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FROM ORE TO STEEL

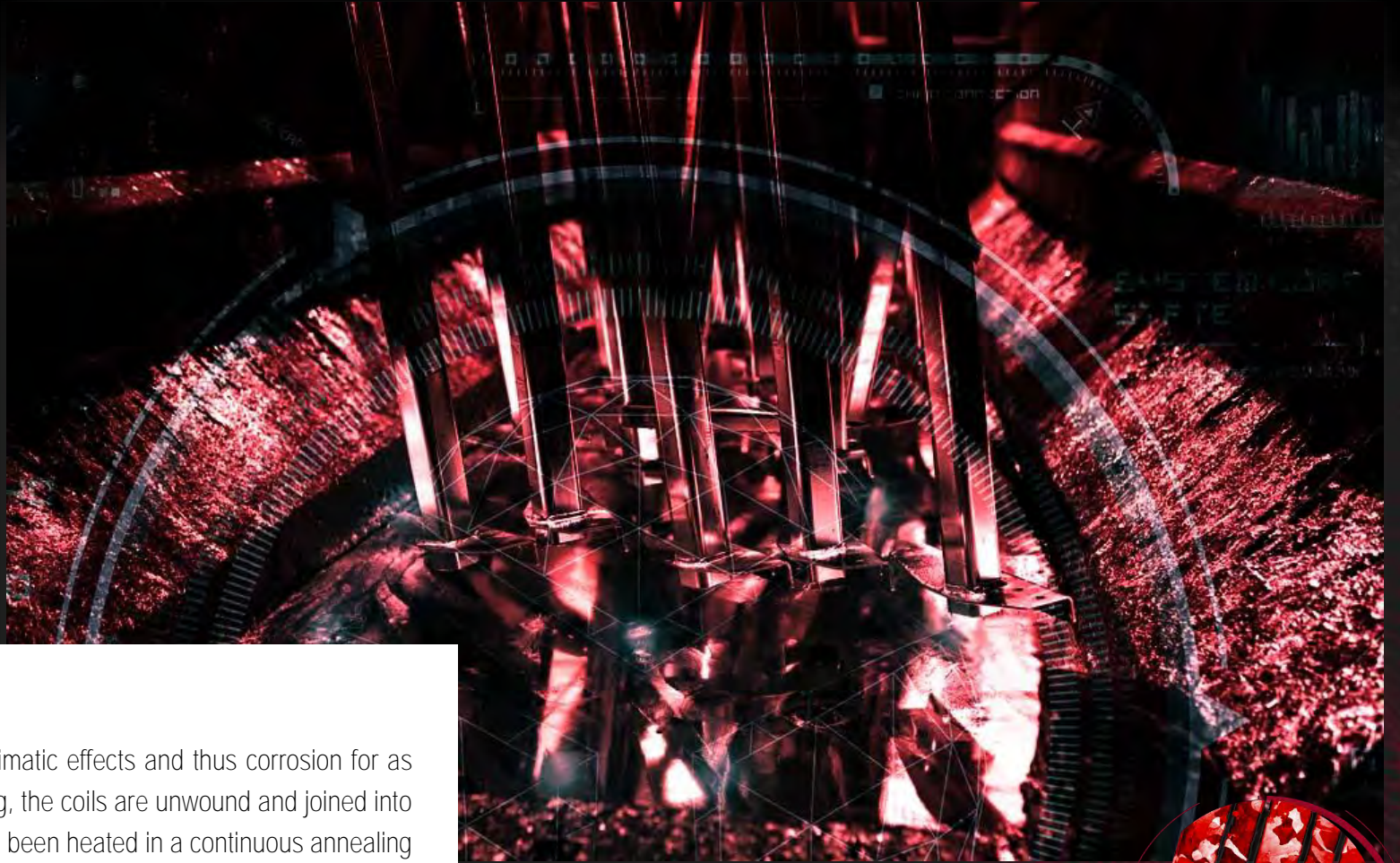
SMART SOLUTIONS FOR THE STEEL INDUSTRY

CONNECTED

THE HOT GALVANIZING

STEEL

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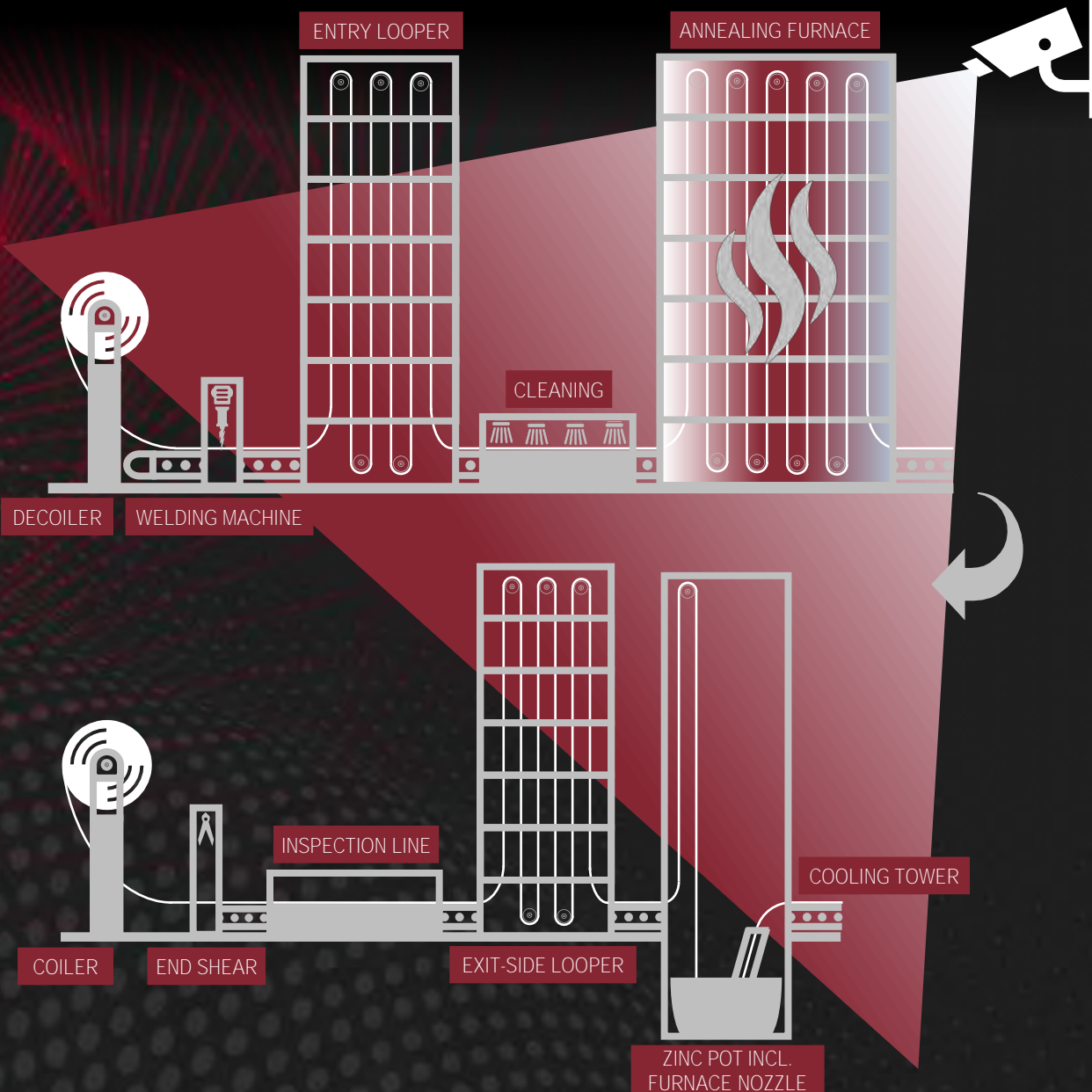


THE HOT GALVANIZING

Hot galvanizing is used to protect steel from the negative climatic effects and thus corrosion for as long as possible and without maintenance. In strip galvanizing, the coils are unwound and joined into an endless strip using a welding machine. After the sheet has been heated in a continuous annealing furnace, the actual zinc treatment takes place in a melting bath. In this production step, strip speeds of up to 220 meters per minute are reached before the steel strip is wound back into coils.



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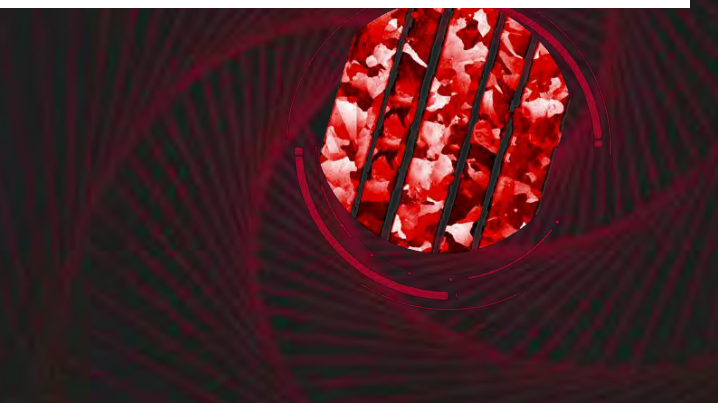



OVERVIEW CAMERAS

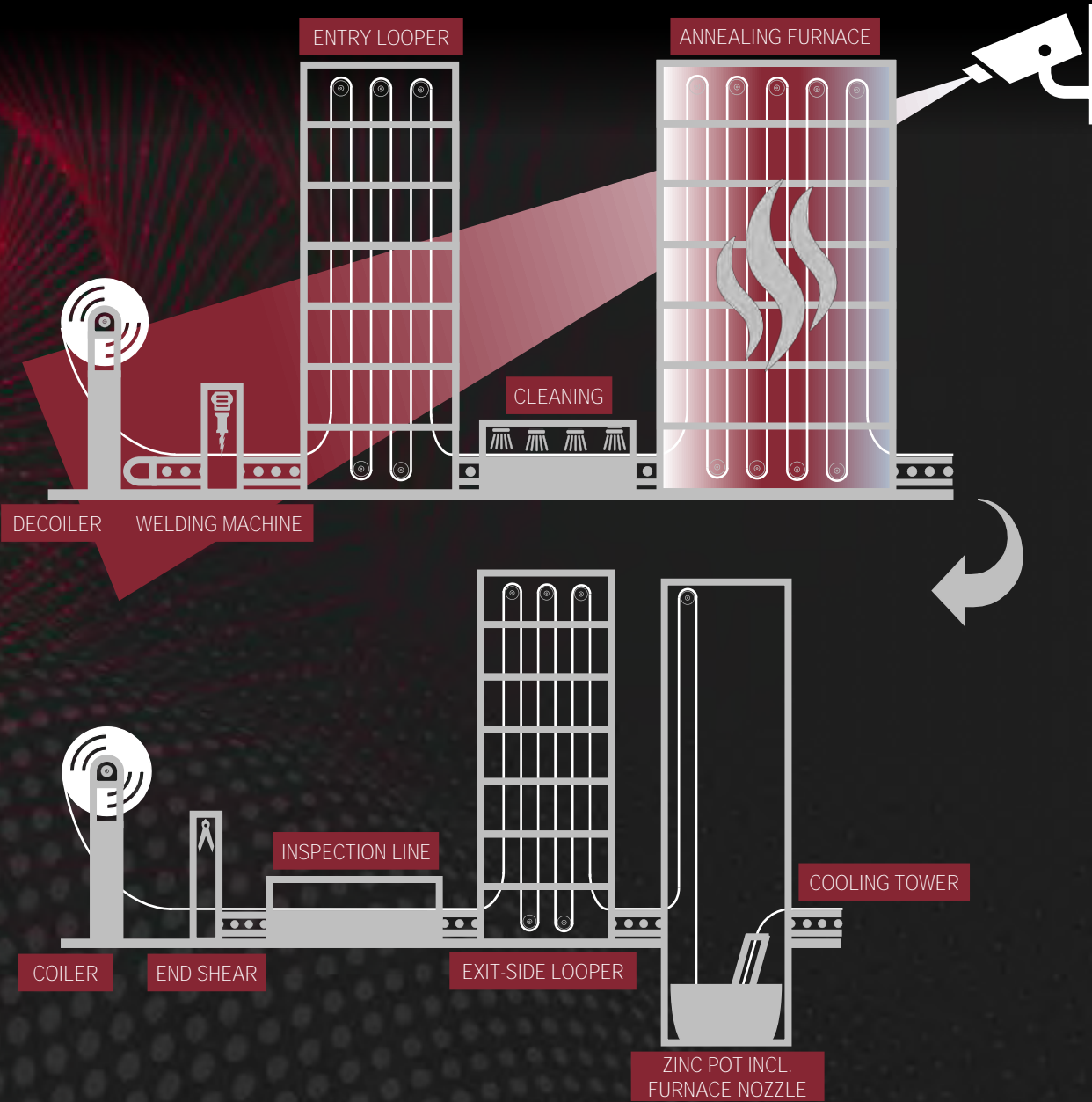
In **process monitoring**, which is geared towards detailed inspection and evaluation within a production chain, visual observation of the entire plant **shouldn't** be neglected. For this purpose, overview cameras are installed at strategic positions that they provide an **overall picture of the current 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**.



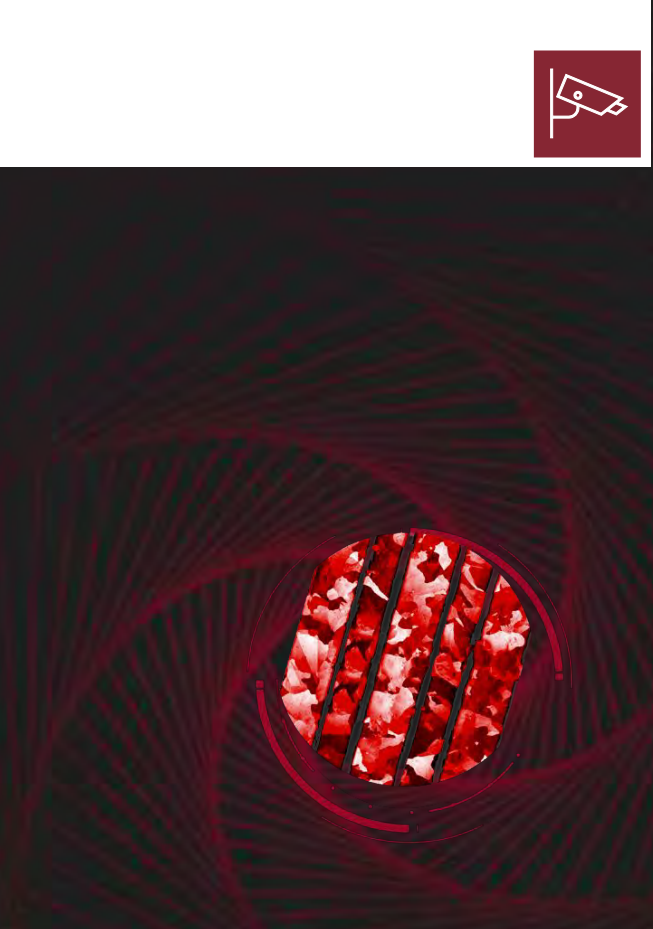
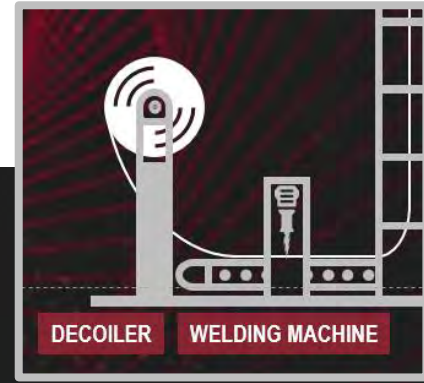
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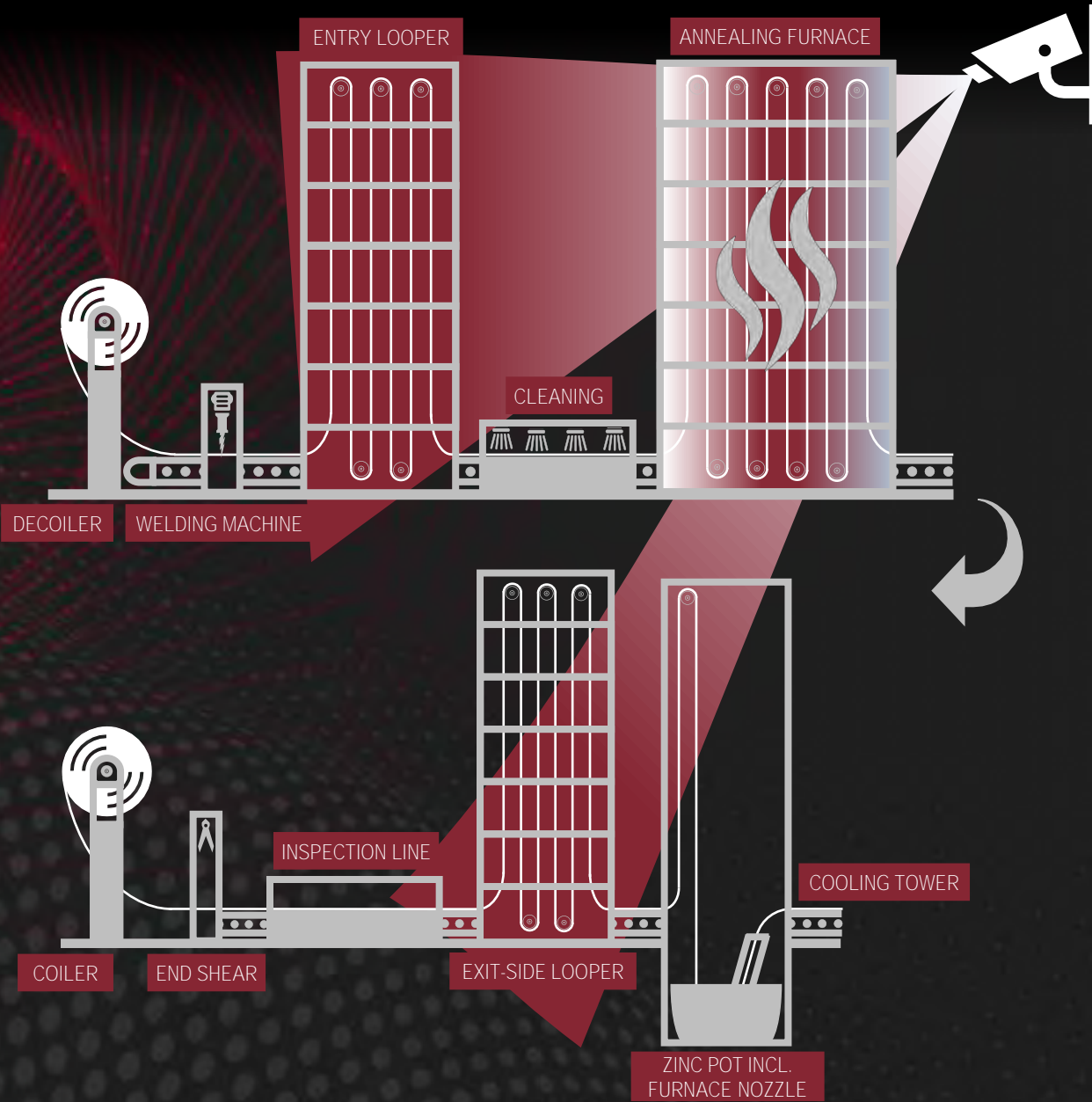
PRE-CONTROL / WELDING MACHINE

Already during uncoiling, the strip is checked for obvious defects with the support of visual cameras.

The product is then joined together in the **welding machine** to form an endless strip. The **faultless execution** is as well monitored by visual cameras.

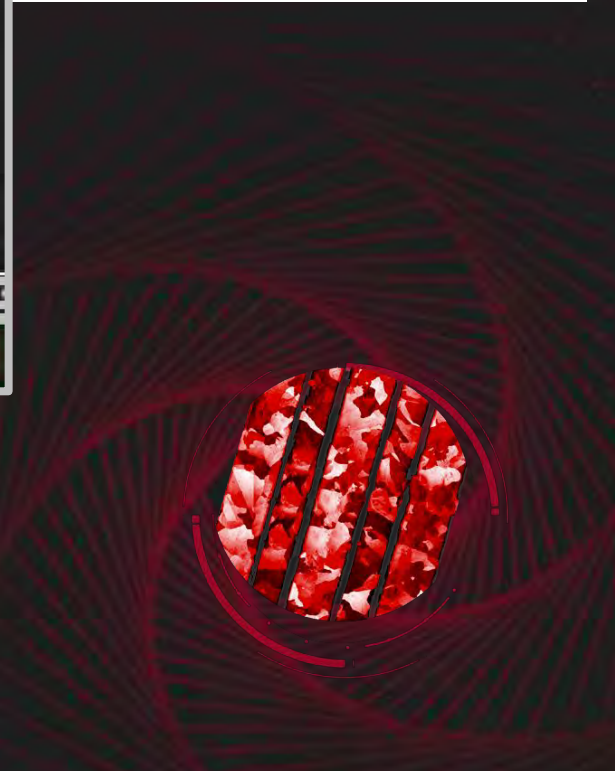
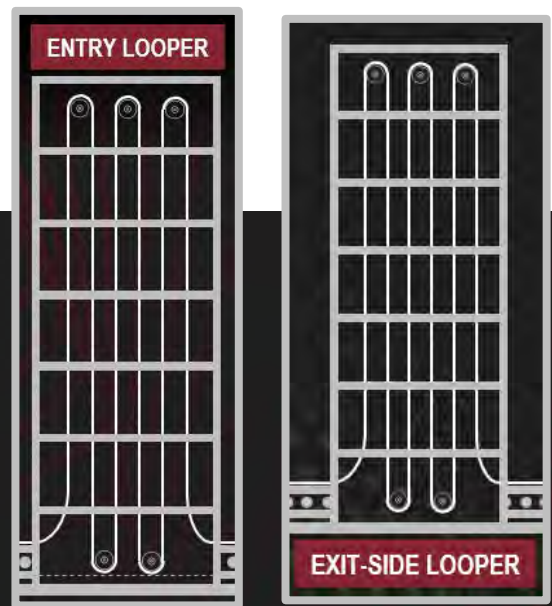


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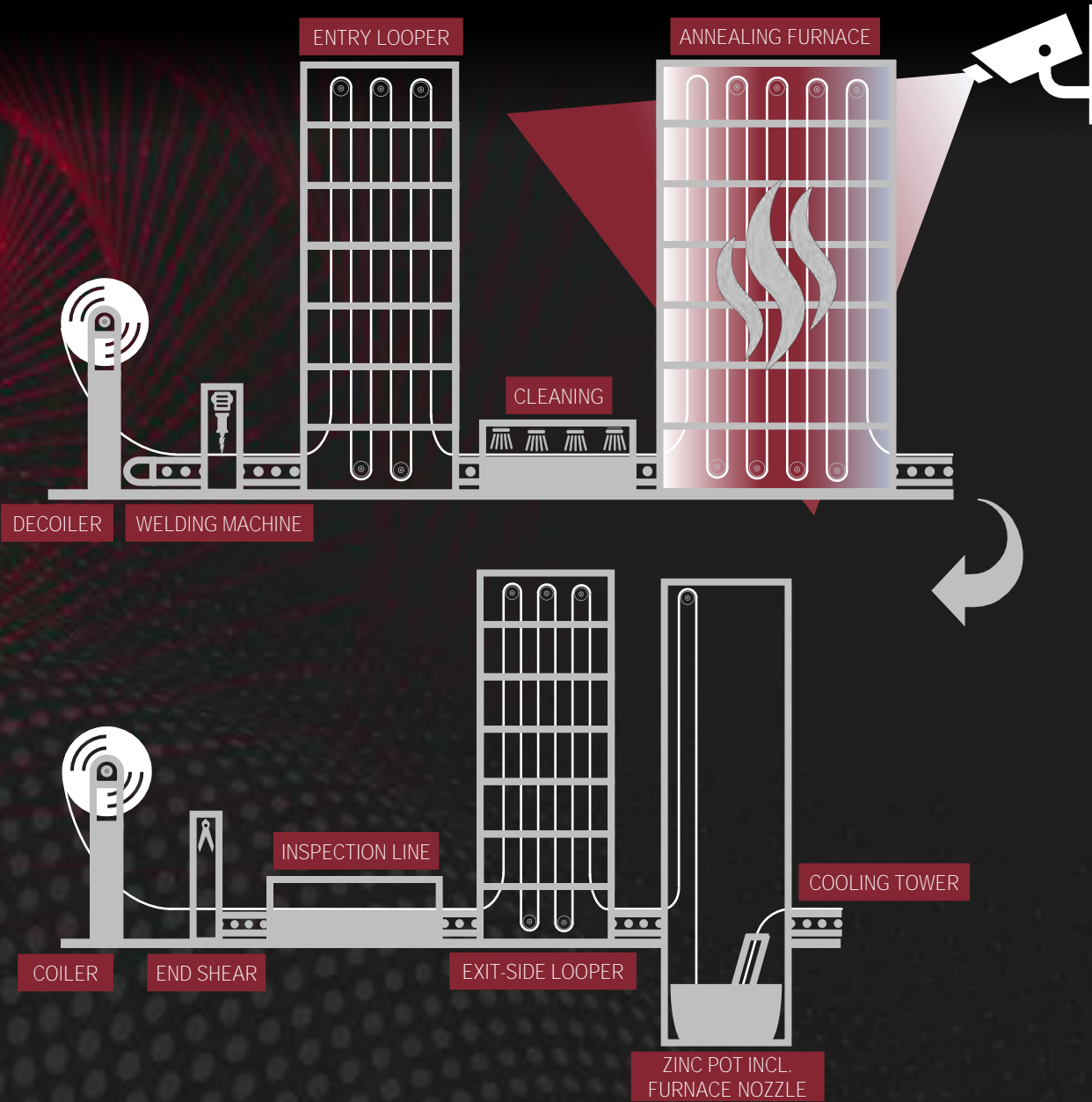


ENTRY AND EXIT-SIDE LOOPER

The entry and exit-side looper are used to store the strip during the welding process and for the cutting machine before the galvanized product is rewound into coils. Visual cameras are used to check that the sheet metal is not tilted or torn off, thus endangering the continuous production process.

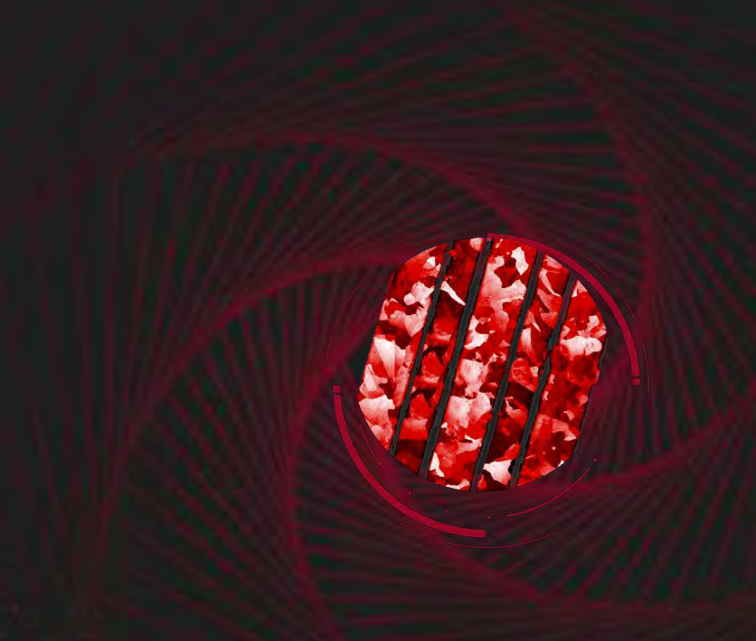


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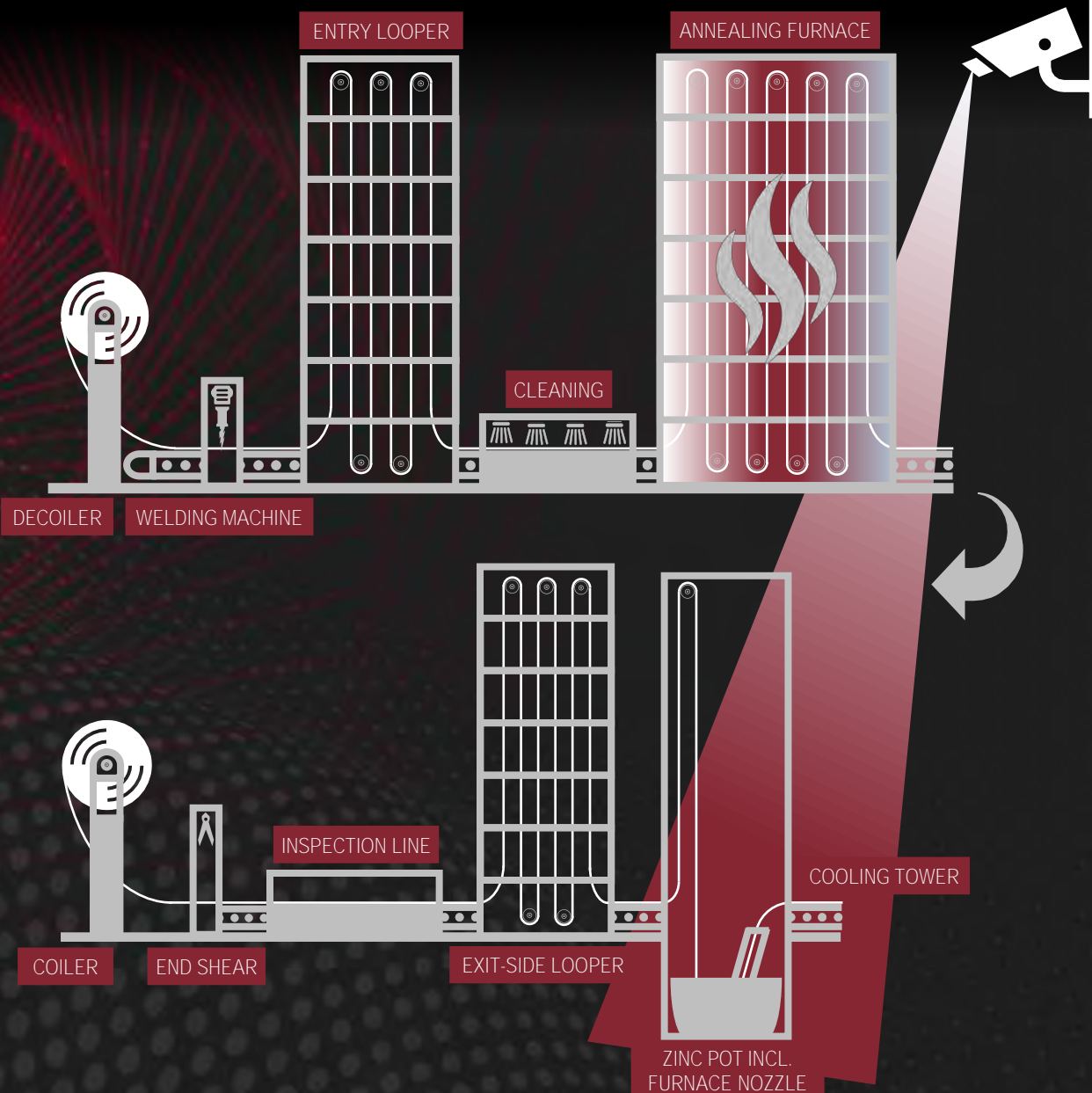


ANNEALING FURNACE

Before the steel can bond with the zinc coating, it is heated in an annealing furnace to approx. 450 °C to 650 °C. In this process, furnace probes are used to continuously monitor the strip position. In addition, due to the poor lightning conditions, external lightning is used, which is either already integrated in a camera probe or is placed separately in the furnace as a explicit light probe.



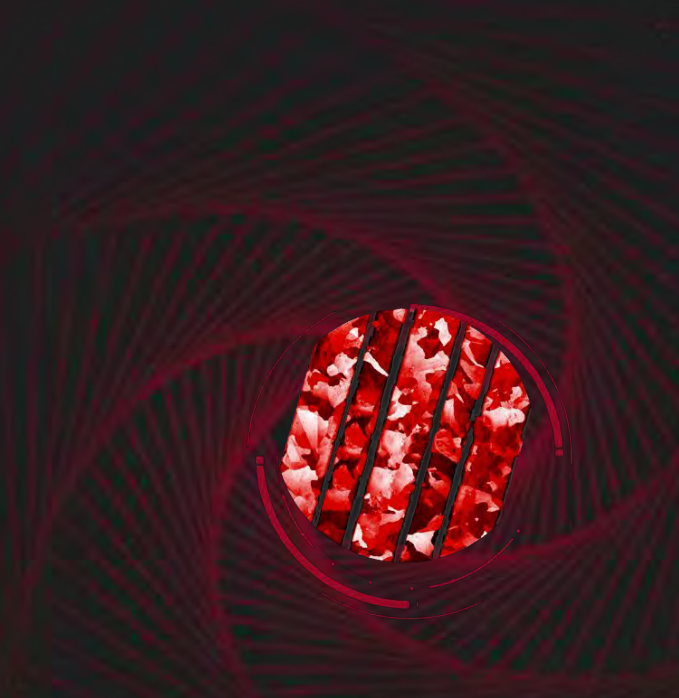
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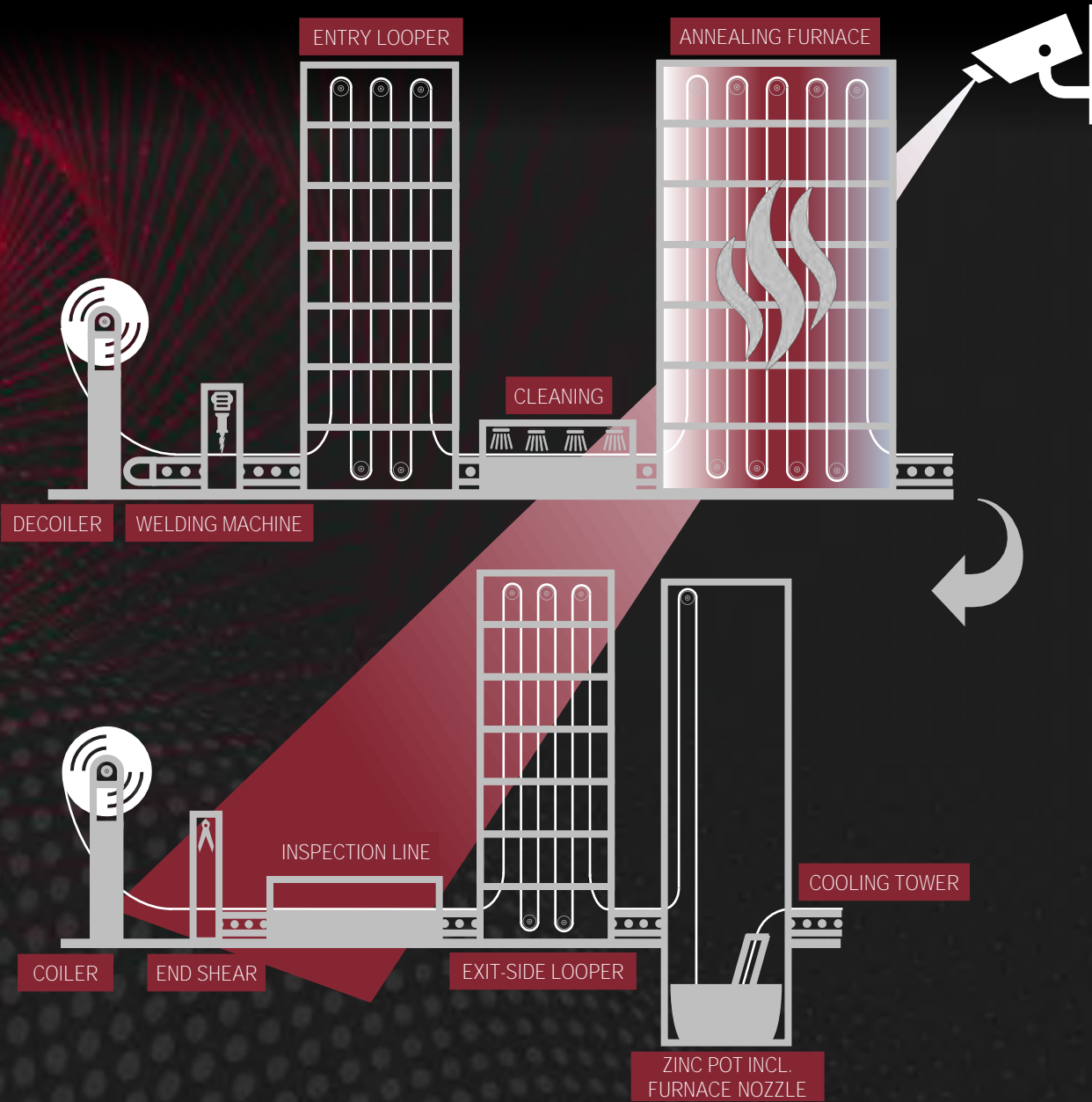
GALVANIZING BATH

The strip is fed into the galvanizing bath via a lock, the so-called nozzle. To allow the steel to bond with the zinc, the material is heated to a temperature comparable of the zinc bath under inert gas and vacuum.

Since slag can be generated during this process, the strip inlet is monitored by special **furnace probes**. As with the annealing furnace, the lightning conditions here are also very poor, so that **external lightning** must be used.

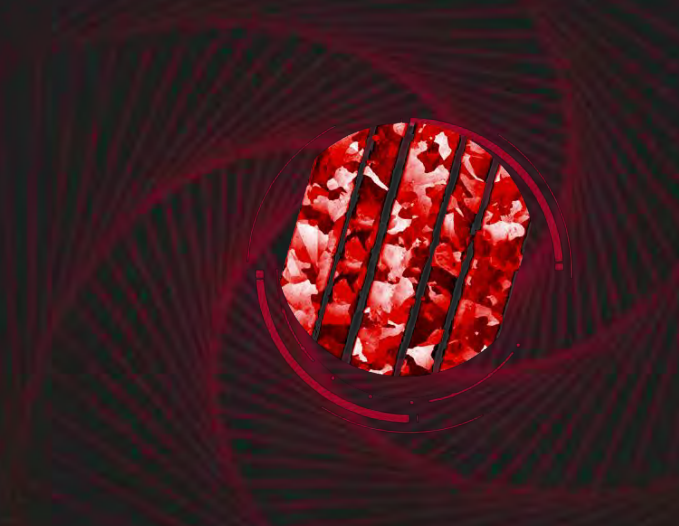
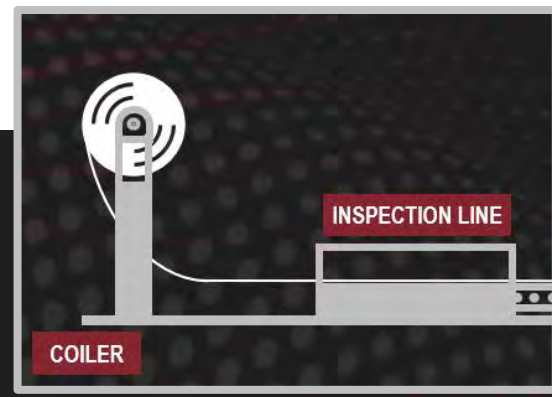


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INSPECTION

After leaving the zinc bath, a first **surface inspection** is carried out using visual cameras. After the coat thickness measurement, the strip is then passed over inspection tables where employees carry out a visual inspection; the process can also be monitored with **visual cameras** to support quality assurance.



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Feuerraumsonden

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network solutions

analysis

furnace probes

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