

DOCAN
A CAN DO COMPANY
PIPING

ENGINEERING SERVICES 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 consultancy services for high integrity lifecycle engineering, 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.



CONSULTING SERVICES - 1

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

With respect to Piping Engineering, we have a broad range of experience over the lifecycle of many piping installations including nuclear piping. Some typical examples of our lifecycle experience include:

- R&D of piping/pressure systems, pipe stress analysis (PSA), pipe supports, and supporting structures.
- Greenfield and brownfield development projects.
- FEED and detailed design of piping layouts, structures, pressure vessels and equipment.
- Development of piping specifications, and using PV Elite and Probad for this purpose
- Static Analysis of critical Piping systems using either CAESAR II or ROHR2
- Design of specialist pipe supports (anchors, line stops, other), and selection of off the shelf supports
- Life extension based on fatigue, pressure, temperature, loading of structures, piping, vessels, and equipment.
- Fitness For Service Assessments generally Level 3 but also including simpler Level 1 & 2 and code assessment.

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

CONTACT US TO ENQUIRE ABOUT YOUR SPECIFIC CONSULTANCY REQUIREMENTS WWW.DOCANCO.COM



CONSULTING SERVICES - 2

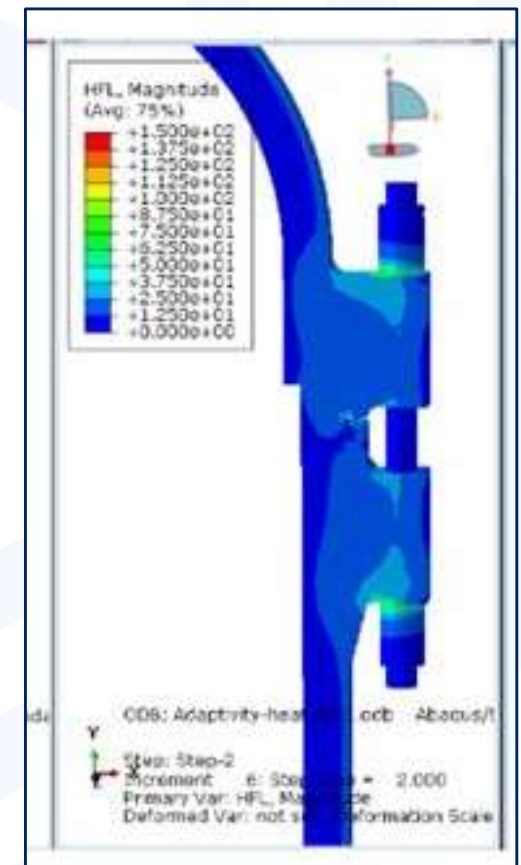
- Buried piping, Pipelines, and District Heating, noting that we are members of UKDEA (UK District Energy Association).
- Site survey, piping walk downs of existing systems, & laser scanning for reverse engineering.
- Simple flange leakage calculations all the way to full 3D detailed FEA where necessary.
- Dynamic and vibration of piping systems, including using Flownex coupled to CAESARII or ROHR2 for flow induced vibration and surge.
- We have experience working under PED (Pressure Equipment Directive) & PSSR (Pressure System Safety Regulations).
- We have experience providing PSA training and can tailor our training to focus more heavily on applications of interest.
- We are partnered with TEi Ltd, who are a leading Engineering Construction Organisation in the United Kingdom specialising in design, supply, repair, maintenance and site installation in the power generation and petrochemical industries.
- We are members of Achilles FPAL (First Point Assessment) and we actively strive to exceed standards of quality in our consulting.

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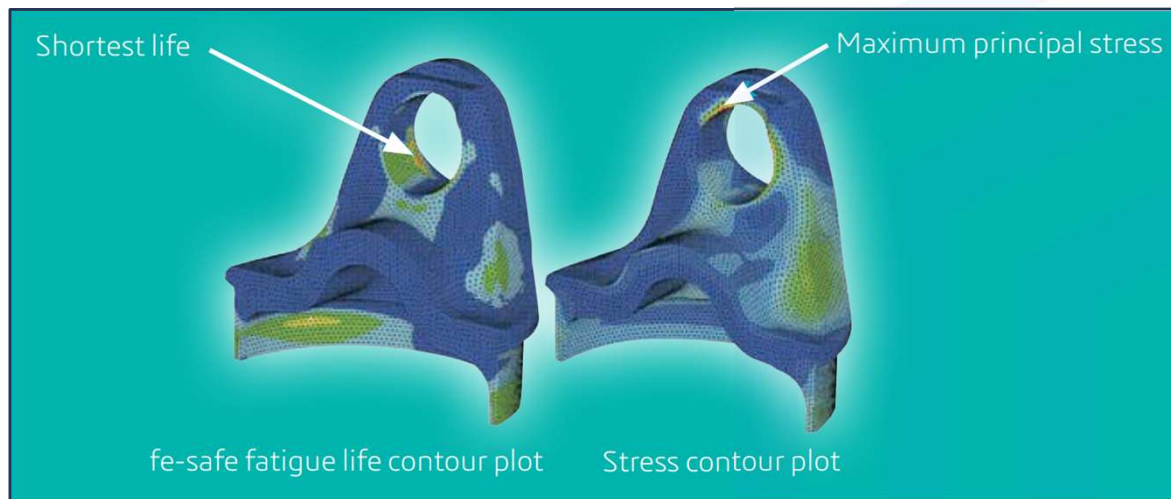


ABAQUS Standard detailed flange leakage assessment



LIFE EXTENSION / FATIGUE ASSESSMENT

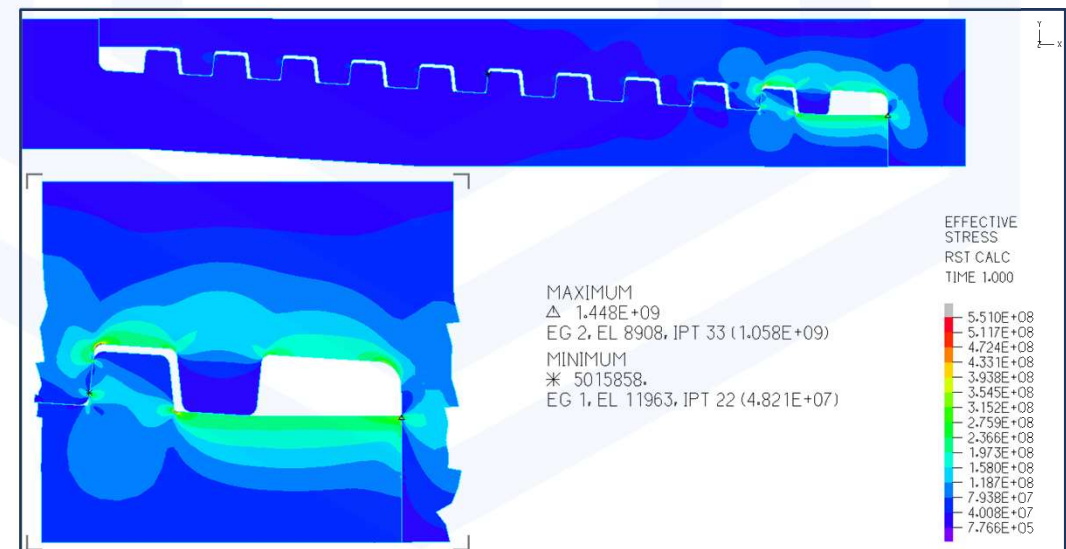
- Life extension based on detailed fatigue and creep assessment (using FE Safe).



We have access to some of the best tools and software packages for performing fatigue analysis and assessment.

This example is from a project where we performed a fatigue assessment of a threaded connection on the production tubing used on a UK well site, for a national energy provider.

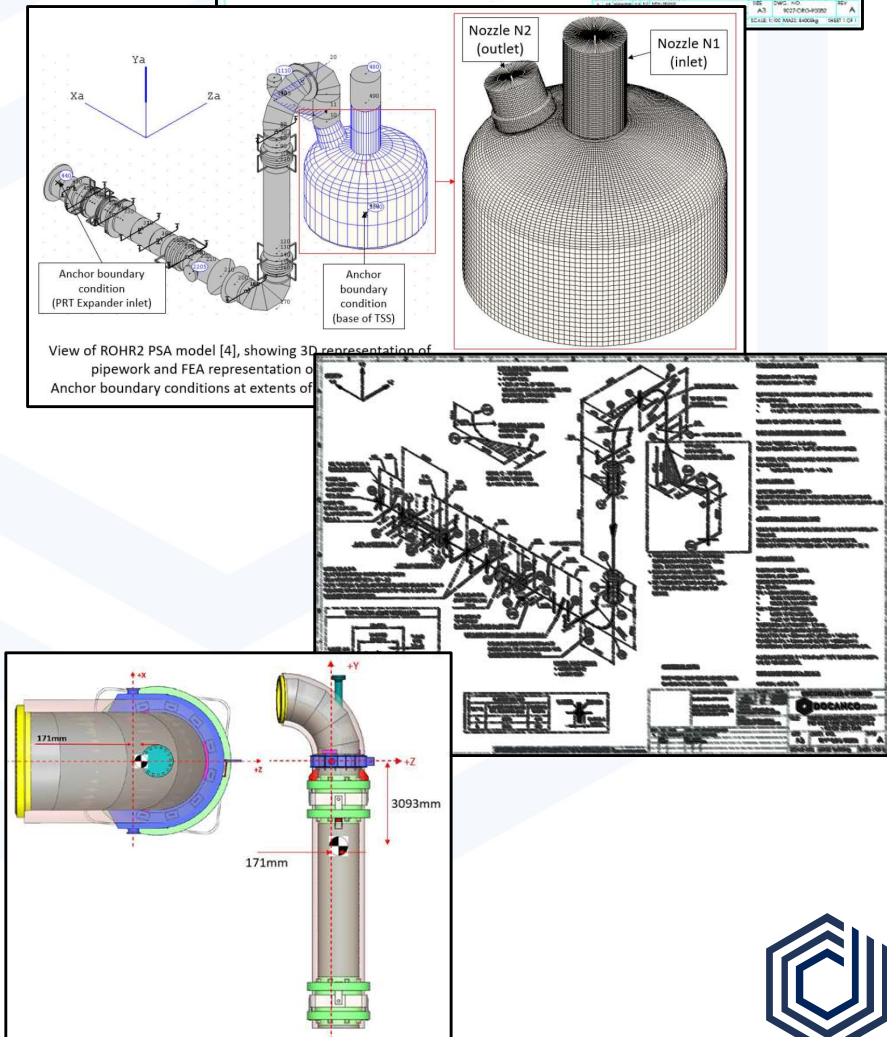
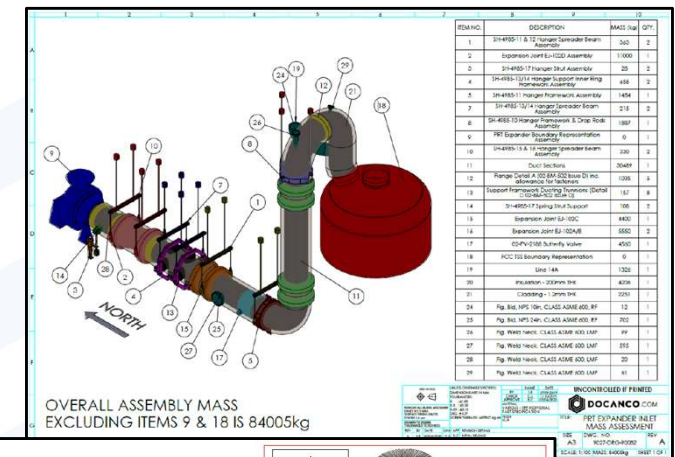
The project included a combination of manual calculations and FEA modelling to determine if fatigue of the connection was likely to be an issue.



CONSULTANCY EXAMPLE

FEED, DESIGN, FFSA, & DECOMMISSIONING

- **Assessment of Power Recovery Train (PRT) inlet pipework.**
- **High temperature (+700C) and large diameter (60") line.**
- **Line had sagged and spring hangers bottomed out under hot operating conditions.**
- **Line contained several constant and variable spring supports, gimbal joints, flanges, vessel nozzle, and PRT turbine inlet nozzle.**
- **Tasks undertaken by DOCAN:**
 - 3D CAD model creation for mass & CoG assessment of line.
 - Review of construction information and site surveys.
 - Pipe stress analysis of line including detailed modeling of attached vessel/nozzle arrangement.
 - Re-specification of spring hanger supports.
 - Produce stress isometrics.
 - Fitness For Service Assessment of potential creep damage in pipe and nozzle.
- **The results of the work indicated that a section of the pipe should be replaced. This involved:**
 - Update of PSA work.
 - Mass and CoG assessment for lifting out of old pipe section.
 - Lifting assessment with manual calculations & FEA, and design of lifting reinforcement components.



**TO SEE MORE EXAMPLE PROJECTS
CHECK OUT THE PROJECTS SECTION ON
OUR WEBSITE**

OR GET IN TOUCH!



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 3rd 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.

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.



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.

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