



FICHTNER CONSULTING ENGINEERS, INDIA

Key Facts

Company: Fichtner Consulting Engineers Private Limited

Website: www.fichtner.co.in

Industry: Power

Country: India

Products Used:

- CAESAR II®
- CADWorx® Plant Professional

FICHTNER CONSULTING ENGINEERS SOLVE PROJECT COMPLEXITIES WITH CADWORX® AND CAESAR II®

Headquartered in Mumbai, India, Fichtner Consulting Engineers Private Limited provides comprehensive engineering solutions for a wide range of utility and captive power projects.

JSW Steel Limited Salem Works, part of JSW Group, selected Fichtner Consulting Engineers-Mumbai to provide detail engineering for a US\$30million project for two 30 MW turbines for a power plant project in Tamil Nadu, India.

The JSW Salem Works project consisted of seven boilers including one Atmospheric Fluidized Bed Combustion (AFBC) boiler, five waste heat recovery boilers (WHRB) and one blast furnace gas (BFG) boiler supplying steam to the two 30 MW turbines. The main piping totaled 4,805 feet (1,465 meters) in length with diameters ranging from one to 16 inches and included 435 pipe fittings, 284 supports, 80 spring hangers, 19 valves, three pressure safety valve and two turbine bypass valves, with each valve weighing around 2.25 tons.

ADDRESSING PROJECT COMPLEXITIES WITH CAESAR II AND CADWORX

The main steam pipe had to withstand 100 bar pressure at 520 degrees Celsius, which meant accurate design was critical. In addition, there were 750 meters between the boiler, boiler feed pump and steam turbine. As each boiler was added to the existing system, the pipe in the existing system was not replaced which accurate analyses.

To address these project's complexities, Fichtner used CAESAR II and CADWorx to design the main steam pipe as a single model, to create 3D piping layouts, produce stress isometrics, stress calculations and special support details, submitting the stress calculations for India regulatory approvals.



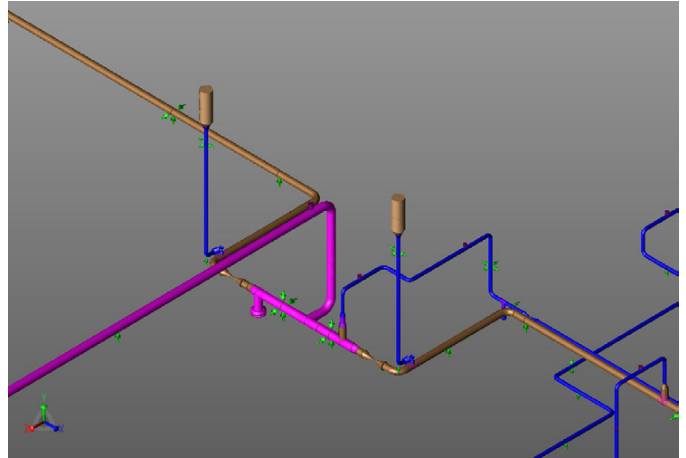
USING CAESAR II TO ADDRESS EXISTING MISALIGNMENTS

Turbine flanges were misaligned and were not parallel during initial construction. Using CAESAR II analysis, Fichtner was able to correct the problem by shifting three spring hangers below by only 100 mm without moving the existing spring hangers. It also analyzed the main steam and boiler feed water piping, making minor modifications in the piping system by increasing or decreasing the pipe length and adjusting supports to achieve the required system flexibility during operation.

“Working in CAESAR II is an excellent experience because the software is user friendly and gives accurate solutions to the challenges of piping analysis,” said Wilson Raj of Fichtner’s project team.

DELIVERING TIMELY AND ACCURATE RESULTS

“CAESAR II helped us avoid remodeling and eliminate errors at each stage and we were able to reduce labor-hours significantly,” Raj added. Fichtner completed piping flexibility analysis to ensure reliability in different operating conditions and were able to model the piping systems to perfection while considering constraints such as a lack of available space and the distance to be covered. Engineering special type loops and floating headers was required. It completed the project ahead of schedule, which helped further ensure the customer’s satisfaction and ensure that the seven boilers and two turbines are in successful operating condition.



ABOUT HEXAGON

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon’s PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at [hexagon.com](https://www.hexagon.com) and follow us @HexagonAB.