

A large industrial cement plant is shown under a clear blue sky. The central feature is a tall, multi-story preheater tower with several large cylindrical vessels visible within its structure. Scaffolding and walkways are present around the tower. Two large cranes are positioned near the top of the tower. In the foreground, there are various pipes, smaller structures, and a dense line of green trees. The overall scene depicts a complex industrial facility.

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JK CEMENT REDUCES PREHEATER MAINTENANCE WITH FULLER CCP

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In 2023, the JK Cement plant in Nimbahera, Rajasthan (India) was looking for a solution to extend the wear life of its dip tube. Operating with 15% alternative fuel substitution in a chemically aggressive environment, previous solutions had worn quickly, creating risk that the plant could no longer tolerate. They opted to replace the failing dip tube with a Cast Central Pipe (CCP) from Fuller – a solution that has proved highly successful.

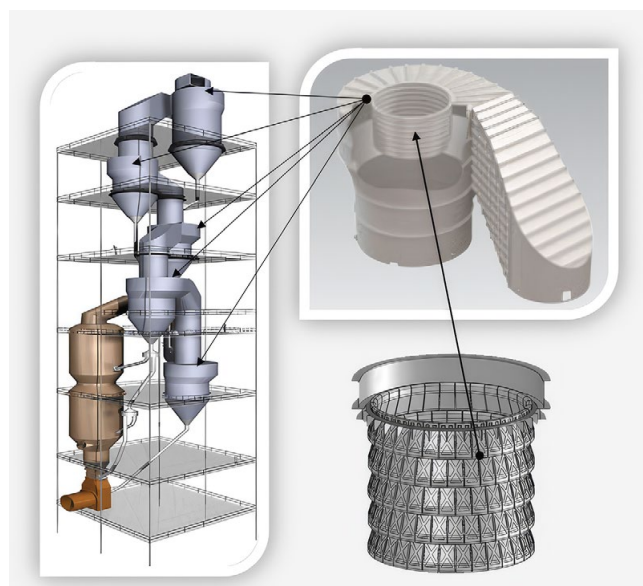
Finding efficiency in challenging environments

The CCP sits at the fourth cyclone stage, where temperatures are in the range of 750 – 800°C. With 15% AF substitution, the existing dip tube was subject to significant sulphur and chloride attack, accelerating wear and corrosion. Given the productivity and cost implications of unplanned downtime in the preheater, the plant was eager to avoid this at all costs. They needed a solution that could accommodate the environmental challenges while also improving fuel and energy efficiency in the preheater. JK Cement opted for Fuller's CCP, which promised to deliver on all fronts.



Choosing long-term reliability

The central pipe – or dip tube – enables hot gasses to flow efficiently upwards through the preheater cyclones, delivering uniform and efficient heat transfer to the descending raw meal. It sits at the heart of the preheater's separation process, and its condition has a direct bearing on how efficiently the cyclone operates. In the lower stages of the preheater, where temperatures are highest and kiln gases most concentrated, it is also under the greatest stress.



The CCP uses a segmented cast construction that handles temperatures up to 1100°C. This matters not just for thermal resilience, but also for ease of maintenance and installation. Worn or damaged sections can be replaced individually during a planned maintenance stop if desired. Downtime is minimised, and the replacement process is straightforward.

For plants running alternative fuels, material selection is critical. The sulphur and chloride compounds introduced by alternative fuels attack conventional materials aggressively, accelerating wear and shortening service life. Fuller's corrosion-resistant material grade is developed specifically for this environment, providing the chemical resistance needed to maintain performance between planned maintenance intervals.

The CCP also offers different segment thicknesses – 15 mm, 20 mm and 25 mm – which can be combined to tailor the design to the specific mechanical and chemical demands of each cyclone stage. Segment thickness is essentially the wear clock: as the material erodes in service, the remaining thickness indicates how much service life is left. Fuller's team specified the appropriate configuration for JK Cement's fourth stage application, giving the installation the best possible chance of a long and predictable service life.



The optimisation of the airflow, using the Fuller CCP, met and exceeded the customers' performance expectations – a testament to the project's success. This is especially challenging when utilising significant levels of alternative fuels.



The Results

Three years after installation, JK Cement has no regrets. Service life has doubled compared to their previous solution, reducing maintenance costs by 10 lakhs.

« On our most recent inspection, there was still 16 mm of segment thickness remaining – that's less than 10 mm loss in three years. We're delighted with the performance of the Fuller CCP, which has coped well with the challenging environment of our fourth stage cyclone. We will definitely purchase another when the time comes. »

- Rajesh Dhakar, Manager (Mech.), JK Cement

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