

## Contour finds Preactor Production Planning and Scheduling to be First Class



Contour Premium Aircraft Seating is one of the leading premium aircraft seating manufacturers in the world supplying to many leading international airlines. Headquartered in Cwmbran, Wales, the £100m turnover company employs 800 people across its 2 main sites which operate as a mini supply chain with the primary manufacturing and sub assembly business directly supplying the final assembly and sales business.

Serving the premium end of a market which already demands the most rigorous levels of quality, consistency and traceability requires absolute precision at every step of what is a highly complex manufacturing process. When Contour needed to invest in upgrading its existing production planning and scheduling capabilities, it found the first class solution in Preactor.



Those fortunate enough to have flown First or even Business Class will appreciate that the word “seat” does not do justice to the modern travel environment such seating provides. In addition to a multitude of seating and sleeping positions, each unit provides an array of audio visual possibilities as well as a growing number of communication options. It therefore comes as no surprise that each seat comprises between three and four thousand top level parts from a range of almost 100,000. In order to ensure the required levels of quality control, 70% of all components are manufactured in-house including 90% of all metal items. Add to this the fact that Contour typically manufactures 200 seats per month with each seat costing up to £85k and the scale of the company’s production planning and scheduling becomes clear.

However, as Planning Manager Leyton Hancock explains, this barely describes the true complexity involved. “When we say we manufacture the vast majority of each seat, we are talking everything from every metal fixture and fitting, through to the majority of every moulded part, most composite elements, the soft furnishings including leather, even the wiring harnesses that control the electrics. Quite often, the only Top Level Parts we are supplied with is customer specific audio/visual equipment and actuation systems, although even here, if a customer has a deal with an

existing supplier, we will have to use those supplied components.” All of the above is handled by over 40 CNC machine centres plus a range of further metal working cells, 6 vacuum forming areas, 10 fabrication related centres, and further departments dedicated to composites and electrics. Furthermore, there are various stages of sub assembly involved at different points in the manufacturing process before the final collection of parts and sub assemblies are dispatched to the main assembly site for completion.



All this would be difficult enough to manage if each seat was standard but every airline requires different levels of customisation to an order so in effect, each order is treated as unique although one which may use many existing part numbers. In terms of time scales, turn around per unit is approximately 2 weeks although as will be already apparent, there is a huge amount of sequence dependency involved during this process. It is no wonder that Hancock says that success depends very much on ensuring the right component for the right product is at the right place at the right time with the right resource being available to action the next step.



Much of the nature of Contour’s manufacturing adds to the innate planning and scheduling challenges that already exist. Firstly, many processes involve specific resources which can potentially become bottlenecks due to lengthy setup times. In some situations, setup times can range from 20 minutes to 8 hours while production runs can be as short as 30 seconds yet as long as 2 days. Optimising batches and sequence dependency can have dramatic impacts on the smoothness of flow. Hancock notes that there can often be a difference between perceived bottlenecks and actual bottlenecks which only adds to the difficulties. “There had been a long held view that a press brake operation which was quite time consuming was acting as a bottleneck

with people working to resolve this. On investigation it turned out to be a completely different process further upstream which operated much quicker but had deceptively long setup times.” In addition to this, the high levels of manual labour involve introduce significant levels of fluctuation as different workers may work at different rates, all of which can again impact of the smoothness of flow.



As Hancock points out, this is all assuming you have the materials in the first place. “Given the huge variety of what we manufacture, we inevitably deal with a great many suppliers, some of which are more reliable than others.

Depending on the product being supplied, we can be dealing with lead times ranging from hours through to weeks if not months.

All of this has to be not just managed effectively but to be visible in the first place so we can have the required levels of visibility across the entire manufacturing process. It’s simply unacceptable to not have the required part available as it can completely jeopardise every subsequent process.” It’s not just a matter of having high buffer stocks because some parts, notably certain plastics, can cost over £600 per 1.5x1.5 metre sheet, all of which adds up to costly Work In Progress (WIP).

In terms of order generation prior to investing in Preactor, Contour used an ERP system located in its final assembly site to generate orders which were supplied to the manufacturing site from which a meaningful schedule needed to be generated. All of the above understandably create considerable difficulties in terms of generating such a schedule and in a meaningful time scale.



Given the sheer scale of variables involved, it’s no wonder that the large family of spreadsheets which were used to generate the plan struggled massively with the task. Hancock is to the point when he says, “some of these spreadsheets were very clever, but at the end of the day they were still spreadsheets.” He continues, “In some cases a single spreadsheet might take 30 minutes to open due to the number of embedded macros.” With the number of spreadsheets involved numbering in their hundreds, it’s no wonder that generating a schedule could take days not hours and even then, it would be out of date before it could be distributed effectively across the production floor. “Not only did we struggle with control of the schedule, we couldn’t compare actual progress on the production floor with the projected schedule. Consequently our Capable to Promise (CTP)/ Make to Promise (MTP) dates were very poor. We’d often have to take 3 to 4 attempts to get an accurate CTP/MTP date.”

Aware of the problems, the company had already invested in a planning and scheduling solution called Orchestrate which it had hoped to integrate with its existing ERP system. However, this floundered at the pilot stage and never got off the ground. Whilst not at the company at this time, Hancock explains that the primary reason was that the system was specc'ed incorrectly. "In short, the company didn't fully understand what it wanted and how such a system need to run in order to deliver the results Contour required." Hancock's arrival at the company coincided with the appointment of a dedicated Lean Facilitator and represented the management's recognition that the best way forward was to have Lean and Planning working together. At the heart of this was a recognition that any scheduling had to work with finite capacity and be able to adapt to the ongoing changes in workflow that moving towards a Leaner model of manufacturing might entail. As Hancock reflects, "We needed an evolutionary, not a revolutionary product."

The product Hancock had in mind was a production planning and scheduling system called Preactor from Preactor International. Hancock had previous experience with the system and recognised that the inherent flexibility, scalability and power of Preactor were all key ingredients that Contour needed. Moreover, he also had very positive experiences of working with the company and key individuals within Preactor. The importance of this was amply demonstrated when Hancock approached Orchestrate with the express intention of evaluating the product against Preactor to see if Contour could make use of its initial investment. "Their first response was to say that it would cost £30k to make the changes we required. In addition to the expense raising eyebrows, it also confirmed that Orchestrate lacked the inherent flexibility and customisation potential we needed. We have a lot of in-house expertise and we knew that if we had a product that we could adapt ourselves, we would have the product needed to deliver all the benefits we required."

The decision was therefore made in June 07 to invest in a Preactor Enterprise system that provides 5 local area schedules and one master schedule. What followed was an in-depth implementation period lasting 6 months during which all existing business data had to be extracted from the company's existing spreadsheets and ERP system and entered into Preactor. The most time consuming work however lay in compiling all the data that didn't exist systemically in order to generate accurate Bills of Materials and routing information that could cope with products of this complexity extending over 2 sites.

6 months later and the information flow at Contour is now very different. All relevant data is now imported on a weekly basis into Preactor from the ERP system immediately after an overnight update of the ERP data. Shortage data is flagged up by due date from the ERP system and a master schedule generated which automatically sequences all jobs taking this into account thereby creating a top level plan. This is then exported to each local Preactor system where relevant fine tuning is performed before being distributed to the shop floor in terms of Work-To lists. All updated information is fed back into the ERP system which is then used to generate the next schedule when required.

While only in the early stages of developing the system, Preactor is already delivering significant cost savings and benefits while hinting at even greater things to come. Perhaps the most immediate saving was an £8000 per week reduction in costs in the

| Order No.            | Part No.             | Part Name            | Quantity             | Material             | Unit Cost            | Total Cost           | Status               |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 |
| 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 | 10000000000000000000 |
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Vacuum Forming section alone due to more efficient workflow and better resource utilisation. Not only have bottlenecks now been correctly and incontrovertibly identified, they have now been addressed as part of the overall increase in visibility that Preactor has brought. Hancock estimates that Preactor has directly contributed to a general increase in output of 10% with a corresponding WIP reduction of approximately 40%.

And what of those important CTP/MTP promises? “In terms of CTP, we’re now at least working in the right time zones. We’ve still some work to do but we’re heading in the right direction as we fine tune our system and continue to make progress with our Lean program. The main thing is we’re now making the right thing at the time and this comes down to the fact we see Lean and Planning as symbiotic. Lean provides optimised batch quantities and minimised waste which Preactor can then factor in order to give the best flow. And because Preactor provides such a tight level of control, there’s no ability for people to try and work outside and around the system. The proof is demonstrated time and time again that the system really does generate the best schedule.” He cites as an example the Composites area which has undergone a significant Lean exercise, is controlled by Preactor and which has seen a 70% reduction in WIP.

Such early benefits have increased the company’s determination to complete a company-wide rollout of Preactor which should take a further 2 months and to begin building on the successes thus far achieved. Additional benefits are anticipated by an ongoing tightening up of the Preactor/ERP interface with the introduction of Shop Floor Data Collection (SFDC) equipment in the form of bar code scanners being considered as means to close the planning loop.

Mike Novels, Preactor CEO concludes by commenting on the success enjoyed by Contour. “We know from 15 years experience in the planning and scheduling software business that companies want a solution to fit their exact needs. This means that the ability to be able to change how Preactor works without expensive re-coding is important and with 2,300 companies using our products around the world there are few scheduling problems that Preactor has not tackled. We congratulate Contour on the success they achieved so far. Their feedback will be invaluable to us and we look forward to working with Leyton and his team in the future.”