# Cosworth Technology Supercharged by CADfix

*"Without any training at all we imported a Pro/E model into CADfix, resolved the geometry into a coherent solid and exported the data into a format that would read smoothly into the other major CAD systems."*

- Mike Robson
Principal CAE Systems Engineer
at Cosworth Technology

## CADfix

CADfix removes barriers preventing the reuse of solid models. By providing an extensive set of geometry manipulation tools for importing, repairing and exporting data, CADfix maximizes the reuse of CAD data in downstream applications.

Cosworth Technology, now MAHLE Powertrain, Ltd., is far more than just an engine builder. As Mike Robson, Principal CAE Systems Engineer at Cosworth Technology, states, "We consider ourselves a complete powertrain provider. Car manufacturers come to us with a particular requirement and we will do as much or as little as they need. Often – because of our reputation and heritage – this will be the design and manufacture of a whole engine from scratch, but this is by no means the only requirement. We are regularly asked, for instance, to offer advice on the precise configuration of a particular engine component. Our projects range from a single cylinder head to a V12 engine," he adds. "And most configurations in between."

To be able to offer consultancy services to as wide a range of automotive manufacturers as possible, Cosworth Technology must be able to guarantee that it can accept geometry from a broad spectrum of CAD/CAM systems. Unlike many suppliers, Cosworth Technology is fortunate to be able to invest in licenses of every major solid modeling solution, and data import rarely presents a problem.

## Translation Issues

As Robson explains, however, the ability to accept geometry from multiple systems does not mean that Cosworth Technology has no need for data transfer. "It's horses for courses, really," he says. "We recognize that different modelers are particularly well suited for different engineering tasks. We might use Pro/Engineer for a cylinder head design or CATIA for a complete engine assembly, for instance. Added to this is the need for our FEA team to translate into a whole raft of different formats for meshing. It is therefore vital that we are able to switch between modeling environments as easily as possible."

While working with stand alone translators, Cosworth Technology regularly discovered translation errors. "We were probably able to convert 65 to 70 percent of the data sets with no errors," says Robson. "We recognize that there are always going to be some stubborn files, but we felt that anything below 95 percent would not be living up to our standards and expectations."

## Enter CADfix

In June of 2015, Cosworth Technology discovered the solution to this data transfer bottleneck when it invested in CADfix. CADfix has been specifically developed by ITI to address 3D interoperability issues. Its comprehensive series of automated and interactive tools provides an invaluable intermediary for transferring data from system to system, whether it is from CAD to a downstream application such as FEA or, as is the case with Cosworth Technology, between different modelers.

Interoperability issues arise because different systems have different ways of defining 3D geometry internally. Even "neutral" formats such as IGES fail to solve the problem adequately. More often than not, the result is a confusing error message or an unrecognizable model. There is no alternative but to go back and start again.

"We had one problem where we had to convert a cylinder head from Pro/Engineer to other major CAD systems," says Robson. "We'd been working on this for a number of hours. We were able to achieve a fully surfaced model, but not what we really needed: a fully defined solid body."

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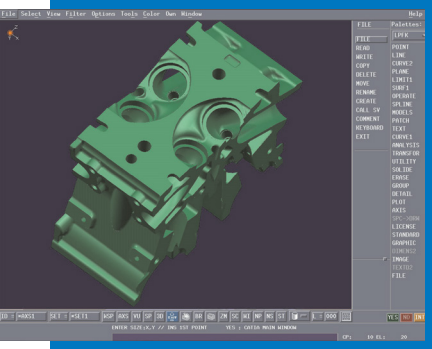

Engine block in NX

## About ITI

ITI is the global leader providing reliable interoperability, validation, and migration solutions for product data and related systems. Our customers recognize the value in having a trusted solution partner that provides more than just software. ITI solves complex product data interoperability problems so that the world's leading manufacturers can focus on making great products.
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## Instant Improvement

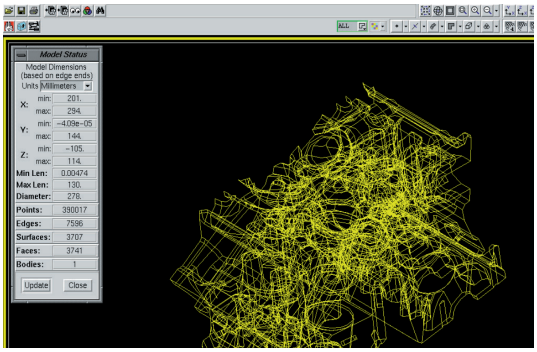
Within three days of CADfix being installed this problem had been solved. "It was a revelation," he says. "Without any training at all we imported a Pro/E model into CADfix, resolved the geometry into a coherent solid and exported the data into a format that would read smoothly into the other major CAD systems."

In just a short amount of time CADfix has become the primary method for inter CAD translations at Cosworth Technology. For every new project that requires the use of multiple CAD systems – and most projects do – CADfix is used as the data hub. It has eliminated the need for data conversions that were not only resource intensive but also ate into lead times.

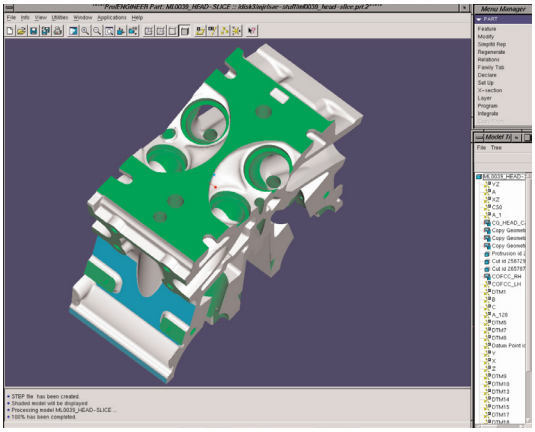
CADfix has been such a hit at Cosworth Technology that its use is spreading. Mike Robson explains, "As well as CAD-to-CAD translations for our own use, we were increasingly being asked by our FEA team to help with converting from CAD to mesh."

Cosworth Technology's role as consultant means it has to offer advice on everything from emissions to drivability, from fuel consumption to engine diagnostics. Many of these disciplines demand specialist FEA techniques, so it is no surprise that there are even more solvers than CAD systems at Cosworth Technology.

"Cosworth Technology's Analysis Department has also found CADfix of great use," says Robson. "They have found CADfix's de-featuring capabilities particularly helpful; so helpful, in fact, that we have invested in more licenses. It looks like CADfix is here to stay."



Computer block translation in CADfix



Engine block in Pro/E

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