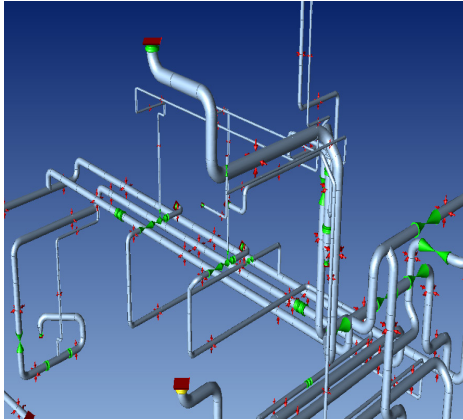


# CASE STUDY



# CADWorx & Analysis Solutions



## CAESAR II proves to be a valuable tool in Brazil's Nuclear Industry

Established in 1995, GENPRO Engenharia S.A. (GENPRO) is a Brazilian capital company and was established in 1995 by a team of professionals with extensive experience in engineering and design projects for industrial plants. GENPRO has since established itself as a leading engineering company serving the Brazilian and regional market from its offices in Sao Paulo, Rio de Janeiro and Salvador with a workforce of highly qualified and experienced professionals.

### Nuclear Reactor Laboratory Project

The Brazilian government assigned GENPRO to develop and build a nuclear research reactor laboratory, including the endowed major systems and equipment in the existing plant and a pressurized water reactor (PWR). The plant is an onshore experimental facility to validate and test all design considerations and operating conditions and is restricted to the physical space available. GENPRO's tasks required following conventions and rules typical of nuclear power plants and ensuring the safety of operators and the local population while avoiding damage to the environment.

### Replacing nuclear-specific software with Intergraph

The project required stress analyses of 800 pipes in nuclear piping classes 2 and 3 and non-nuclear piping for different levels of seismic response spectra. They initially chose a software specialized for nuclear analysis for the project but immediately determined that the software had serious limitations such as allowing for only one response spectra, which precluded the seismic analysis of piping routed at different elevations or multiple excitations. It was then that GENPRO turned to CAESAR II which enables the use of response spectra for each of the different levels of routed pipes.

### Producing accurate calculations to improve efficiencies

Using Intergraph CAESAR II software, GENPRO accurately calculated all nuclear and non-nuclear piping including those routing in more than one level of the building core. The results indicated supports for pipes of class 2 and 3 would not require snubbers which eliminated maintenance costs and reduced risks to humans. They also used CAESAR II to calculate equipment nozzles, thereby freeing additional man-hours.

### Reducing labor and costs with CAESAR II

CAESAR II was not only fast and accurate, its operational capabilities when compared to the nuclear-specific software produced other benefits. Combining these benefits with CAESAR II's proven reliability allowed faster completion of work that required stress analysis, and they could complete the work faster and produce more savings for the project.

### Establishing CAESAR II in Brazil's nuclear market

Brazil is becoming more prominent in the nuclear space. At the same time, GENPRO has been assigned a number of new refineries in the north eastern region of Brazil that are subject to seismic conditions that must be evaluated by conducting stress analysis of piping. "Having proven itself on this project, CAESAR II will have more opportunities in the future," explained Cesar Augusto Limberger, engineer at GENPRO. "It will play a critical role in supporting GENPRO in the rapidly growing Brazilian market."

"Using Intergraph's CAESAR II software, GENPRO calculated accurately all nuclear piping classes 2, 3 and non-nuclear piping, including those with piping routing in more than one level of the building core."

## PRODUCT INDEX

Intergraph CAESAR II®

## INDUSTRIES SERVED

- Power
- Nuclear

## THE COMPANY

[www.genpro.com.br](http://www.genpro.com.br)

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