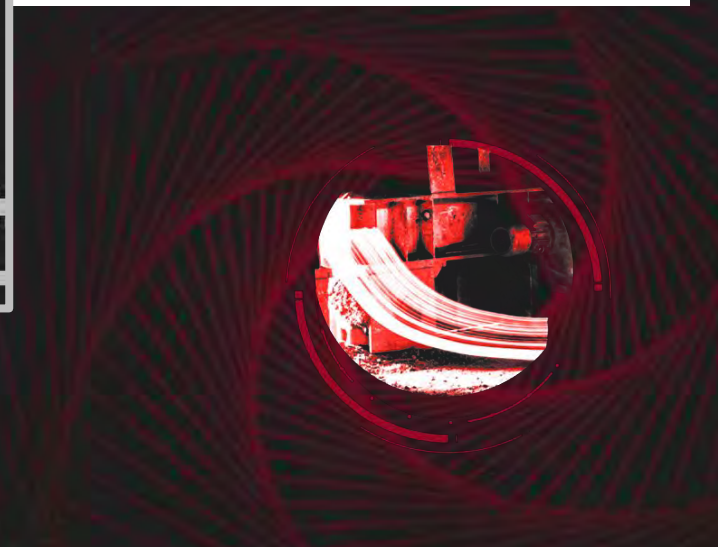
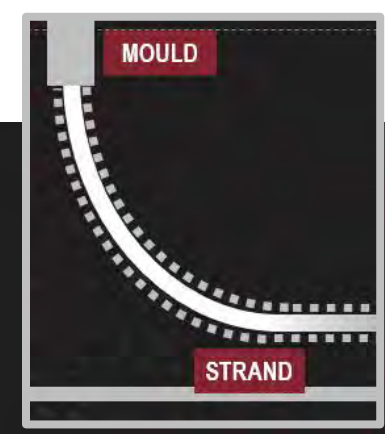
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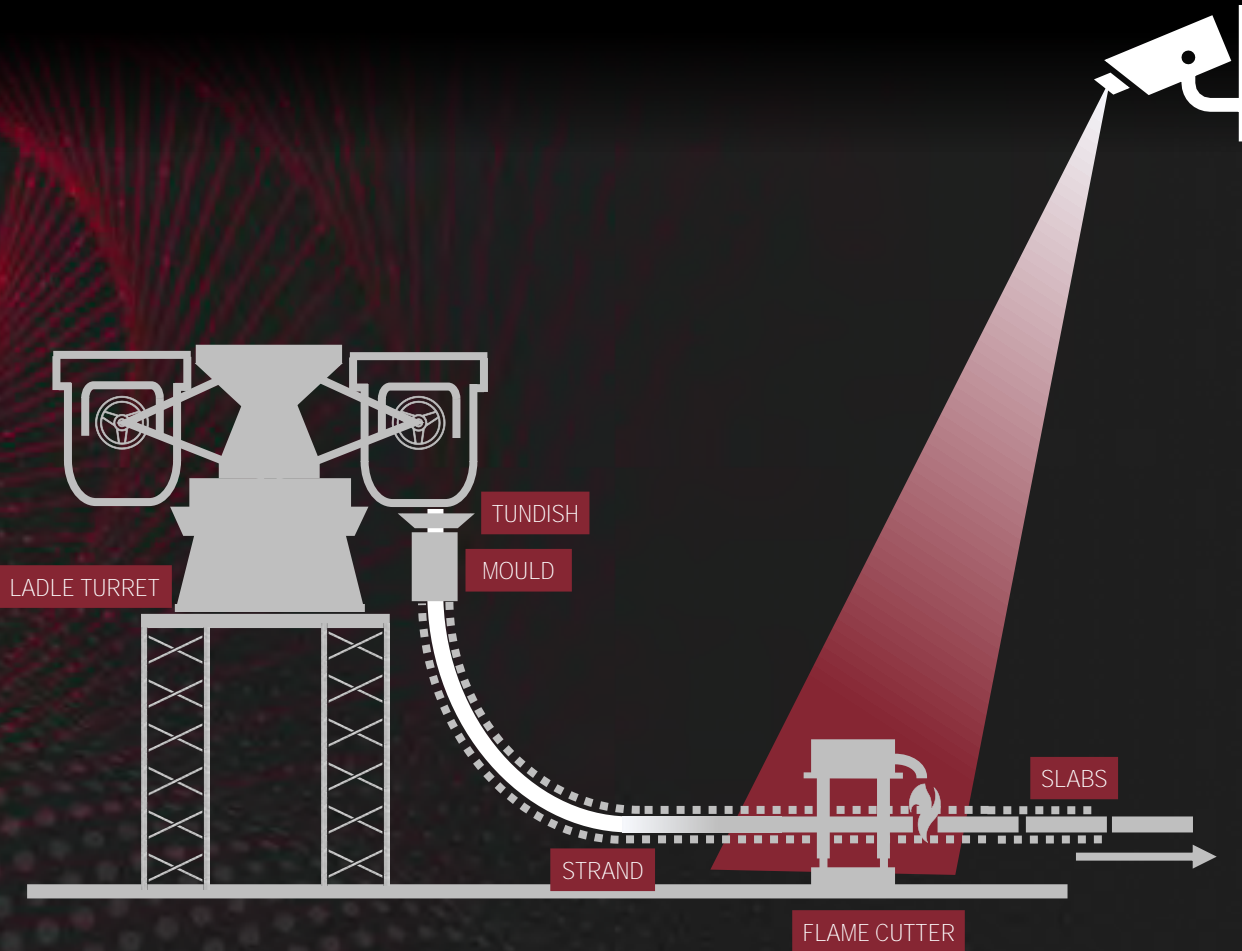
STRAND

Thermographic monitoring can provide early indications of possible strand defects, such as cracks or local leakage of liquid steel.

With a thermographic system for process monitoring and control in continuous casting, both product quality and energy consumption can be significantly optimized. For this purpose, thermal imaging cameras monitor the forming and cooling process of the steel strands and control the heat distribution during this process. The information is passed on to software that assesses the heat flow and automatically readjusts it if necessary. This ensures an even cooling, which makes a major contribution to the quality of steel. Furthermore, only the amount of energy that is actually required is fed into the continuous casting process.



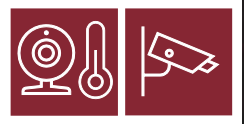
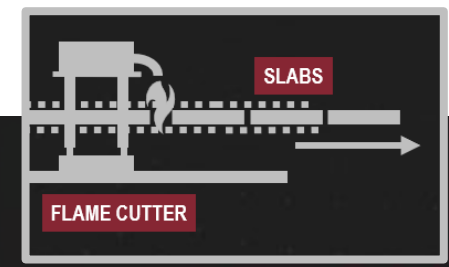
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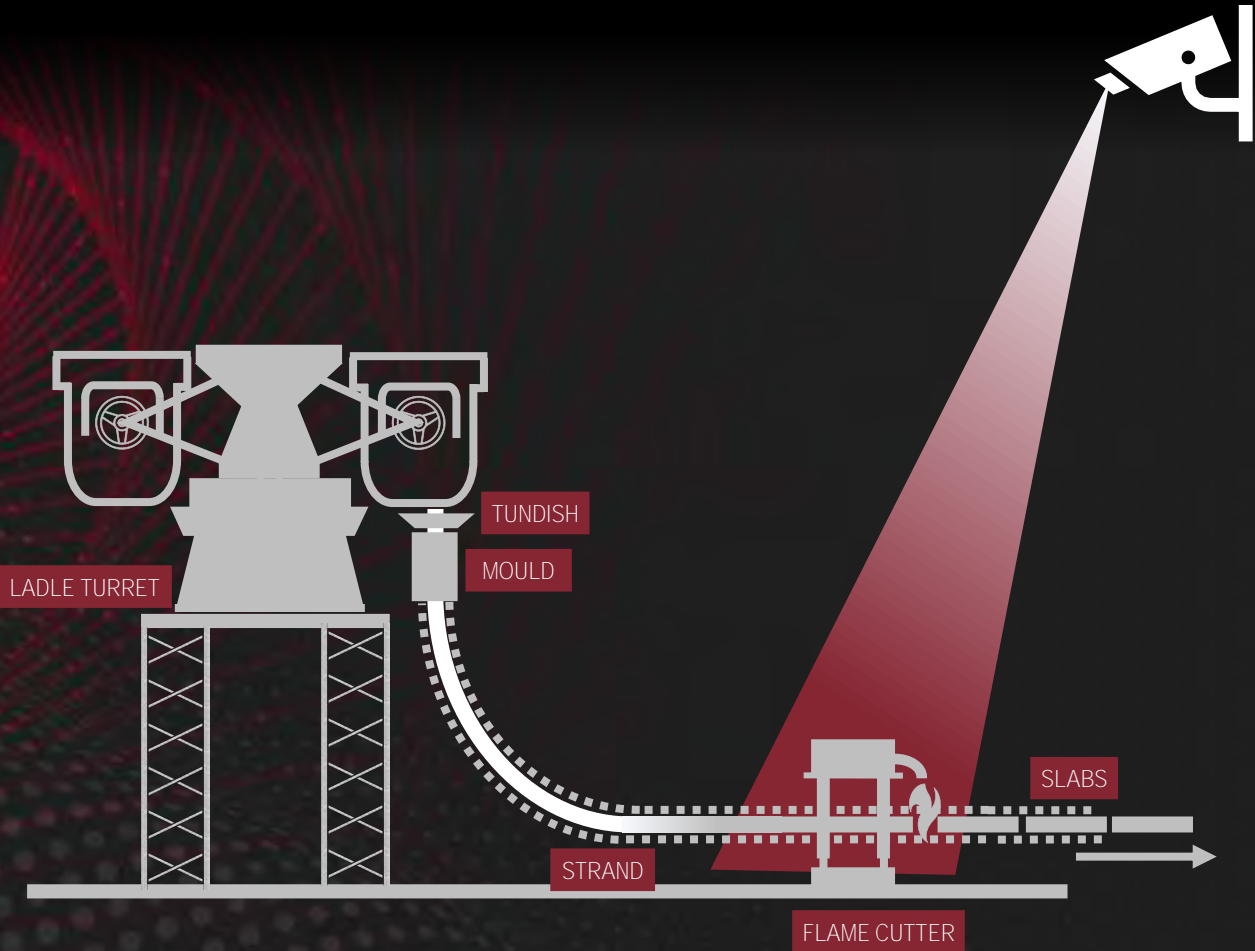
FLAME CUTTER / DEBURRING

After cutting the slabs to the desired length, undesirable burrs (edges) can occur at the cut points, which are then removed with the help of a deburring machine. Visual cameras support the process monitoring.

The process can be monitored with the help of visual cameras. It is also possible to use thermographic cameras, which observe and evaluate the cut surfaces on the slabs in detail.

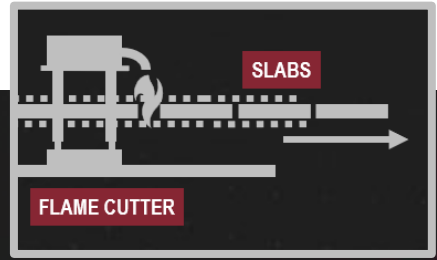


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DISCHARGE CONVEYOR

As a final process, the finished cut slabs are marked with batch / identification numbers. For this purpose a marking machine provides the slab with a punched number at the end of the long side. By means of a visual camera the correct numbering can be checked as well as the slab removal of the discharge conveyor is monitored. In most cases, the slab is lifted off the belt by a crane and temporarily stored until further processing.



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Feuerraumsonden

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