

DOCAN
A CAN DO COMPANY

CFD 2022



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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.



SIMULATION & ANALYSIS CONSULTING SERVICES

At DOCAN we have a wealth of experience when it comes to simulation and analysis. Our engineers are experienced practitioners with backgrounds in simulation consultancy, academic research, and across a broad range of industries and practical engineering applications where simulation has been heavily used to solve engineering problems.

Of course, there are many aspects to engineering outside of simulation and analysis work. However, being able to visualize problems, gain insight and knowledge in a cost-effective manner, and explore design variations are just some of the benefits of employing simulation and analysis early on in an engineering project. Beyond that, the possibilities are endless.

This brochure demonstrates our skills, expertise, and the technologies available to DOCAN, as we continue to solve our clients' problems with simulation, from proof-of-concept studies, all the way through to decommissioning assessments, and everything in-between.



SIMULATION & ANALYSIS CONSULTING SERVICES

We are company members of NAFEMS, so can train and develop our engineers using consistent industry practice with CAE applications that are effective and up to date.

Typical reasons why are clients come to us range from:

- Lack of technical knowledge and expertise required to implement simulation and analysis technologies.
- Lack of available engineering resource.
- Budgetary constraints preventing investment in software.
- Being unaware of current technology and the possibilities of what can be achieved.

The team at DOCAN have a wide range of expertise in engineering analysis and simulation, predominantly gained working within highly regulated industries on safety-critical designs following engineering codes and standards.

We have experience working across many industries, and the following slides give an overview of what we can offer.

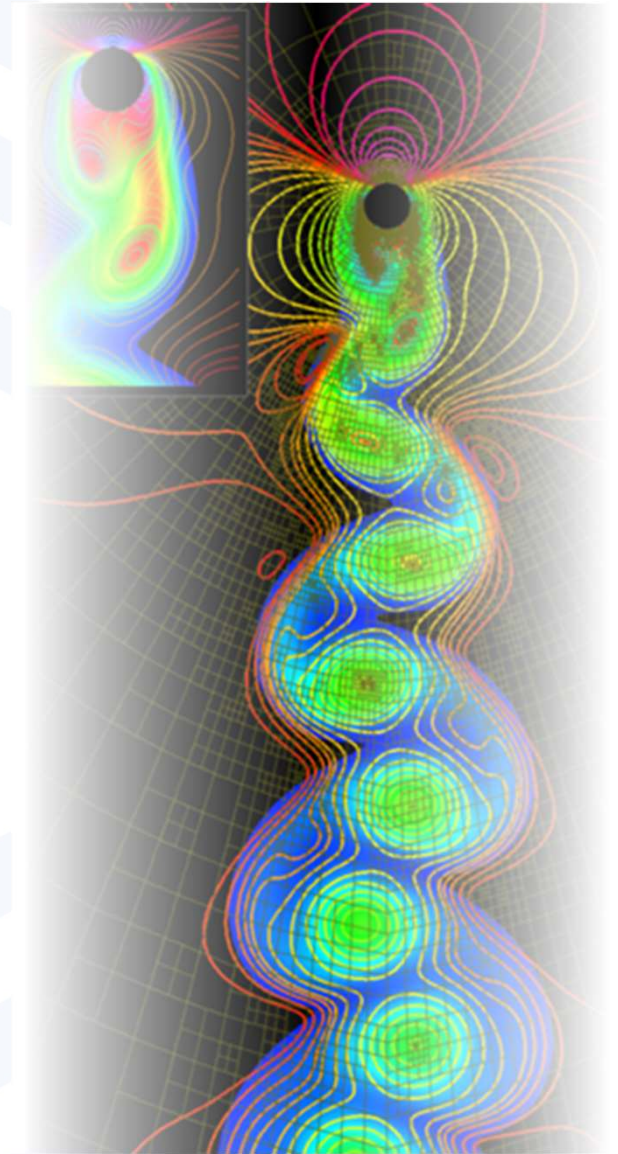


SIMULATING REALITY WITH ANALYSIS – CAE

DOCAN have the tools and expertise to simulate a wide range of thermo-fluid engineering problems. Using co-simulation within our suite of software, effective Fluid Structure Interactions (or FSI) can be simulated, where the response of a structure to the fluid flow has an impact on the fluid flow until an equilibrium state is met, whether that is steady-state or transient in nature.

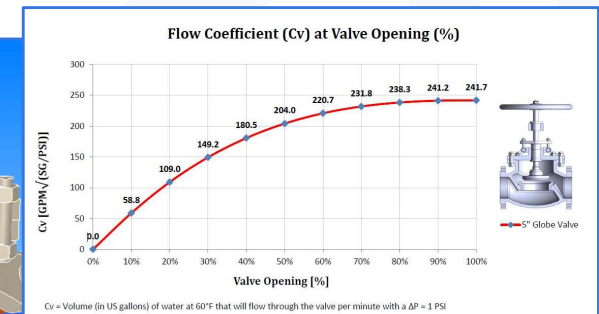
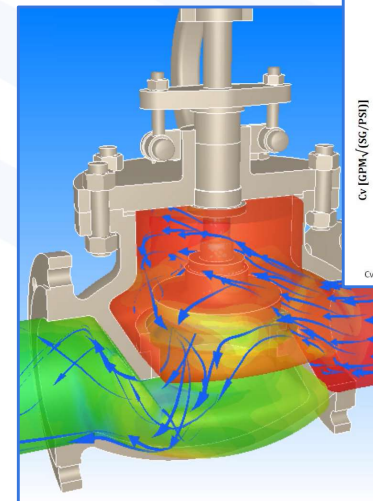
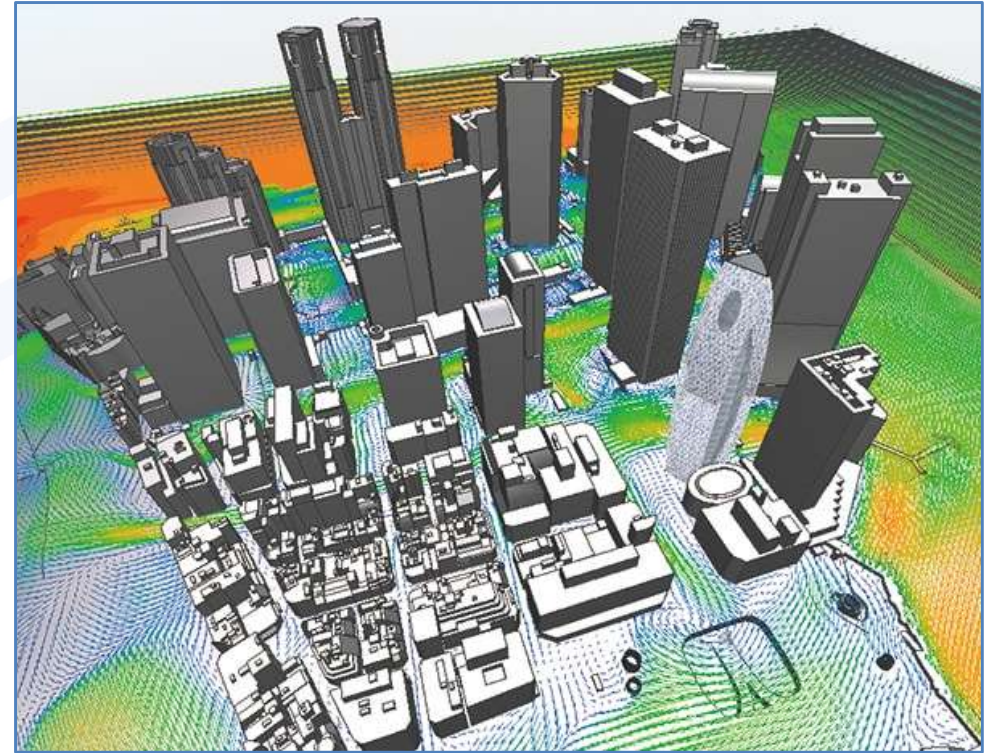
Global network models and full 3D CFD can be used to represent complex fluid flow, where characteristics of a piece of equipment are required for inputs, or the wind load imparted on an entire building. We use cutting edge CFD software which offers a series of practical, state-of-the-art CFD simulation and visualization tools, and our CFD tools can incorporate Multiphysics cosimulation to achieve couplings with Structural, Acoustic, Electromagnetic, Mechanical, OneDimensional, Optimization, Thermal Environment, 3D CAD and other relative analysis tools, to improve the accuracy of the simulations.

With our CFD software, we can model effects such as cavitation, aeroelasticity and erosion whether that pertains to equipment, buildings or land. This can be applied to model full HVAC responses, hydroelectric facilities, or piping networks



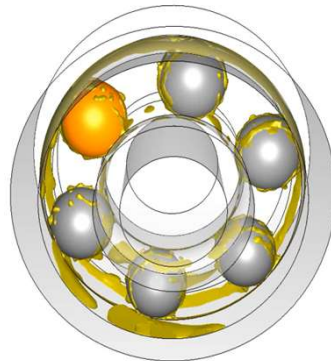
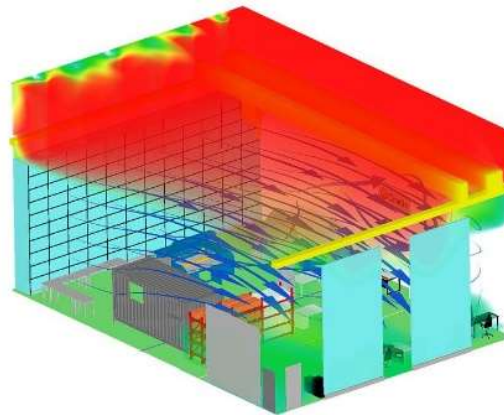
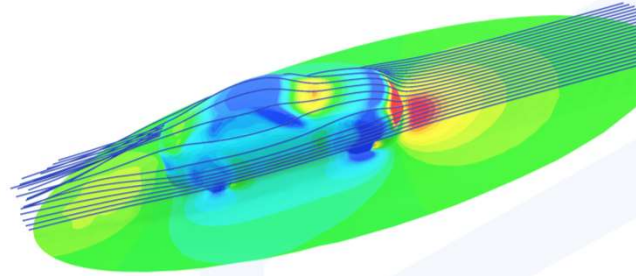
SIMULATING REALITY WITH ANALYSIS – Fluid Dynamics

- DOCAN have the tools and expertise to simulate a wide range of thermo-fluid engineering problems.
- Global network models and full 3D CFD can be used to represent complex fluid flow, produce required characteristics of a piece of custom equipment, or the wind load imparted on an entire building.
- We use cutting edge CFD software which offer a series of practical, state-of-the-art CFD simulation and visualization tools.
- Our CFD tools can incorporate Multiphysics co-simulation to achieve couplings with Structural, Acoustic, Electromagnetic, Mechanical, One-Dimensional, Optimization, Thermal Environment, 3D CAD and other relative analysis tools, to improve the accuracy of the simulations.



SIMULATING REALITY WITH ANALYSIS – Fluid Dynamics

- Using co-simulation within our suite of software, effective Fluid Structure Interactions can be simulated, where the response of a structure to the fluid flow has an impact on the fluid flow until an equilibrium state is met, whether that is steady state or transient.
- With our CFD software we can model effects such as cavitation, aeroelasticity and erosion whether that pertains to equipment, buildings or land. This can be applied to model full HVAC responses, hydroelectric facilities, or piping networks.



Some of the areas where our engineers can help:

- Pollutants dispersion in urban environments
- Natural ventilation analysis for Green Mark certification
- Data center cooling, airflow and CRAC balancing design and analysis
- Noise reduction and acoustic analysis
- Explosion and combustion analysis
- Macro and micro climatic analysis
- Sloshing analysis
- Fire and ventilation analysis
- Heat transfer and thermal analysis
- Fatigue and fracture analysis
- Water treatment and filtration analysis
- Evaporative cooling
- Green water loading analysis
- Wind driven rain



SOFTWARE

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:

INDUSTRY LEADING SIMULATION & ANALYSIS TOOLS

- ANSYS FLUENT
- ABAQUS (STANDARD/EXPLICIT)
- MSC SOFTWARE

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

WE ALSO USE A RANGE OF PRODUCTS COVERING:

- ENGINEERING MATHEMATICS & AUTOMATION
- PRESSURE SYSTEMS DESIGN
- 2D DRAFTING & 3D CAD

1D THERMO-FLUIDS 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.

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

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