



FACTS AT A GLANCE

Company: Numikon d.o.o.

Website: www.numikon.com

Description: Numikon provides a wide range of engineering and analysis services for the process and energy industries. One of their specialties is surveying plant piping, creating 3D piping models, testing the wall thickness and hardness of piping and integrating this information with the 3D models.

Employees: 20

Industry: Chemicals, oil & gas, power generation and marine

Country: Croatia

PRODUCTS USED:

- CADWorx fieldPipe™ Professional
- CADWorx® Plant Professional
- CAESAR II®

KEY BENEFITS:

- Laser scanning offered major time savings compared to manual surveys
- Laser scanning avoided the need to work at height or near hazardous equipment
- 3D Models linked to equipment database and stress analysis software

NUMIKON IMPROVES BROWNFIELD OPERATIONAL SAFETY AND EFFICIENCY WITH INTERGRAPH® CADWORX® FIELDPIPE™ PROFESSIONAL AND CAESAR II®

Process equipment specialist produces as-built models supporting inspection, non-destructive testing, pipe stress analysis and creation of plant documentation

IDENTIFYING GOALS

Numikon specializes in the calculation and analysis of mechanical, power and process equipment and components, project engineering of process and power plants, pipe stress analysis, pressure vessel design, as well as laser scanning and laser surveying.

Numikon's customer, INA-Industrija nafte d.d., a leading oil exploration, production, refining and marketing company in Croatia was looking for an efficient solution to create as-built information for their Sisak refinery.

INA d.d. hired a consortium of three companies (Numikon d.o.o., TUV-Croatia d.o.o., KONZALT ING d.o.o.) for the project.

OVERCOMING CHALLENGES

Extensive asset documentation for the refinery existed, but there was uncertainty about how accurate and complete it was. Furthermore, there was insufficient information about the specifications of the piping and exact pipe routings throughout the refinery. This lack of information was highly undesirable for safety, operational, and regulatory reasons.

INA therefore decided to have all of the piping in the refinery surveyed to create an accurate and up-to-date 3D model, complete with information about the piping material grades, wall thicknesses, topology etc. of the pipes, and document all of this on new isometric drawings. This information could then be used to perform pipe stress analysis on critical pipelines.

The survey had to be undertaken while the refinery was operating. Some of the piping was difficult to access because of its location above ground, or because it was insulated. In addition, the work had to be carried out to a tight deadline.

To save time and improve safety, Numikon proposed using:

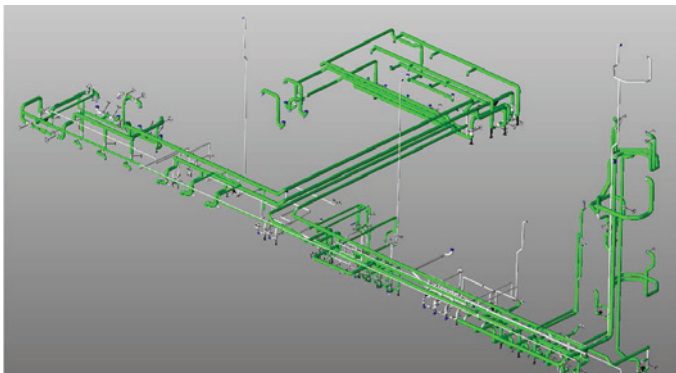
- Leica total station for laser surveying and measurement of the plant
- Intergraph CADWorx fieldPipe Professional to create the 3D model
- Intergraph CADWorx Plant Professional for isometrics and data integration



Laser surveying in action at the Sisak refinery using a Leica Total Station.

Numikon first analyzed INA's drawing specifications and configured the Isogen component of CADWorx Plant Professional to ensure that all the deliverables met the company's drawing standards, and completely fulfilled the customer's requirements.

They also entered details of the equipment used at the refinery in a database to support day-to-day plant operations and maintenance activities.



A 3D model of the plant created in CADWorx Plant Professional (part of the Sisak refinery).

REALIZING RESULTS

Numikon surveyed their part of Sisak refinery in 49 days. Using the laser surveyed data they created all deliverables required by their client, including:

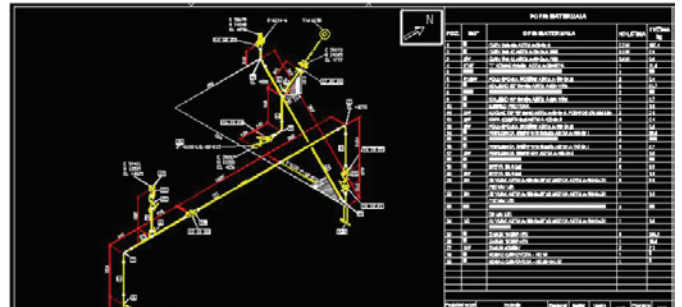
- 3D models
- Piping isometrics
- Details of piping components (valves, pressure regulators, flanges, supports, etc.)
- Tag and nameplate details
- Details of the equipment and connected piping
- Pipe stress analysis results (including required test pressure) and pipe data (wall thickness, material properties, etc.)

ABOUT INTERGRAPH PROCESS, POWER & MARINE

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.

These deliverables enable the owner operator to operate the plant safely and efficiently and comply with all regulatory requirements. The detailed as-built data also greatly facilitates maintenance and plant expansion and modification.

Mario Anić of Numikon explained "When we first started using the Leica total station and Intergraph software the two companies trained our staff. It took them about ten days to get up to speed and start on their first project. We were particularly impressed by the in-depth knowledge of the Intergraph and Leica people. On the whole we estimate that our productivity has gone up by as much as 640% (six times)! This productivity gain means that we can minimize the on-site project time and maximize efficiency, offering our customers a very attractive package.



Isogen isometrics created from the 3D model with CADWorx Plant Professional.

MOVING FORWARD

Mr. Anic continues: "Currently we are the only company in our region to offer this service based on laser surveying and the Intergraph software in a full package together with non-destructive materials testing, measurement and hardness and thickness testing. That gives us a major advantage in a competitive market."

"Currently we have four employees who use this equipment and software and we are planning to recruit two more in the near future. We are using CADWorx fieldPipe Professional for oil refineries, the pharmaceutical industry, gas plants and other sectors. At present we are working on similar technical documentation packages for another four plants, again based on laser surveying and Intergraph CADWorx 3D models." Mr Anic summarizes.

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