



DOCAN
A CAN DO COMPANY

ENGINEERING DESIGN 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 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



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.



ENGINEERING DESIGN SERVICES

KEY DESIGN SERVICES

Concept & Prototype development

- You might have an idea but not necessarily the high-level engineering resource to develop the idea to a prototype – this is where DOCAN can help. We work with clients across a range of industries providing services from concepting to prototype generation through to assessment of prototype designs and creation of manufacturing drawings. We can facilitate manufacture of parts with the aid of our manufacturing partners, both for traditional methods of manufacture, such as machining and fabrication, and for Additive Manufacturing (AM), which is particularly useful for rapid prototyping.
- We can help you present concept material for funding applications, produce engineering calculations to verify your concept and work for you to turn your idea into a feasible design with drawings for you to conduct prototype testing.

Designing from first principles

- DOCAN have design expertise to assist with design concepting, optioneering, FEED, detailed design, machining, fabrication and more. We can then facilitate creation of construction drawing, O&M manuals and any product documentation which may be required.
- We regularly work to international design codes such as ASME, BSI, API, DNV, etc. to deliver code compliant designs.

Design with Simulation

- One of our key differentiators to our competitors is how we use design and analysis to offer a better engineered solution, being stronger, lighter, cheaper, or whatever the client requires. Our expertise can assist you in solving problems in the fields of structures, fluid dynamics, thermo-fluids, process, and chemical engineering.
- Typical applications we have worked on cover designing to increase available margins against design code requirements, modifying client designs to pass design code requirements, determining Cv curves for valves, determining loading due to pipe slug flow and designing suitable pipe supports among many more.



ENGINEERING DESIGN SERVICES

STAGE GATE PRODUCT DEVELOPMENT PROCESS

To ensure that design projects are run in a controlled manner and to ensure that all necessary tasks be completed with minimal project risk, we employ a Stage Gate Development process. This can be as simple or as complex as is needed to control the project and ensure that projects are delivered in the most cost-effective and low risk manner.

Key aspects of our Stage Gate Product Development process:

- Tailored to meet the needs of the client and project.
- Our design process follows our ISO9001:2015 QA processes.

This includes:

- Project management services to co-ordinate design and development activities against a projected timeline.
- Working with our clients to perform initial commercial feasibility studies.
- Managing development of Technical Specifications and Design Failure Mode Effect Analysis (DFMEA) at the project outset to correctly define all design requirements.
- Developing initial design concepts, including Design For Manufacture (DFM), selection of materials and bought in components.
- Obtaining supplier quotes for bought in components.
- Performing costing exercises.
- Conducting data acquisition exercises where load cases are not fully understood, prior to prototype testing.
- Validation of design concepts through manual calculations, design code assessments, numerical simulation, and working with our partners or other sub-contractors to manufacture prototypes for testing.
- Managing testing activities.
- Developing engineering drawings for production, including machining, fabrication, moulding, etc.
- Working with the client or our own manufacturing partners to develop manufacturing processes, including simulation of processes, development of jigs and fixtures, performing Production FMEA studies, developing Standard Operating Procedures, QA documentation, measurement systems analysis, and Process Capability studies.



ENGINEERING DESIGN SERVICES

REVERSE ENGINEERING

Prior to undertaking the design of a new system, it may be necessary to reverse engineer existing equipment or systems in order to provide input into the new design process.

Our reverse engineering services include:

- 3D scanning of equipment.
- Completing material hardness testing, ultrasonic thickness checks, materials composition analysis.
- Design and verification of new parts to relevant design codes.
- Creating engineering drawings (fabrication, machining, moulding) for new parts.

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 the Leica Absolute Tracker and handheld scanners can be used for detailed scans on a smaller scale.

In combination with the CloudWorx, BricsCAD and Cyclone software, we have all the tools necessary to provide a full turnkey engineering surveying solution, including reverse engineering of existing equipment for design and installation of new structures, Fitness For Service Assessment, and re-design of damaged components.



ENGINEERING DESIGN SERVICES

LIFECYCLE ENGINEERING

In addition to the typical design and assessment services that we provide, our core team of engineers and associate engineers have worked in many different industries and applications, including:

- Development of O&M manuals.
- Technical document authoring and management.
- Maintenance strategy.
- Condition monitoring.
- Fitness for Service.
- Estimated remaining life.
- Decommissioning studies.
- Repairs and retrofits.
- General consulting.





ENG. DESIGN PROJECT EXAMPLES

DESIGN – EXAMPLES – 1

Some examples of our experience 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 and manufacture of motorcycle drive train components, including parts for World and British Superbike racing teams.
- 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.
- Design of mechanical test equipment and fixtures.
- New Product Development (NPD) project management services for a client in the automotive industry.
- Detailed wind loading calculations developed in MathCAD and structural assessment of very large pressure vessel, using Eurocode 1 and API579.
- Design of a catwalk cradle for support of a 45Te Managed Pressure Drilling flow spool.
- Design of walkways, platforms, and frames up to more complex fabricated structures.



DESIGN – EXAMPLES – 2

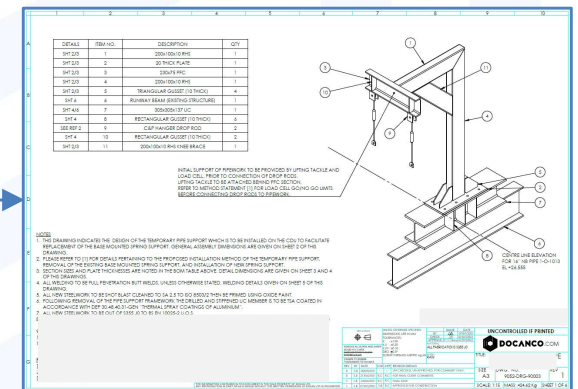
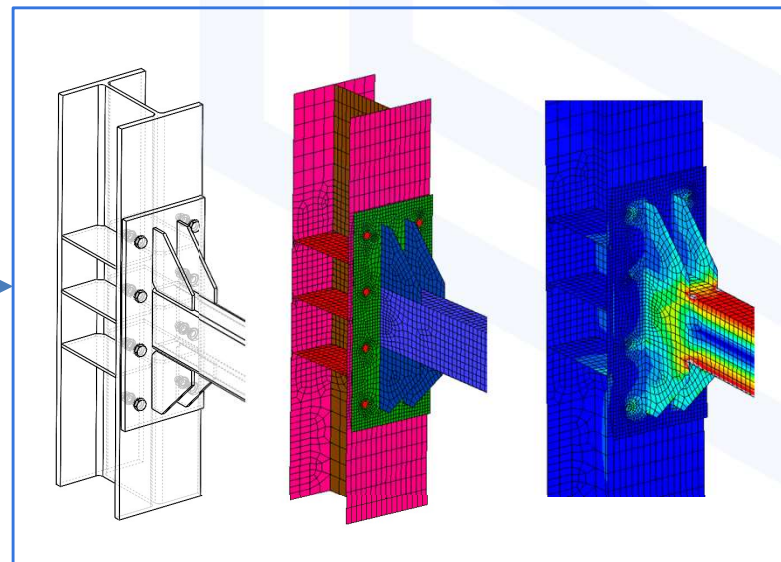
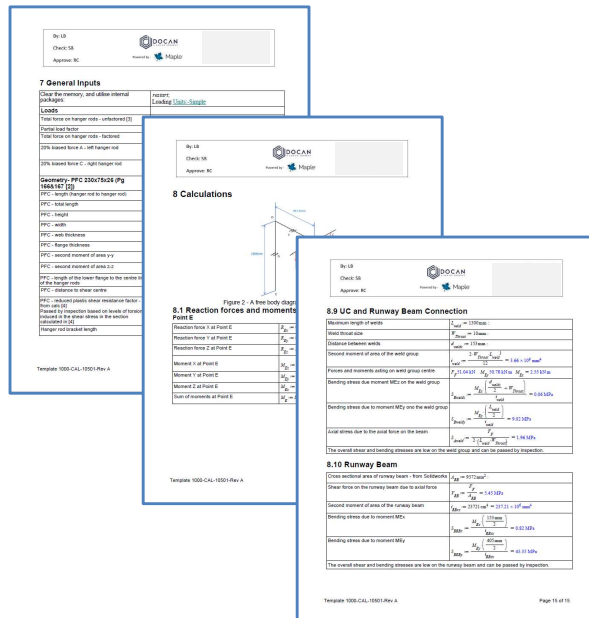
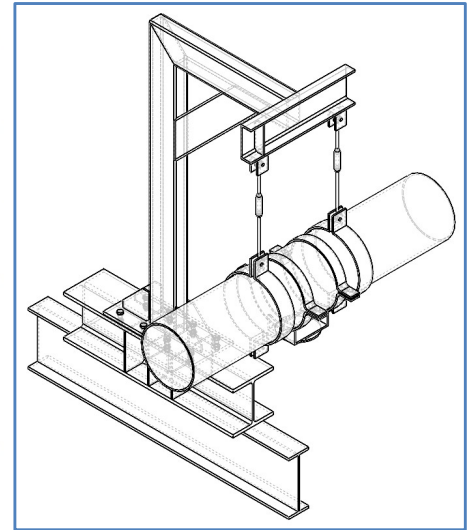
More examples include design of:

- Centrifugal mechanisms for subsea drilling machines accounting for dynamics and kinematics.
- Injection moulded components.
- Novel composite rod riser to enable ROV inspections.
- Mechanical handling machines for manipulation and transport of heavy offshore drilling equipment and risers.
- Consumer products in the sporting goods industry.
- Sprockets and chain drive systems.
- Thermo-mechanical sat-comms equipment accounting for vibration, dropped object, wild heat, high altitude, and extreme environments.
- New offshore pipe laying machines.
- Civil and military aero mechanisms.
- RF sat comms equipment.
- Structural systems in heavy engineering.
- Manufacturing equipment used in the forming, forging, fabrication, machining and injection moulding industry.



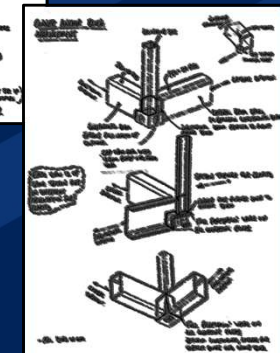
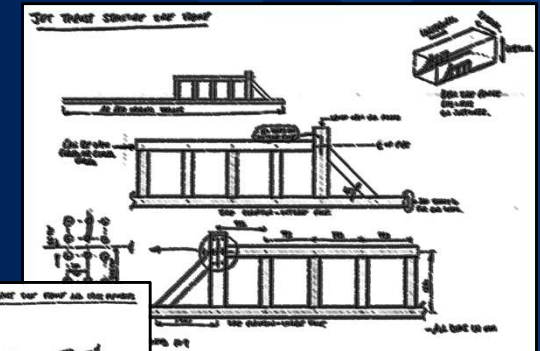
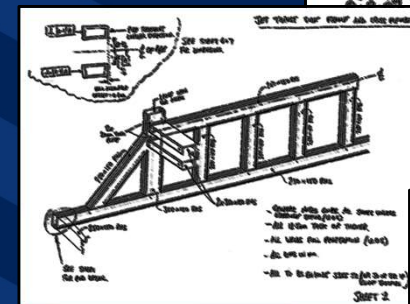
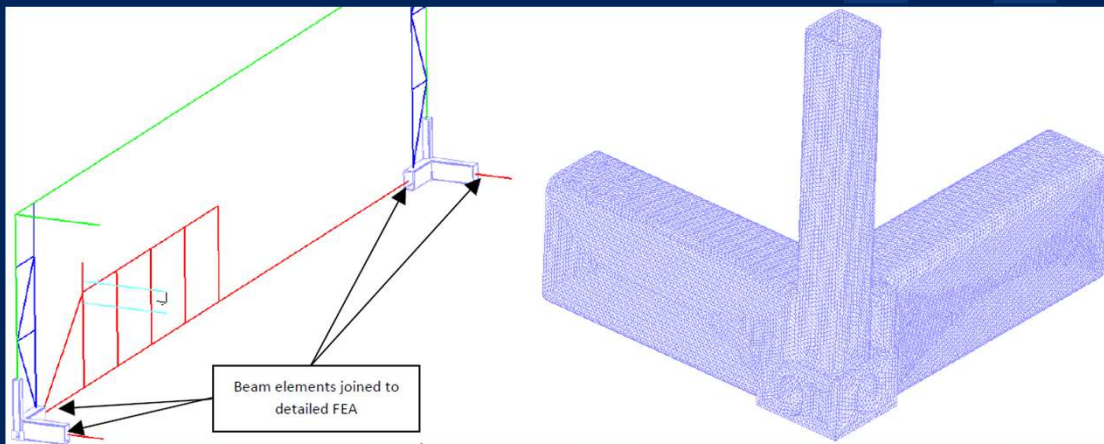
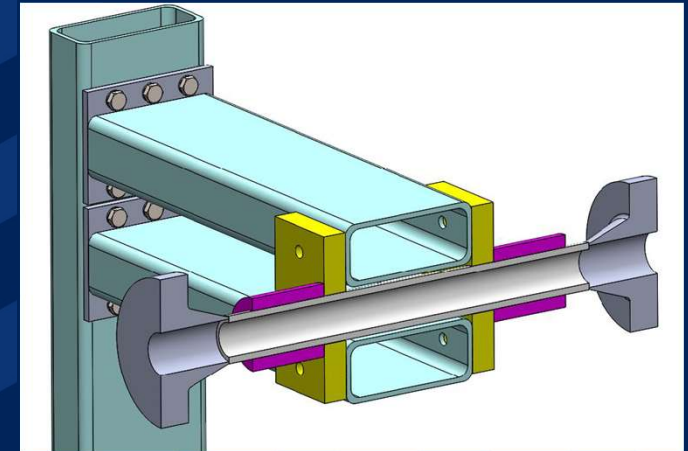
DESIGN – CASE STUDY - 1

- 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.



DESIGN – CASE STUDY – 2

- 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.



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

OR GET IN TOUCH!



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