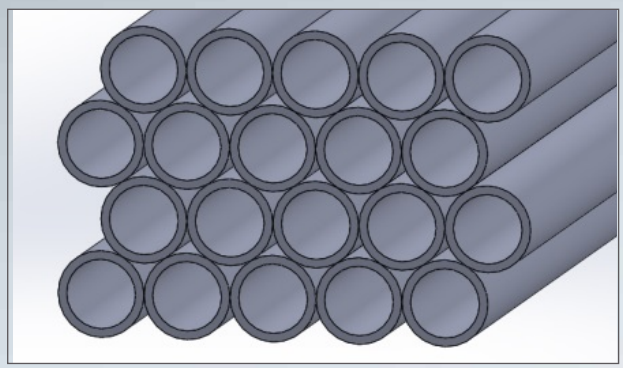
Case Study

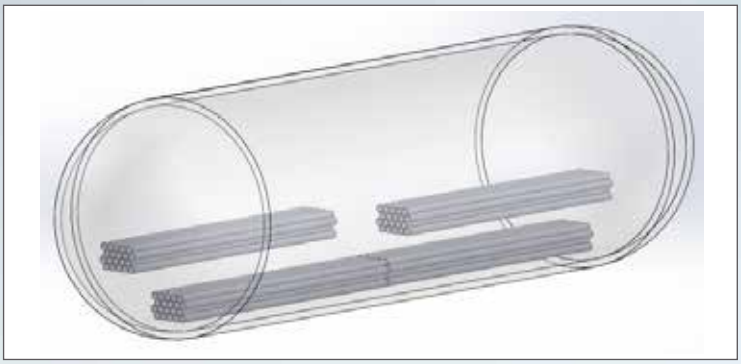
BESPOKE SOFTWARE DEVELOPMENT: COMPLEX TUBE BUNDLE FLUSHING PREDICTION TOOL

Often, bespoke software applications offer an advantage over the use of existing commercial numerical simulation packages. DesignFlow have the ability to develop software that can allow the client to specify exactly which functionality is required, offering full control over how it is packaged and presented, rather than trying to adapt existing tools for a very specific purpose.

A leading manufacturer of precision tubing commissioned DesignFlow to assist in improving the efficiency of a process that removes the surface coating of oil introduced during tube manufacture.

The requirement was to estimate the behaviour of flushing fluid flow through bundles of tubes of varying length, diameter and wall thickness arranged within a sealed flushing chamber. Traditional computational codes would introduce a great deal of complexity to the project without offering the client the flexibility of a tool they could use themselves at any time; instead a bespoke software tool was created.

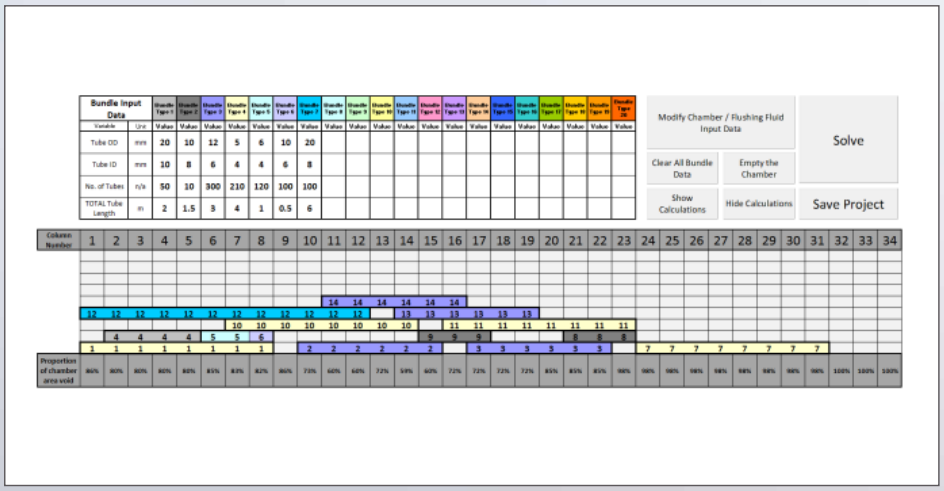




Visual Basic for Applications was used to develop a program based around a simple graphical interface allowing users complete flexibility in defining bundle types and locations.

It used a custom written, matrix – based, linear solver to compute solutions to the hundreds of simultaneous equations that describe the complex relationship between pressure and flow through each tube bundle.

Automatic 'behind the scenes' post – processing of results provides comprehensive information on individual tube fluid flow-rates, flow regimes and fluid residence times without the need for any further work.



> "Working with DesignFlow has given us a much better understanding of our flushing process, showing how and why proposed changes can improve its efficiency in the future."
>
> **Engineering Director, Client Company**

UNIVERSITY OF PLYMOUTH

DesignFlow is a specialist consultancy and research group operating within Plymouth University. We offer a range of CFD, engineering analysis and product development services to industrial clients and research partners.

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