

**DOCAN**  
A CAN DO COMPANY

# STRUCTURAL ENGINEERING 2021

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# ABOUT US

WE ARE AN ADVANCED ENGINEERING CONSULTANCY AND CAE SOFTWARE DISTRIBUTION COMPANY.

WE PRIDE OURSELVES ON OUR CAN-DO APPROACH AND ABILITY TO OFFER CUTTING EDGE SOLUTIONS TO OUR CLIENTS.

We are run by experienced Professional Engineers, Designers and Consultants following an ISO9001:2015 BSI certified Quality Management System.



ISO 9001:2015 | Certificate number: FS 729034

Our processes and QA system are aligned with providing design and assessment services for high integrity engineering products, and we have a growing track record of delivering on significant safety-critical projects.

OUR BUSINESS IS SPLIT INTO TWO DISCREET DIRECTORATES.

- Engineering Consultancy
- CAE Software Distribution

Our culture, setup and experience are tailored to working on high integrity systems within highly regulated industries, while having to deliver to challenging timescales and budgets. Our verification processes follow the requirements of our ISO 9001 QMS and are compatible with those companies which operate in highly regulated industries.



# OUR VALUES

Our values at DOCAN are the forefront of our identity and vision. They play a major role in the success of every project we undertake.

We are driven as a company, as a team, to bring together our expertise, powerful technologies, industry experience and insights which helps our clients solve their problems.

- To have a can-do attitude
- To have accountability
- To have integrity
- To be honest and straightforward
- To deliver on value and quality
- To have a positive social impact
- To have a customer focus
- To have the most appropriate and innovative technology solutions available
- To be positive
- To have fun and learn on the way



# CONSULTING SERVICES

At DOCAN we have a wide range of skills, experience and people. At our core we are run by professional engineers with many years of experience in industries including Oil & Gas, Drilling (Onshore/Offshore), Renewables, Aerospace, Nuclear and Manufacturing.

The core services that we provide include CAE involving systems, process, structural mechanics, structural engineering, thermo-fluids, engineering design, CAD, drafting, FEA & CFD, classical analysis, and both design code and fitness for service assessments. In addition to our core services, we have access to a range of DOCAN Associate Engineers who are industry experts and specialise in key industries, for example Manufacturing, and niche disciplines such as Electromagnetics, RF, and Optoelectronics.

Our Structural Engineers can offer a full structural consultancy service, with their current projects focused on the structural engineering aspects of new green field, old brownfield, fitness for service and decommissioning projects.

In addition to our core services, we have access to manufacturing resources including fabrications, machining, and assembly, from small components through to large scale items such as furnaces and boilers.

## Some examples of our experience in this area include:

- Design of skid shoe for 7000Te offshore module, including assessment due to transportation, ship roll, heave, etc., as well as jacking forces to move on to barge. Completed using STAAD-Pro.
- Design of temporary pipe support framework for use on live COMAH site for repair of existing pipe support equipment to EC3, using manual calculations and FEA.
- Design of 40' container structure to retrofit jet thrust testing equipment, designed to EC3 and DNV 2.7-1 & 2.7-3, including design of lifting attachments.
- Detailed wind loading calculations developed in MathCAD and structural assessment of very large pressure vessel, using Eurocode 1 and API579. The structural assessment completed using non-linear FEA.
- Design of a catwalk cradle for support of a 45Te Managed Pressure Drilling flow spool.
- Design of simple walkways, platforms, and frames up to more complex fabricated structures.

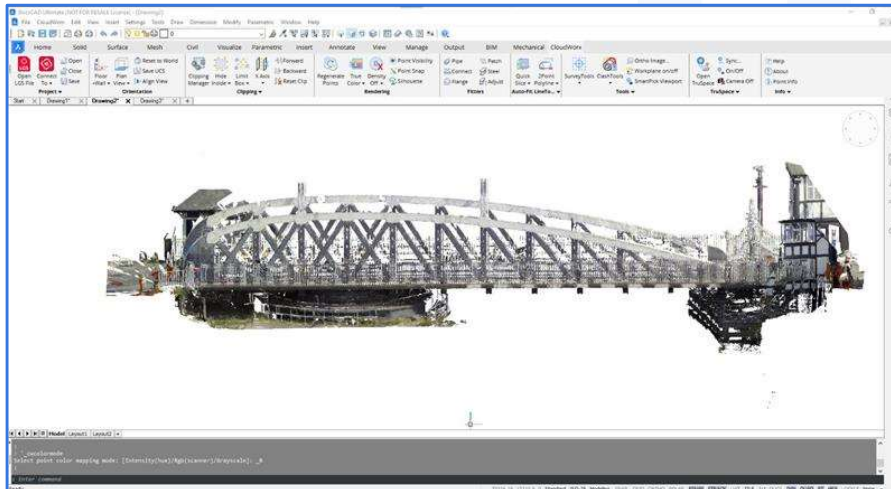
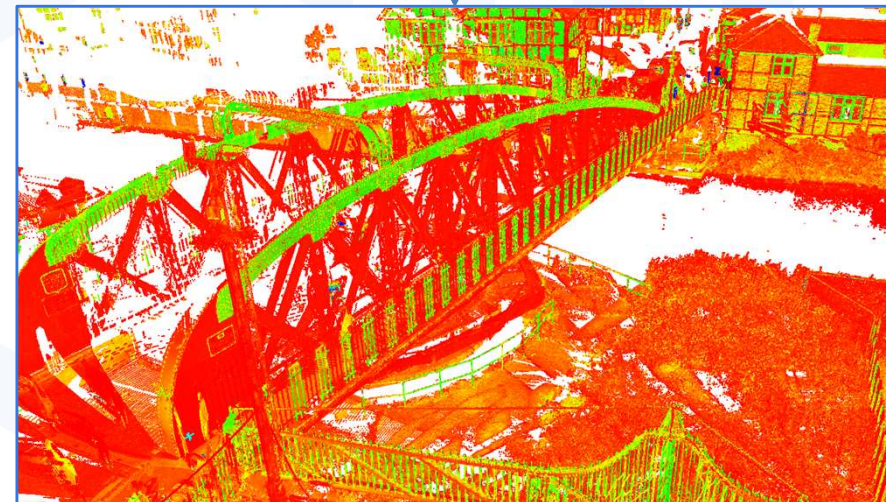


# ENGINEERING SURVEYING SERVICES

In addition to our strong engineering background, we have expertise in surveying techniques and are developing this part of the business through our partnerships with state-of-the-art surveying technology companies.

Advanced equipment, such as the Leica RTC360, P40 long range scanner, and Total Station allow for accurate scans of large areas in a short time while capturing all details.

In combination with the CloudWorx, BricsCAD and Cyclone software, we have all the tools necessary to provide a full turnkey surveying solution, including reverse engineering of existing equipment and installation of new equipment.



Full 3D surveying of Northwich historic swing bridge

**LIKE TO HEAR MORE...?**

**CONTACT US TO AT [WWW.DOCANCO.COM](http://WWW.DOCANCO.COM)**





# HOW WE CAN HELP

## OUR KEY AREAS OF EXPERTISE ARE:

- Engineering Design & Assessment
- Engineering Simulation & Analysis Expertise
- Training Services for Design & Simulation
- Term Contracting Supplier
- Expert and 3<sup>rd</sup> Party Reviews

**We provide a service to solve our clients' engineering problems.**

**We work in a way which suits our clients. This could be as an independent engineering resource which provides high-level engineering design, analysis and assessment services, through to providing turnkey project solutions. Or we could work alongside your in-house engineers, providing support, technology transfer services and training to meet your requirements.**

**We are flexible in our approach and work to provide our clients a solution which works.**



# SOFTWARE

\*INDICATES WHERE DOCAN IS AN AUTHORISED RESELLER OR CHANNEL PARTNER

We employ a wide range of tools and software packages across our consultancy business.

We have formed partnerships with world leading software houses which enables us to offer you cutting edge software.

We also have acquired additional tools to support our consultancy work as needed.

Here are some of the tools available to us:

## COMPLETE SIMULATION & ANALYSIS TOOLS

- **MSC SOFTWARE\*** (INC. MSC NASTRAN, PATRAN, ADAMS, CAE FATIGUE, CRADLE CFD, AND MANY MORE)
- ALSO INCLUDES ABAQUS, ANSYS, FLUENT, AND OTHER PACKAGES AS DESIRED BY THE CLIENT.

For FEA & CFD, acoustics, fluid-structure interaction, multi-physics, fatigue and durability, multi-body dynamics, and more.

## 1D SYSTEMS ANALYSIS

- **FLOWNEX\***

1 dimensional thermo fluid system modeler and solver with capabilities to handle flows of pure liquids or gases, mixed flows, compressible and incompressible fluids, incondensable, two-phase, and slurry flows.

## PRESSURE SYSTEMS

- **ROHR2\***
- **CAESARII**
- **PV ELITE & CODE CALC**
- **TANK**

Static and dynamic analysis of pressure systems for piping, vessels and pipeline systems.

## 2D DRAFTING & 3D CAD

- **BRICSCAD\***
- **SOLIDWORKS**
- **CADWORX**
- **CLOUDWORX**
- **RECREATE**
- **DESIGN X**

Covering basic 2D drafting through to complex 3D modelling and engineering drawings for all industries.

## HPC & CLOUD COMPUTING

- **RESCALE\***
- **IN HOUSE HPC'S**

Providing HPC resource solutions.

## ENGINEERING MATHEMATICS & AUTOMATION

- **MAPLE\***
- **MATCAD**
- **MATLAB**
- **FORTRAN, C++, PYTHON**

Analyzing, exploring, and solving mathematical problems.

**CAN'T SEE WHAT YOU'RE LOOKING FOR...?**

CONTACT US TO ENQUIRE ABOUT YOUR SPECIFIC CONSULTANCY REQUIREMENTS [WWW.DOCANCO.COM](http://WWW.DOCANCO.COM)



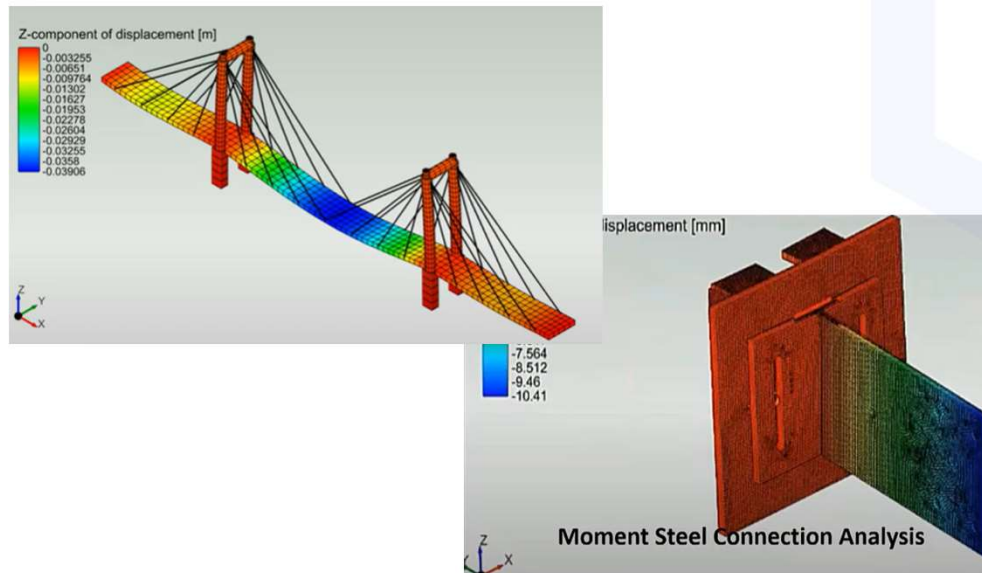
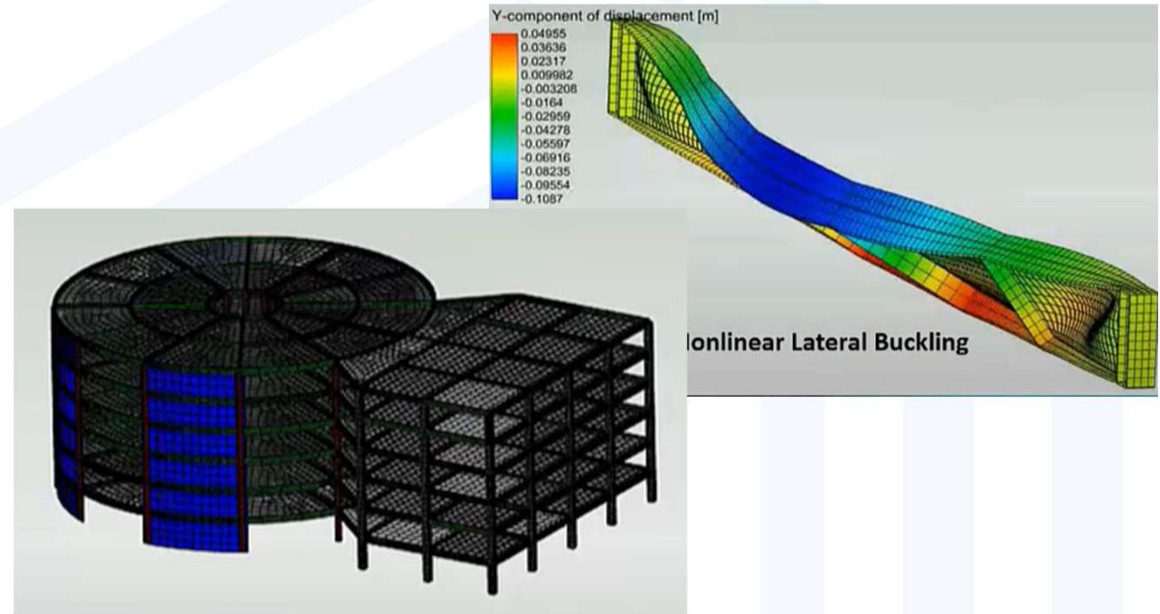
# SOFTWARE – CivilFEM\*

\*DOCAN IS AN AUTHORISED RESELLER

DOCAN are resellers of CivilFEM, a general-purpose finite element software for civil, structural and geotechnical engineering, using the powerful Marc solver for the most complex advanced analyses.

## USES OF CivilFEM?

- Analysis models for construction and advanced architecture
- Forensic structural analysis
- Geotechnics, tunnels and mining
- Soil-structure interaction
- Bridge engineering
- And another other civil engineering infrastructure



## WHAT IS CivilFEM CAPABLE OF?

- Nonlinear buckling analysis
- Nonlinear staged construction process
- Pre-stressed reinforced concrete
- Concrete creep and shrinkage
- Soil structure interactions
- Check & design by the most important codes and standards
- Nonlinear transient analysis
- AND MANY MORE



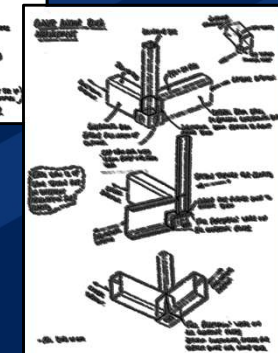
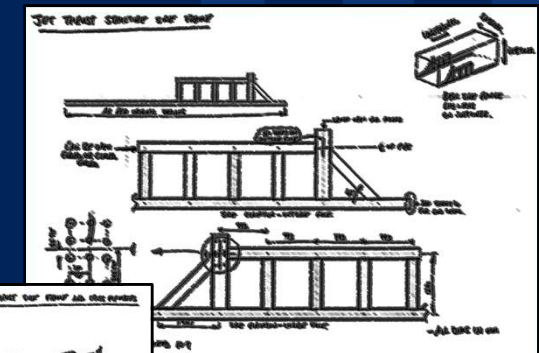
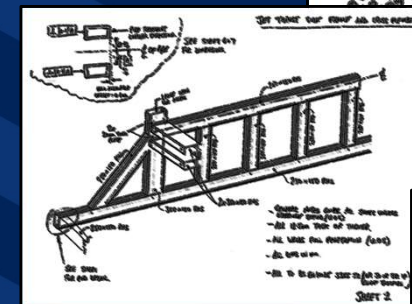
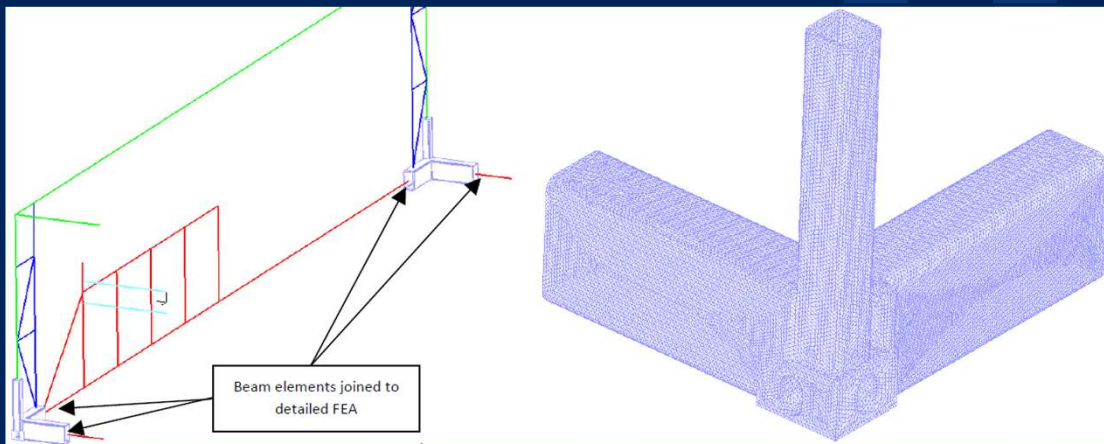
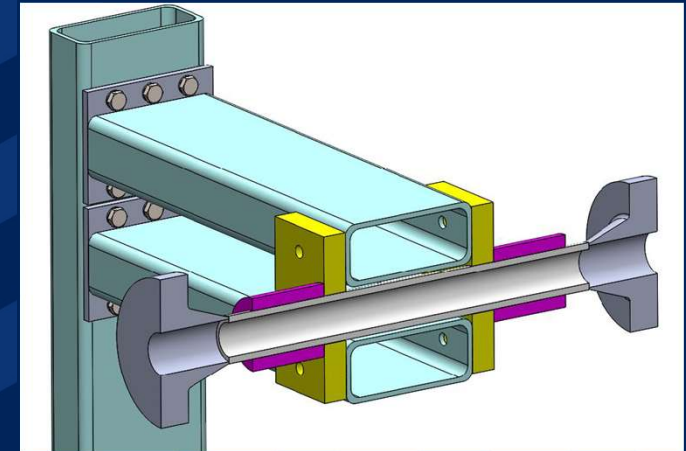




# SAMPLE PROJECTS

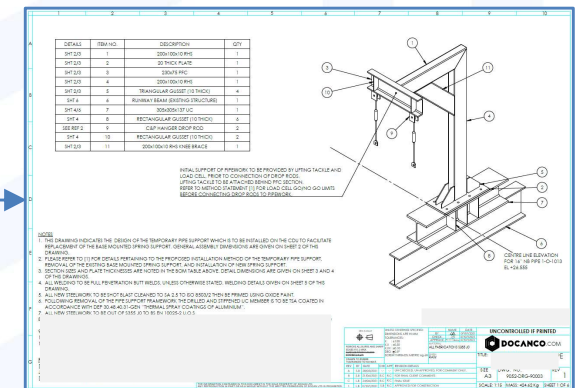
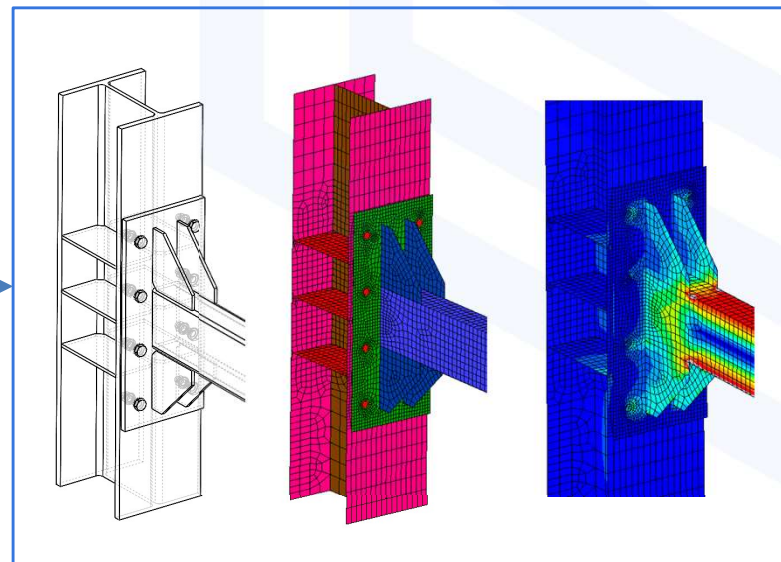
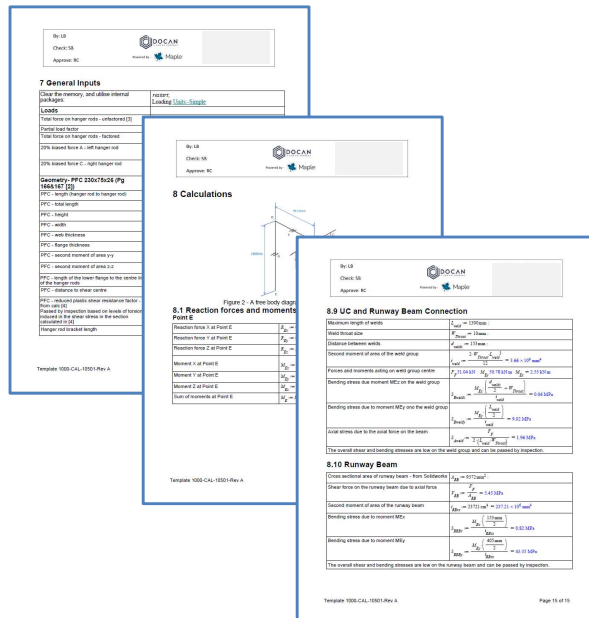
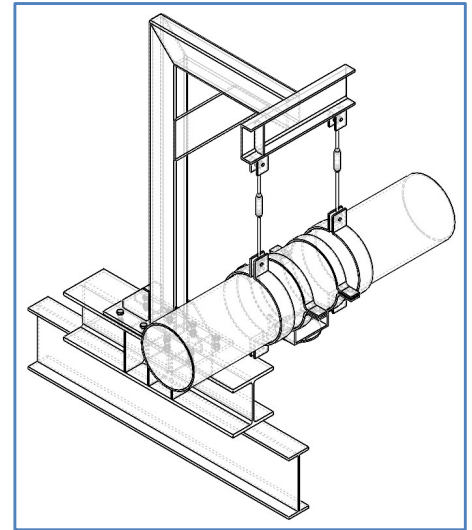
# RESEARCH & DEVELOPMENT

- We undertook a project to retrofit a DNV ISO container with an integral piping support structure to be used for testing very high jet thrust applications.
- The design was developed using a combination of 3D CAD modelling, manual calculations, beam FEA modelling and detailed 3D solid FEA modelling.
- The design compromised on a welded fabrication with bolted joint connections for testing various jet thrust scenarios, designed to the requirements of Eurocode 3.
- Sketches and drawings were provided to the client to facilitate detailed manufacturing drawings to be produced by their in-house drafting resource.



# DESIGN

- This project was to design a temporary pipe support to be used during replacement of an existing spring support. This was on a UK COMAH site and was used to support in-service pipework.
- The temporary support was required to be attached to existing equipment via a bolted connection, to allow for easy decommissioning after use.
- Pipe Stress Analysis was used to determine the support loads, which formed the basis of the design of the frame.
- The design comprised of a welded fabrication with a bolted joint connections, drop rod lifting points, and designed to the requirements of Eurocode 3.
- The frame and bolted connection was designed using manual calculations in the Maple calculation software, modelled in Solidworks. and verified using detailed FEA. Manufacturing drawings (inc. BoM) were also created for the client to build and install the framework. For more complex structures, design packages such as CivilFEM and STAAD are available to us.



# CONTACT US

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