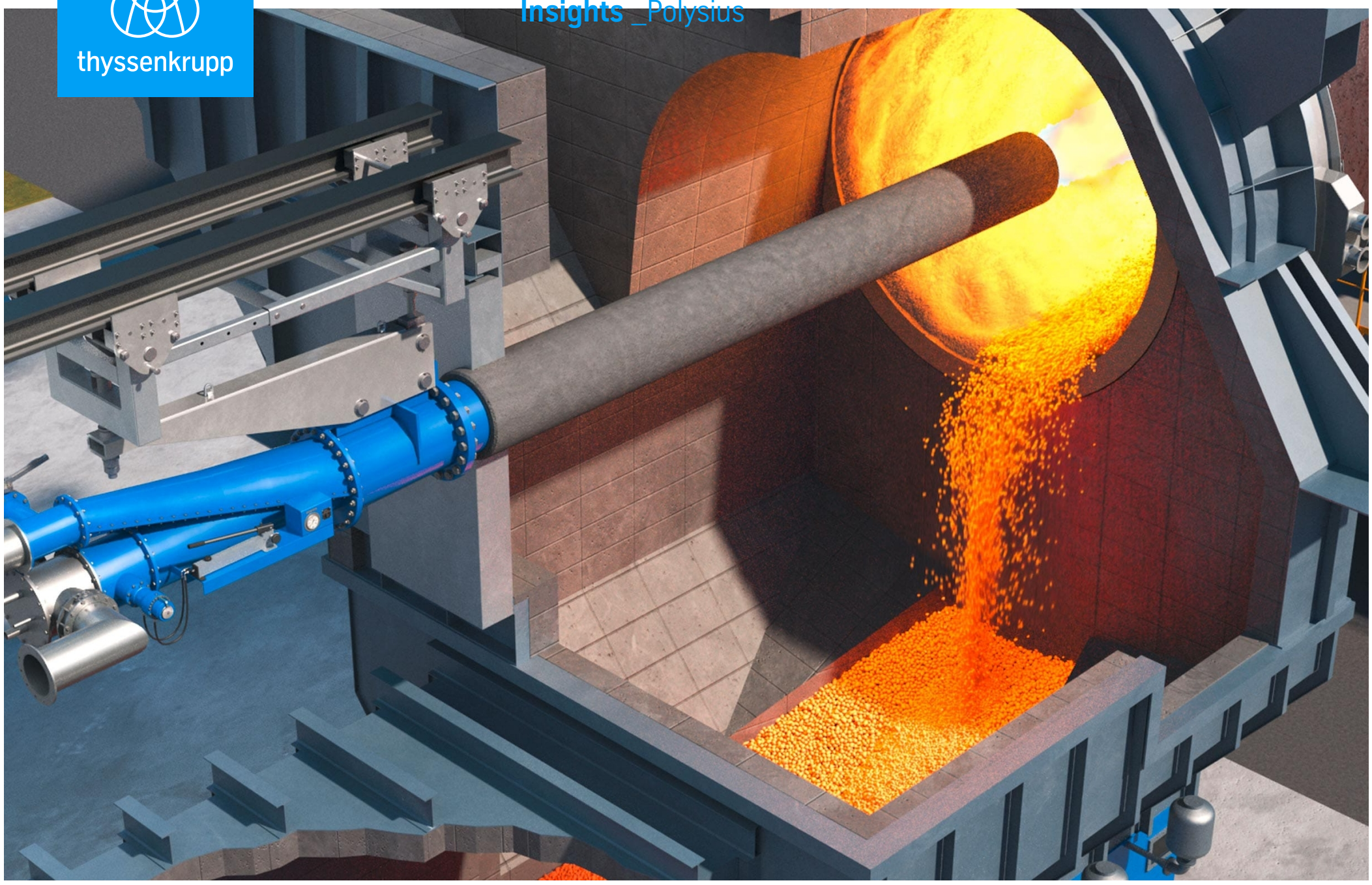

polflame® - A real perennial favorite in cement production worldwide

The polflame® clinker zone burner from thyssenkrupp is an indispensable part of the international cement business. Since 1997, cement manufacturers from all over the world have been using the "long-lasting burner" in over 200 cement plants. It is an important key when it comes to lowering CO2 and NOx emissions through the use of alternative fuels, reducing fuel consumption and at the same time improving clinker

production and quality. Advantages that have recently convinced Chinese cement producers in particular: More than 50 polflame® burners have been ordered in China since 2017. This makes China thyssenkrupp's most important market for polflame® burners.

The first polflame® burner was supplied to the Conch Cement Group in China. Its outstanding performance in terms of coal consumption, clinker quality and ease of operation subsequently convinced China Resources Cement, CUCC, South Cement, Shanshui Group, the Tianrui Cement Group and other Chinese cement producers, among others.

> “With the polflame® burner, we help our customers reduce their costs while maintaining consistently high productivity and product quality - especially in the face of fluctuating production demand and volatile fossil fuel availability and prices.”

Waldemar Kasdorf, Chief Design Engineer polflame®

Alternative fuels: polflame® VN reduces the cost factor fuel

In the cement industry, fuels are a significant cost factor. In order to reduce the costs of clinker production, high-quality fossil standard fuels such as coal, oil and gas are replaced by inferior substitute fuels. While combustion in the precalciner is not critical from a process engineering point of view, the thermal conversion of substitute fuels in the rotary kiln is a much more demanding process in which criteria such as process stability and product quality play a decisive role.

The newly developed polflame® VN is ideally suited for use with standard fuels, such as pulverized coal, fuel oil and/or natural gas, as well as substitute fuels. In designing the second generation, thyssenkrupp has departed from the conventional way of thinking, which assumes that operators need to know at the project stage what fuel they will be using in the near and medium future. The new polflame® VN is designed so that changes in fuels, substitution rates or capacity increases can be implemented without major modifications. In addition, the high-efficiency nozzle system has been modified to allow easy adjustment of the nozzle size, e.g. to maintain dynamics after a fuel change or capacity increase.

The advantages of the polflame® burner at a glance:

- Modular design with interchangeable fuel channel configuration
- Simplified, maintenance-free nozzle adjustment system
- Long service life of the wearing parts of the primary air nozzle system - extended warranty of 5 years
- Successful handling of highly abrasive fuels
- High substitution rate: reduction in fossil fuel costs through use of alternative fuels
- Reduced NOx emissions by adjusting the primary air flow and the angle of the nozzle at the end of the burner

More comprehensive information about the polflame® VN including a video can be found here:

The bottom line: If a plant only ever uses one fuel and rarely switches, for example between coal and natural gas, and current prices do not continue to rise, it makes sense to have two main burners, one for coal only and one for natural gas. But recently, due to rising fuel prices, price volatility and increasing control of cement's CO2 and NOx footprint, many plant operators are demanding a more flexible approach and are increasingly using difficult fuels such as alternative

fuels. A burner such as the polflame® VN is ideal in these circumstances as it allows the fuel channel configuration to be changed even after years of operation.