

A Leaner Manufacturing Case Study

Control valve manufacturer Bifold wanted to drive changes in their manufacturing processes which would cut costs and deliver measurable improvements in reliability and performance.

Using ShapeSpace 3D search technology to search their entire part reference library and identify all parts manufactured from the same raw material, Bifold were very quickly able to consolidate manufacturing processes and improve efficiencies.

Quality part manufacturing

Manchester based Bifold Group design and manufacture control valves and accessories for demanding engineering environments. Quality, safety, performance and reliability of their products are essential as they are used in hazardous, corrosive and subsea situations.

Too much unproductive 'down time'

Valves are made up from a range of stock component part designs held in a part library, which has grown to almost 60,000 different parts. If components are physically in stock, the company is able to turn a job around extremely quickly, depending on batch size. If components are out of stock, they have to be machined before any assembly can begin.

To meet order demands, Bifold's machine shop was spending a lot of time tooling-up and making adjustments to machinery as they constantly juggled component runs with customer requirements. The company was not realising the potential of their existing capacity - they were operating inefficiently, which compromised workflow and extended delivery timescales.

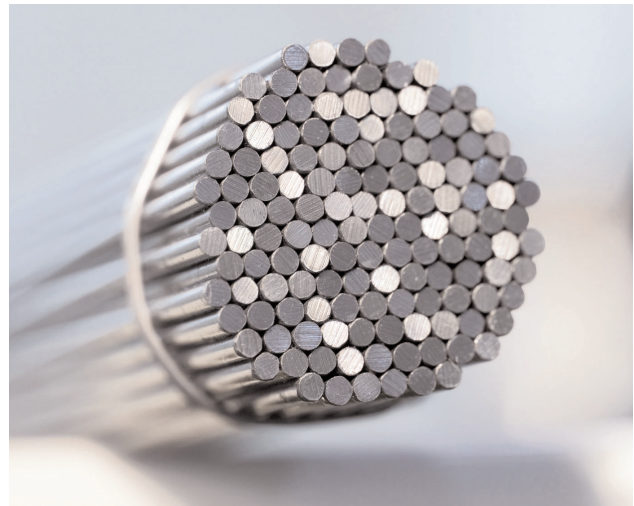
Component parts are manufactured out of stainless steel bars in a range of standard sizes. Bifold use ten variants of steel bar for the majority of their parts.

Reduce costly tooling-up time

Mike Peacock, General Manager at Bifold, wanted to minimise the disruption of constantly switching manufacture from one component part to another, by grouping all components made from the same steel bar into a single process. They would then only need to tool-up once for each steel bar variant.

Simple reprogramming of the machinery would allow them to seamlessly switch manufacture to another component that utilises the same steel bar as its source material, resulting in assembly line continuity and a constant stock level being maintained.

Manufacturing with an economy of scale would reduce costs, improve customer service and enhance business growth without compromising on quality.



Mike's 'lean thinking' would shorten lead times and increase throughput and productivity, giving them a greater market opportunity and competitive advantage. But there was one problem.

Name that Part

How would they identify which parts were manufactured out of the same steel bar? Their part numbering system gave no clue to what sort of part it was, or the size and shape of bar it was manufactured from. All part numbers were computer generated on an ad-hoc basis. A valve body BV0044/02 1/2 inches could be listed next to a locking bracket BV0045/02. Going through a part library of up to 60,000 items manually was not an option. *"It was a nigh-on impossible task"* said Mike Peacock. *"If we were starting again, we would implement a more intuitive part numbering system, but this is what we have, so we needed to find a way around it."*

A 3D shape search tool solves the problem

ProcessFlows supplied Bifold with ShapeSpace 3D search technology. ShapeSpace searches part libraries and databases for all items of similar 3D shape or size. Part name and number is not needed.

All parts matching the 3D search criteria are presented collectively on screen in a layered, 3D visual format for easy identification, along with part number and full documented specification. At Bifold, this includes the steel bar sizing used to manufacture the part. They now have all the information needed to be able to verify each part number against the correct steel bar needed to manufacture that part.

"It was impossible to identify parts from their part number. If we had not discovered ShapeSpace, I think we would have had to put our consolidation plans on hold while we totally overhauled our parts numbering system. This does not make good business sense in an ever more competitive market which requires companies to output more with less resource in order to keep up with the competition" said Mike Peacock.

A leaner manufacturing process

By grouping together all parts made from the same steel bar, Bifold has been able to consolidate their part manufacture and dramatically reduce the time spent chopping and changing between jobs and reconfiguring machinery.

Bifold now maintain a constant level of physical stock parts, including 'one-off' parts and infrequently used parts, which are manufactured as part of the consolidated process at no extra cost.



"As well as being leaner, greener and more efficient, we are able to turn around customer orders in a more reliable timeframe as the majority of parts are always 'on the shelf'. Even bespoke jobs that require a very unusual part have been speeded up as ShapeSpace is able quickly search our part library for an existing part design that we probably did not know we had, so there is no need to redesign the part again from scratch."

Mike Peacock, General Manager, Bifold.