DOCAN
A CAN DO COMPANY

DISTRICT ENERGY NETWORKS & EQUIPMENT 2021

www.docanco.com Tel. UK: +44 (0)1606 212330 USA: +1 888 874 0964 E: info@docanco.com

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.

bsi ISO 9001 Quality Management Systems CERTIFIED

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

HEAT NETWORKS & CP1

- The development of heat network usage within the UK is steadily growing and DOCAN are ideally placed to support the development and growth of this technology through our expert consulting service and provision of CAE software solutions.
- The CIBSE CP1 code sets out the Code of Practice for the UK in this industry. Applications for this code include new build applications, retrofit applications, and mixed developments of new and existing.

- Key themes of CP1 include:
    - Correct sizing of plant and network.
    - Achieving low network heat losses.
    - Achieving consistently low return temperatures and optimizing flow temperatures.
    - Use of variable flow control principles.
    - Optimising the use of low-carbon heat sources to supply the network.
    - Delivery of a safe, high-quality scheme where risks are managed, and environmental impacts controlled.
    - Providing customers with affordable heat and reliable service.

- The following pages show the skills and technology which DOCAN possess which will support the development of heat networks to achieve high performance across the key themes.
- DOCAN are also members of UKDEA (UK District Energy Association).

CONSULTING SERVICES - 1

Interested? See our website for more details:
docanco.com/what-we-do/consultancy/

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, thermo-fluids, engineering design, CAD, drafting, FEA & CFD, classical analysis, and both design code and fitness for service assessments.

There are multiple fields within the district heating discipline to which we can transfer our skills. Obviously, a significant component to any district network is Piping Engineering, within which we have a broad range of experience over the lifecycle of many piping installations. 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.
- Static and transient 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.
- We have experience providing PSA training and can tailor our training to focus more heavily on applications of interest.
- 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 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.

CONSULTING SERVICES - 2

ENERGY CENTRE	HEAT NETWORK	BUILDING CONNECTIONS & BUILDING HEATING SYSTEMS
Piping	Buried piping	Design
Pipe Stress Analysis	Pipe Stress Analysis	Plant room design
Piping design	Detailed pipe design	Floor plans
Process engineering	1D system design	Engineering surveying
Fitness For Service Assessment (FFSA)	Detemine pressure drops	Steelwork design and construction
Static, vibration, etc.	Detemine thermal losses	Builidng Information Modelling (BIM)
Fatigue	Seismic assessment	Thermal design
Pipe supports	Above ground	1D system design
Design & verification	Pipe Stress Analysis	Heat exchanger performance
	Interaction with support structures	CFD for wind loading on buildings
	Seismic and wind loading	CFD for HVAC
Structures	Structures	
Reverse engineering	Design and assessment	
Engineering surveying	Manufacturing partners	
Design and assessment	Equipment sizing	
Manufacturing partners	Piping	
Pressure equipment	Pumps, Valves, Fans, etc.	
Reverse engineering	Non-standard Cv curves	
Finite Element Analysis (FEA)	Kv flow coefficients using CFD	
Computational Fluid Dynamics (CFD)	Operation	
Process engineering	Sensetivity of operating parameters	
Assessment	Pump shutdown	
Design	Transient loads / water hammer	
New technology concepting	Flow surge	
Feasibility studies	Energy spike	
Front End Engineering Design (FEED)		

This table gives an overview of our wider skills matrix cross referenced against the 3 main domains which form the heat network; the energy centre, the heat network itself, and the building heating system.

DOCAN are ideally placed to provide engineering consultancy across all the areas shown. With regards to energy centre applications, we have significant experience of undertaking engineering projects on COMAH sites in the energy industry, from FEED through to FFSA and decommissioning.

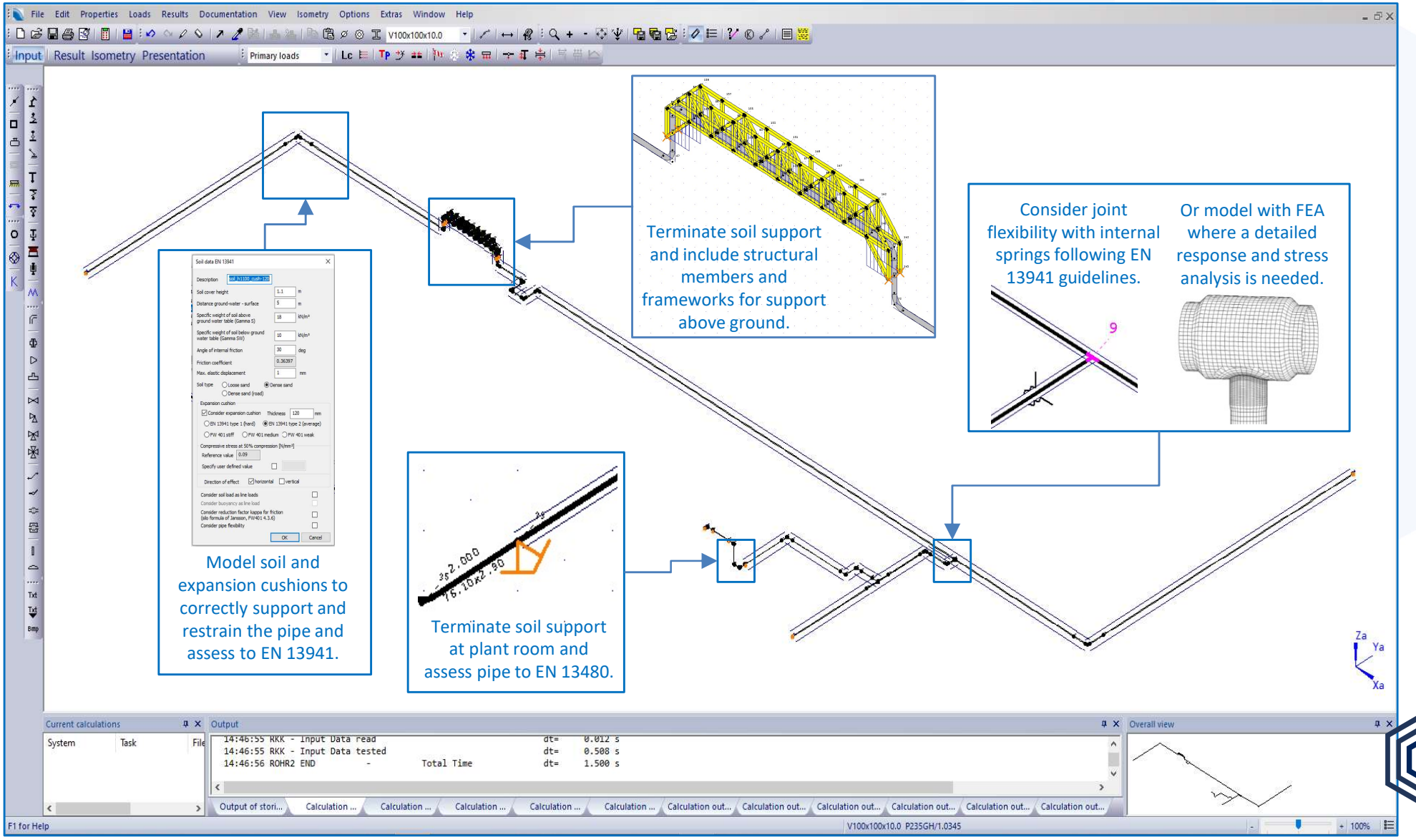
In addition to our engineering expertise, DOCAN are also CAE software distributors and we have formed partnerships with world leading software houses which enables us to offer you cutting edge software. We also have acquired additional tools to support our consultancy work as needed.

Some of our key tools in the field of heat networks and district energy are shown on the following pages.

DOCAN SOLUTIONS – ROHR2

Interested? See our website for more details:
docanco.com/software-solutions/rohr2-pipe-stress-analysis/

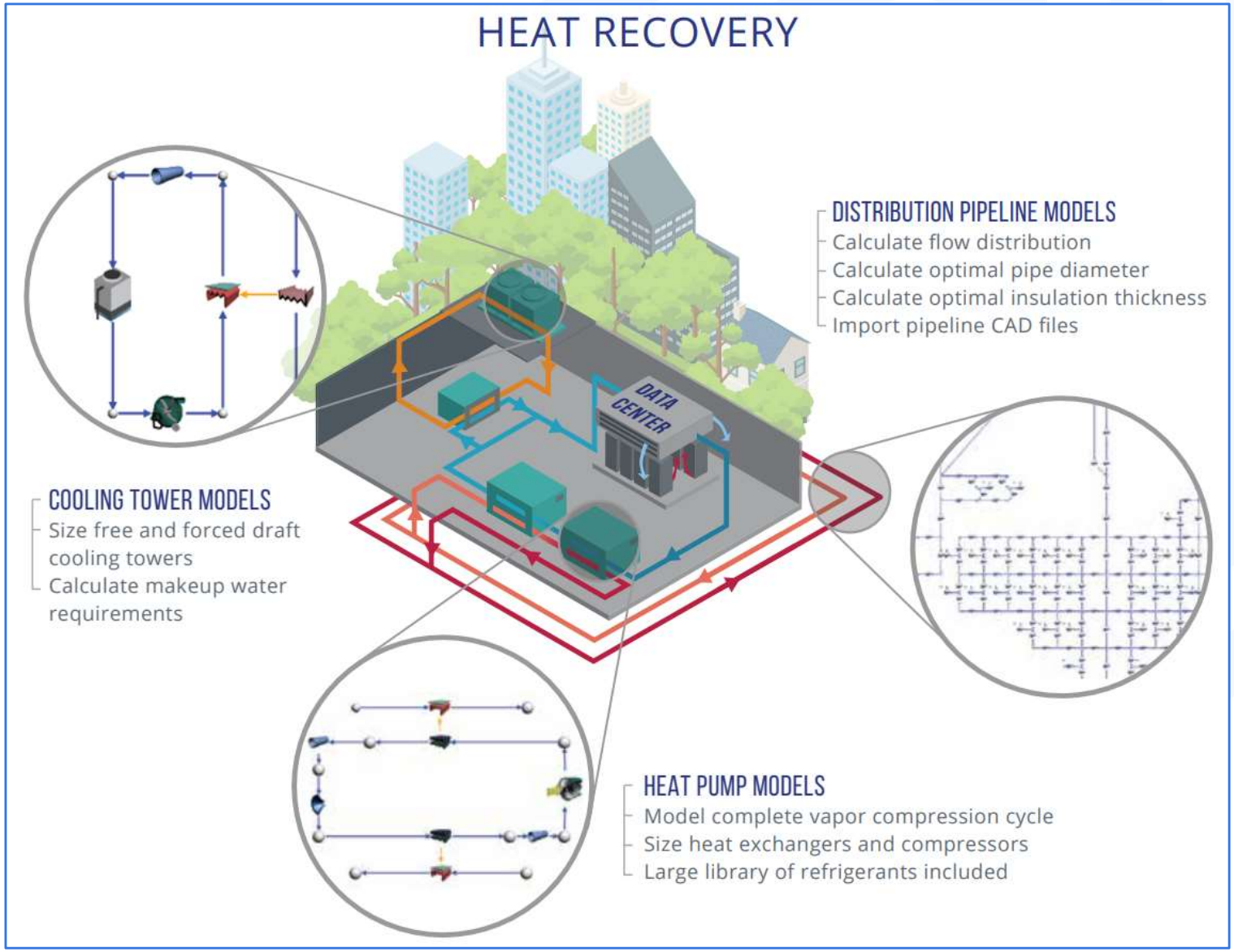
- Regarded as the leading European software for pipe stress analysis work, ROHR2 is a CAE system that powers dynamic structural framework analysis of complex piping networks.
- ROHR2 is a pipe stress analysis code which covers static and transient problems, assessment of above ground and buried piping systems, inclusion of structural members and detailed FEA modelling, and much more.



DOCAN SOLUTIONS – FLOWNEX

Interested? See our website for more details:
docanco.com/software-solutions/flownex-1d-thermofluid-software/

- Flownex® Simulation Environment is a state-of-the-art engineering tool that enables the design and optimisation of fluid flow and heat transfer systems.
- Using Flownex® software, engineers are able to meticulously examine the possible variations of thermofluidic systems, using the findings to design and optimise their systems for real world applications.



DOCAN SOLUTIONS – CRADLE

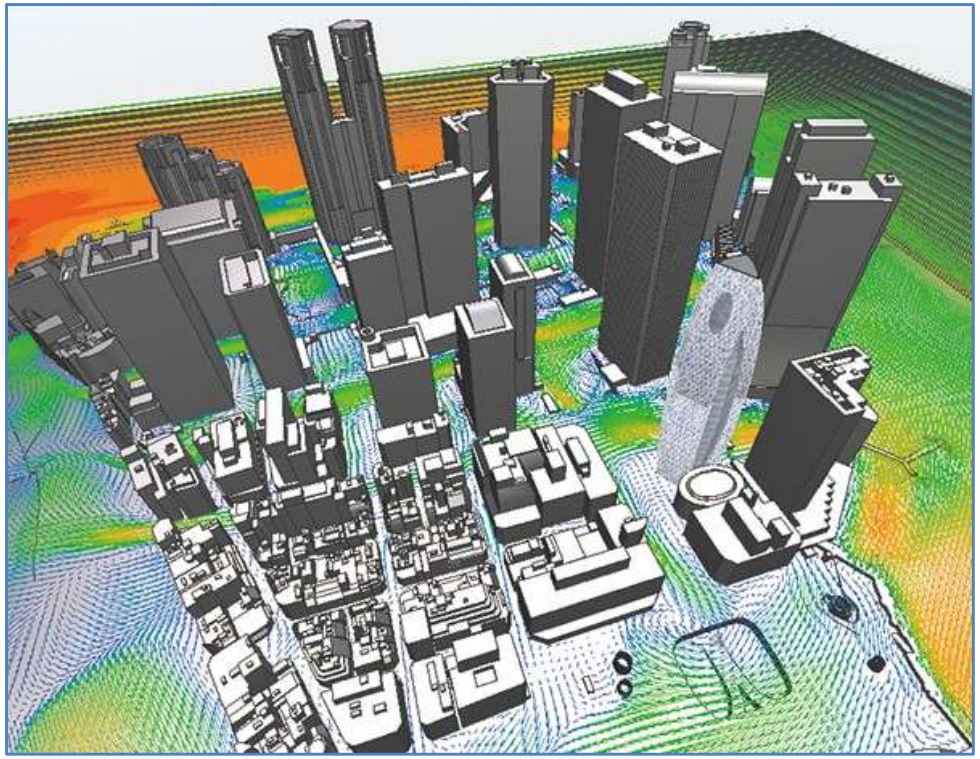
Interested? See our website for more details:
docanco.com/software-solutions/msc-software-and-mscone/

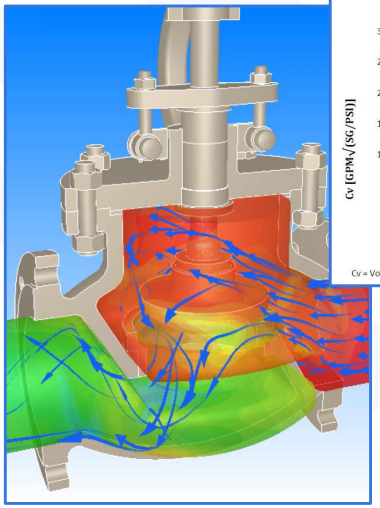
- Where the global network model can not adequately represent complex fluid flow, or characteristics of a piece of equipment are required for inputs, or the wind load imparted on an entire building need to be determined, the CRADLE CFD software is at our disposal.

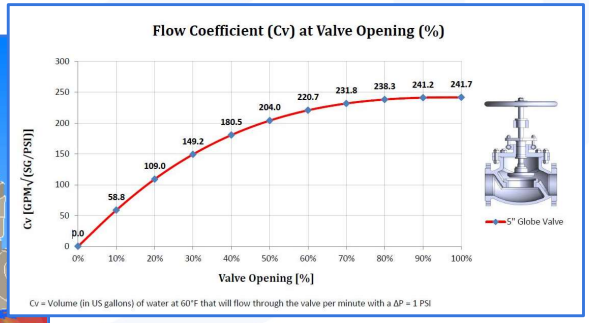
- Cradle CFD is a series of practical, state-of-the-art CFD simulation and visualization software. Embracing remarkable processing speed, refined technology, and proven practicality verified by high user satisfaction.

- It has been in use for diverse applications, such as Automotive, Aerospace, Electronics, Building and Architecture, Civil Engineering, Fans, Machinery, and Marine developments, to solve thermal and fluid problems.

- Incorporating the reinforced Multiphysics co-simulation and chained simulation capability to achieve couplings with Structural, Acoustic, Electromagnetic, Mechanical, One-Dimensional, Optimization, Thermal Environment, 3D CAD and other relative analysis tools, as well as award-winning postprocessing feature to generate visually powerful simulation graphics, Cradle CFD enables any level users to process advanced simulations.



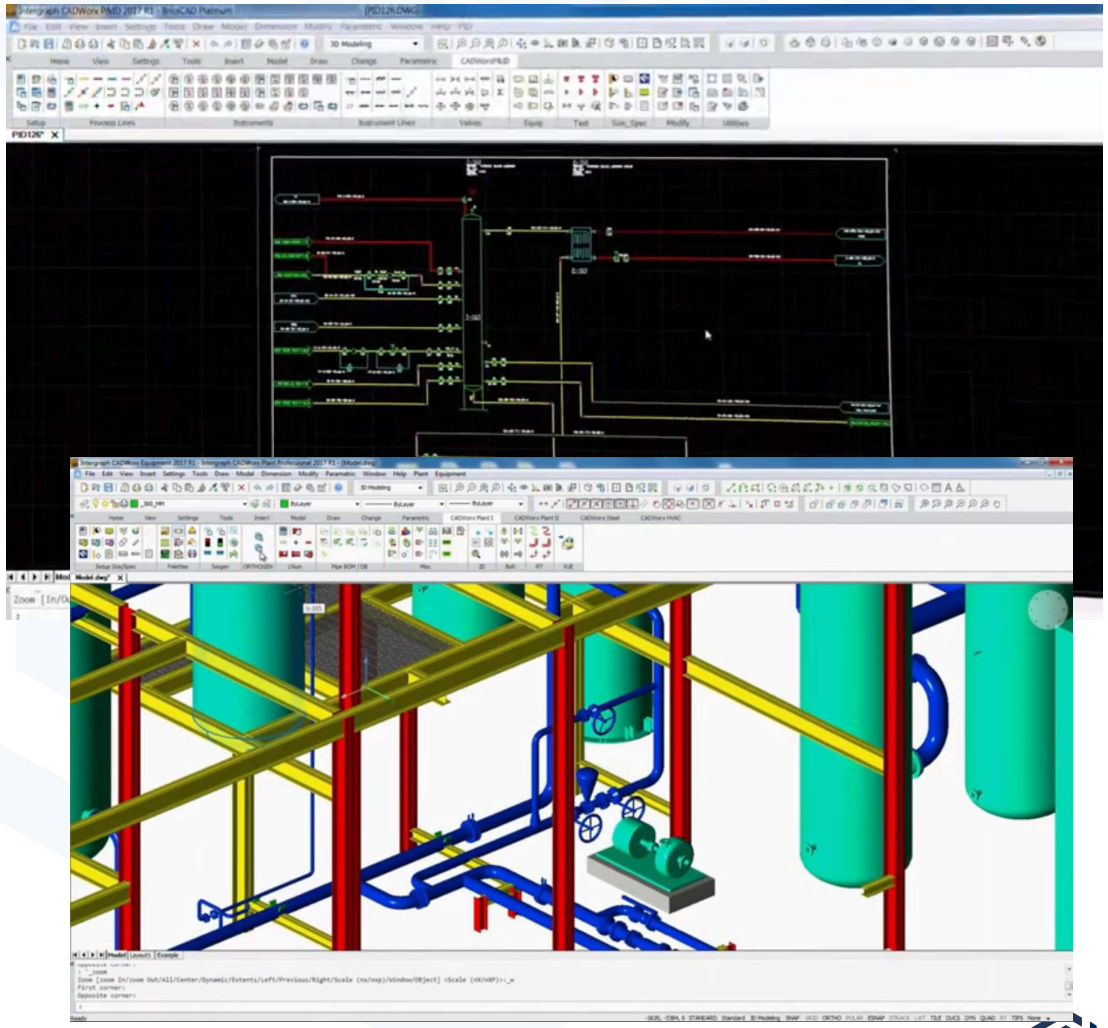




DOCAN SOLUTIONS – BRICSCAD

Interested? See our website for more details:
docanco.com/software-solutions/bricscad-software/

- CAD software for dwg based **2D drafting**, **3D modeling** and **BIM**.
- Interface with Cloudworx to import point cloud data to understand spatial limitations and avoid expensive clashing and re-design.
- Interface with other Hexagon products, such as CADworx, for intelligent P&ID design, plant design and more.

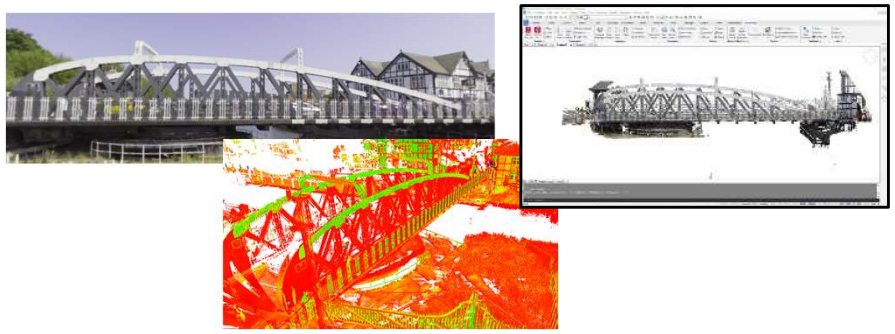


Engineering Surveying

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 for new equipment design and installation, Fitness For Service Assessment or re-design of damaged components.



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.

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.

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.

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.

HPC & CLOUD COMPUTING

- RESCALE*
- IN HOUSE HPC'S

Providing HPC resource solutions.

ENGINEERING MATHEMATICS & AUTOMATION

- MAPLE*
- MATHCAD
- 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**

SOME KEY GROWTH AREAS

DISTRICT HEATING & BURIED PIPING

- Buried piping, Pipelines, and District Heating

RENEWABLE ENERGY SYSTEMS

- Concepting of new renewable energy technology systems.
- 1D system modelling of fluids-based systems – Flownex software
- Design and assessment of piping systems – ROHR2 software
- R&D and assessment of systems – MSC Software / ABAQUS
- Drafting and design of structures & infrastructure

sCO2 & HYDROGEN TECHNOLOGY

- sCO2 cycles design
- Control system design
- Integrate Balance of Plant (BoP)
- Hydrogen/fuel cell cycles.
- And much more…

CONTACT US

CALL - **UK** +44 (0)1606 212330 – **USA** +1 888 874 0964
EMAIL - INFO@DOCANCO.COM
WEBSITE -WWW.DOCANCO.COM
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