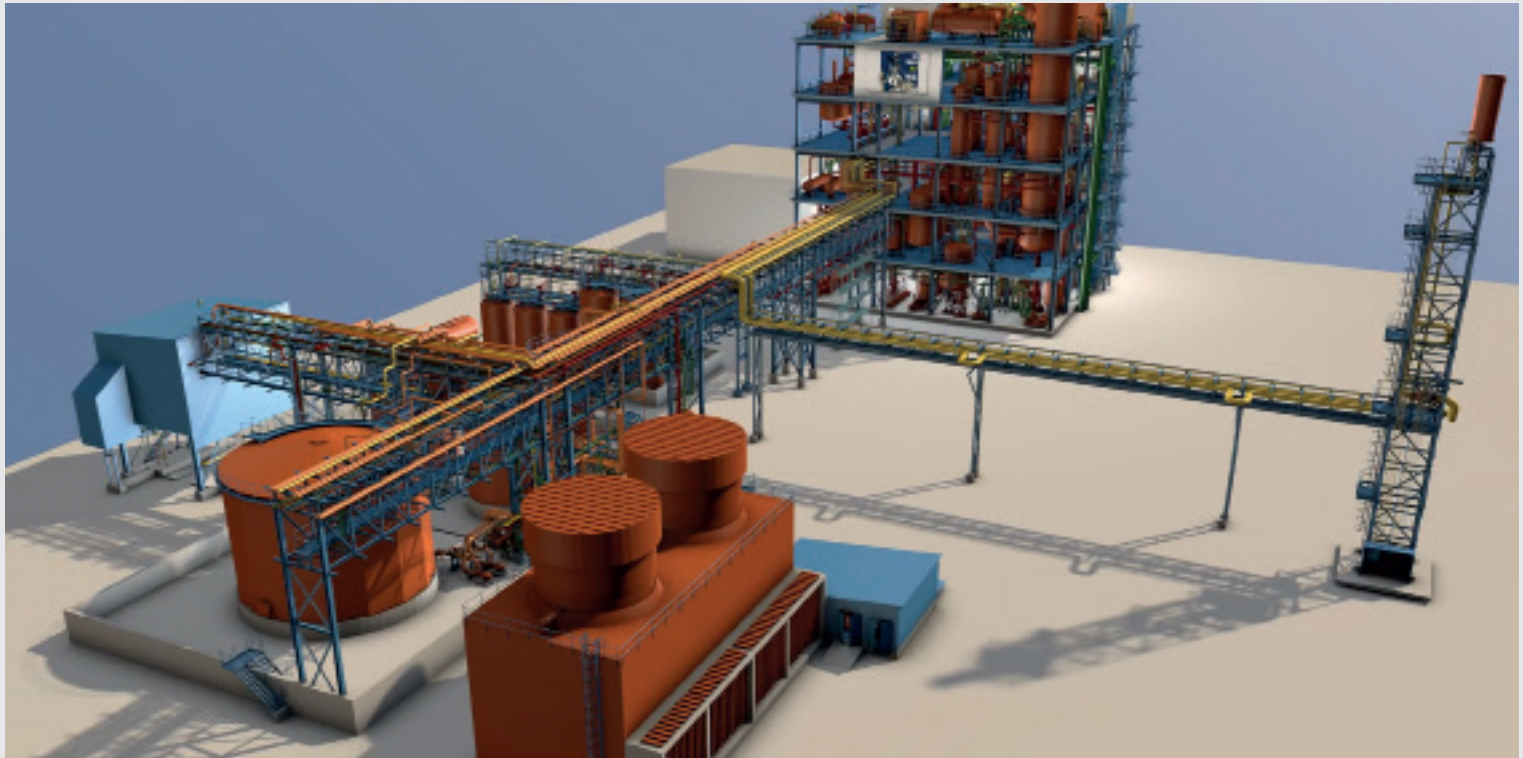


# 3D-DESIGN

3D PLANT DESIGN ACROSS ALL DISCIPLINES



We perform plant design and construction for our clients with state-of-the-art 3D planning and engineering tools. Combined with our advanced and proven QM system, we ensure an optimum of design accuracy and precision. We have developed more software programs to use laser scan data clouds in PDS and to realize automatic clash checks.

## Performance in New Plant Design

The 3D design ensures precise results:

- Using today's most advanced design tools (Autodesk – AutoCAD® Plant 3D, Intergraph - PDS® & Smart 3D®, AVEVA - PDMS® & E3D®)
- Planning, modeling and visualization of all disciplines in one 3D model:
  - pipes, pipe bridges, equipment, steel & concrete structures and HVAC
  - Cable trays, brackets, maintenance / assembly areas
  - Roads & conditions outside of concrete structures e.g. clean-rooms

- Clashes can be identified and fixed at cross-sectional level
- Coordination and adaptation of piping design for compatibility with other planning disciplines
- Creation of an automatically generated material list for RFPs during the planning phase and for cost estimation of the pipe disciplines
- Production of preassembled / final isometric drawings
- Design and dimensioning of secondary steel work for piping supports including workshop drawings
- Data exchange between PDMS and CAESAR II (stress calculation) as well as other engineering programs and disciplines
- Design approval meetings with model visualization in reviews
- Production of auditable final documentation

#### Revamp of Existing Plants and As-built Documentation

We minimize revamp time and guarantee maximum design accuracy using laser scan data for existing plants and brownfield projects

Our customized software for analyzing and rebuilding point-cloud data is designed to read in and convert scanned data.

- Point-cloud filtering and segmentation of the data
- Modeling of main interfering edges / 3D PDS design in the point cloud
- Automatic clash check of the point cloud with our own software

Furthermore, the as-built drawing or transfer to the PDMS model allows quick access irrespective of its location and without disturbing the manufacturing process.



Equipment modeling

Layout design

Piping design

Support design

Creation of isometric drawings

Automatically generated material lists

Support drawings

Final documentation

Laserscan

As-Built documentation

#### Engineering & Maintenance

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