



## FACTS AT A GLANCE

**Company:** Siemens

**Website:** [www.siemens.com](http://www.siemens.com)

**Description:** Siemens Group, a leading innovator of leading-edge technology enabled solutions, has 17 companies in India employing 18,000 persons and operates 21 manufacturing plants and has ties with 500 channel partners.

**Industry:** Power

**Country:** India

## PRODUCTS USED

- CAESAR II®

## KEY BENEFITS

- Addressed cumbersome configurations.
- Achieved higher data accuracy.
- Saved 500 man-hours and reduced the schedule by one month.

## SIEMENS REDUCES SCHEDULE WITH CAESAR II® FOR POWER PROJECT

**EPC succeeds on India's first solar thermal power plant**

### IDENTIFYING GOALS

The Siemens Energy division at Vadodara, Gujarat, India, provides turbine, compressors, and induced-draft fan solutions for power plants.

One Siemens project was for Godavari Green Energy Limited, a 50MW facility in Nokh, Jaisalmer, Rajasthan. This was India's first solar thermal power plant, which recently began operations. The client was Godavari Power and Ispat Ltd., and Siemens' scope included engineering and supply of the turbine, generator, auxiliaries, and steam piping.

### OVERCOMING CHALLENGES

The pipe ranged from 15NB to 250NB in diameter providing systems with auxiliary, sealing, and leak-off steam at temperatures of up to 400C. The project also encompassed the lube and high pressure oil systems, the condensate, and vacuum pump piping.

The configuration of the turbine facility made the overall piping arrangement very cumbersome and rigid. With the anchor point in the center, the thermal expansion on the smaller-diameter turbine nozzle is high, meaning allowable loads on the nozzle are far less.

Siemens had only six months to release stress reports and hanger specifications, and there was no database available for valves, specialty items, turbine, or structures. The project also required coordination with a US-based consultant in key areas, adding to the challenges.

CAESAR II was chosen to perform this high-profile project.

If Siemens had not had CAESAR II's capabilities, the project would have been delayed by nearly two months, and the level of confidence of its execution team and the client would have suffered. The input of the load data and stress analysis would have taken much more time if performed manually. Manual calculation of expansion loop arrangement would have been a time-consuming activity with the results being less accurate.

"Using Intergraph® CAESAR II capabilities, we are able to reduce the time and cost while achieving a higher accuracy level," explained Medhesh Nirmal, manager on the project.

Siemens was able to design the complete sealing and leak-off system in a single model file and analyze the system as a whole in one step.

“We saved nearly 200 man-hours with the CAESAR II Nozzle Limit Check module, where we identified allowable loads against all nozzles to ensure optimization,” Nirmal said.

Siemens leveraged the software’s optimization wizard to perform multiple iterations during analysis and achieve the desired results. This saved the company another 300 man-hours and reduced the schedule by one month. CAESAR II helped improve productivity and accuracy in many other areas during the project.

## REALIZING RESULTS

With CAESAR II, Siemens was able to provide the client a wide range of deliverables, including the stress isometrics, the code compliance and stress summary, the load case report with restraint summary, the hanger datasheet and bills of material, the nozzle check report, and others.

Siemens squeezed the time frame and met the expectations of all involved, including civil engineering, the equipment vendor, and procurement.

“Most of all, the customer was satisfied, with Siemens Turbine landing five out of six thermal solar projects,” Nirmal added.

## AWARD-WINNING PROJECT

Siemens received the 2014 CAESAR II Drivers of Success Runner-Up Award for its use of the software. The annual Drivers of Success competition recognizes innovative applications of Intergraph products, impressive project results, and significant benefits from collaboration among disciplines and the integration of the products.

## ABOUT INTERGRAPH

Soon to be known as Hexagon Process, Power & Marine, Intergraph Process, Power & Marine is the leading global provider of engineering software for the design, construction and operation of plants, ships, and offshore facilities.

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