

Flow Processing at *Hearing Aid Manufacturer*

Introduction

It is not the intention of this document to go into great details as to how flow processing works. Here, we are describing why it was introduced, the benefits and the problems associated with implementation and the outcomes five months later. Included are some unedited comments from staff and managers. Hopefully, the reader will get a rounded perspective of the implementation of flow processing in the UK. We would encourage any sites in Europe who want to consider Flow Processing to visit the UK facility.

1. Why?

The first step in solving a problem is recognising that you have one. In *Hearing Aid Manufacturer*, UK we were always struggling to provide a consistent level of service to our customers. In particular our turn times were variable and could range from 5 days to 12 days, especially in the service department. The results of this were dissatisfied customers, up to 50 telephone calls per day chasing repairs and new orders, lots of overtime being worked, staff being consistently under pressure and potential invoices being tied up as work in progress. It was clear that something had to be done.

2. What were the options?

There were several options available.

- a) **Recruit extra staff.** This is expensive and time consuming, especially for service work. Doing this would also increase our cost of sales that would make us less profitable.
- b) **Work longer hours.** Overtime is fine for short periods but is expensive and, if worked for long periods can reduce the performance of staff and affect quality.
- c) Carry on as we are. This was not a viable option, as we would lose business to our competitors. We need to beat them in all areas, not just product technology, and manufacturing is a key competitive area.
- d) **Find a more efficient way of manufacturing.** Flow processing had been introduced in our *sister division* with great success. The concern was that *sister division* only manufactured programmable aids whilst the UK had a full range of analogue products some of which involved the building of faceplates from start to finish. The same was also true for service work.

It was clear from the above that a new and more efficient manufacturing process was the most useful area to investigate. A system that could deliver higher efficiency, improved quality and yet reduce costs would be ideal. After attending an initial course on Flow Processing it was decided to investigate implementing this in the UK.

3. The challenge.

In July 2000 *Hearing Aid Manufacturer* in the UK was quoting 10 days turn times for service work and 7 days for new orders. The manufacturing organisation was split into service (in a separate building) and new orders. The service department had one manager, four admin staff, two team leaders and ten technicians. New orders had one manager, two order entry staff, six team leaders and twenty two technicians. Technicians were working overtime in the evenings and weekends. The layout of the laboratory for new orders was based on tasks (shell section; wiring section; casing section; cosmetic section; etc.) Between each section there was a pile of work in progress.

4. The implementation

It was decided that the implementation should be fast in order to preserve the momentum once the project has started and the same consultants as used in the U.S. would be used to ensure consistency. The latter posed a challenge since it would be uneconomical to have the consultants come over frequently and be constantly available. We therefore proposed a schedule that would make best use of their time.

Visit One: Training and Planning

Project Duration: 5 person/days – 2 days of training plus 3 days consulting
Start Date: 14 August 2000
End Date: 18 August 2000

Visit Two: Data Gathering and Process Design

BPCG Personnel: 2 staff
Project Duration: 20 person/days
Start Date: 28 August 2000
End Date: 8 September 2000

Visit Three: Live Flow Processes

BPCG Personnel: 2 staff
Project Duration: 20 person/days
Start Date: 25 September 2000
End Date: 6 October 2000

The timescales were tight and left a considerable amount of work to do between visits. It was decided that in order to succeed a number of full time staff should be dedicated to the project. The Production Manager, Quality Manager, Service Manager, Training Officer, Shells Supervisor and Operations Director were identified as the team. On day 1 we started from a basis of very little knowledge of Flow Processing.

Before the first day all staff were informed of the project, its' aims and the bottom line that it would be implemented and was not an option. Staff were kept informed as the project progressed and were involved in providing job timings and preparing work instructions.

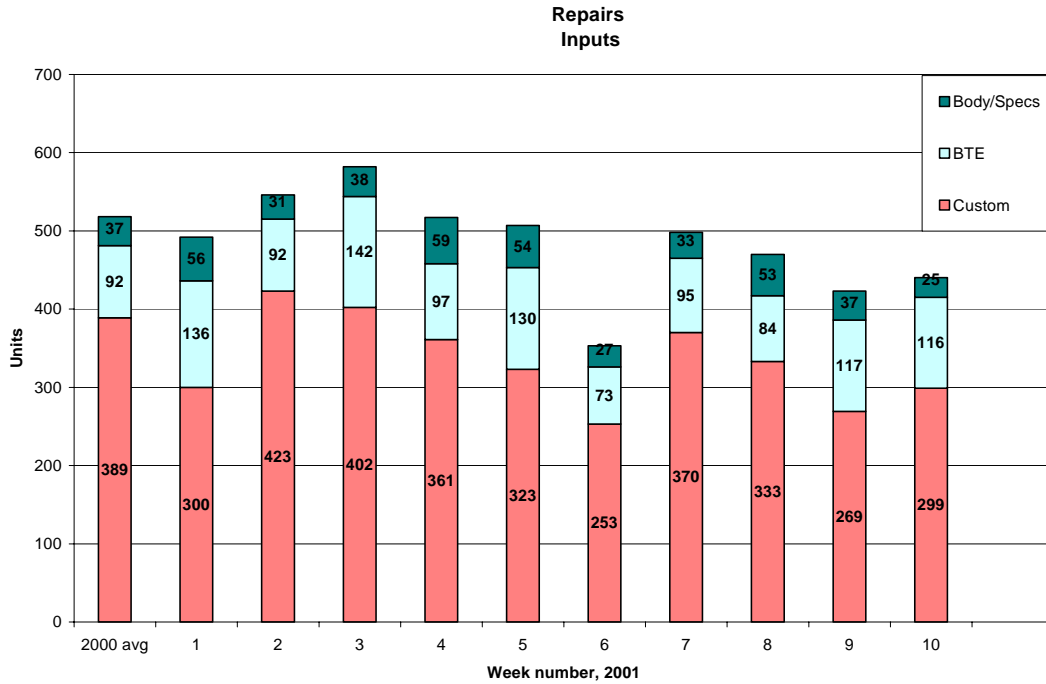
It was not until after visit 2 that we could even consider the design of the new line and implement any building changes required. These turned out be fairly significant and in order to avoid causing problems for our customers were done at night and weekends. Perhaps the most significant change was deciding that there should not be a separate service department as it divided resources and was inefficient.

As we approached the implementation date all staff were given a two-hour training session on Flow Processing and their part in the system. There was some scepticism from staff that the system would work. In particular staff were concerned that they would be turned into robots and their full skills not be used. In section 7 you will find comments from some of the staff.

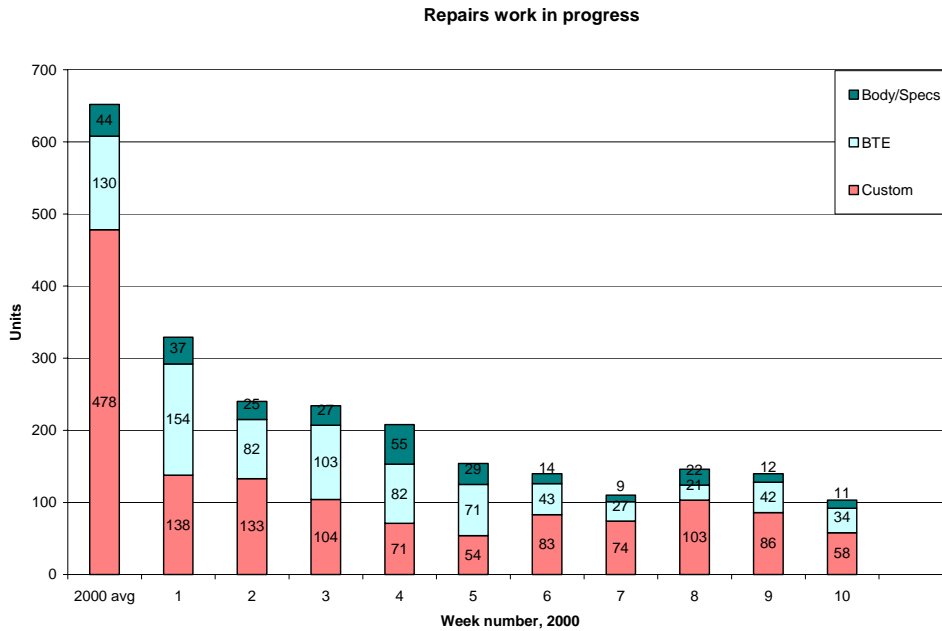
Actual implementation was staged in order to allow a clear focus on what needed to be done. By getting one line working, sorting out the issues and then replicating the line there was minimum impact on customers. The first couple of weeks were a little difficult as we all got used to the new way of doing things.

5. The results

Note that the 2000 average in the following charts included the benefits of flow processing in November and December.

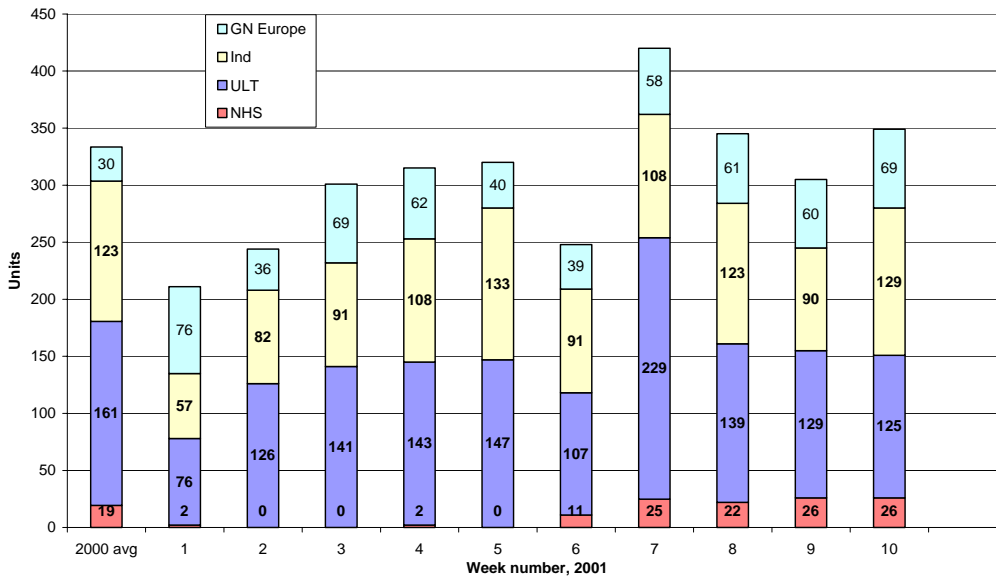


This chart shows the average service order inputs for 2000 and the weekly service order inputs for 2001. It can be seen that service inputs are at a similar level to last year.



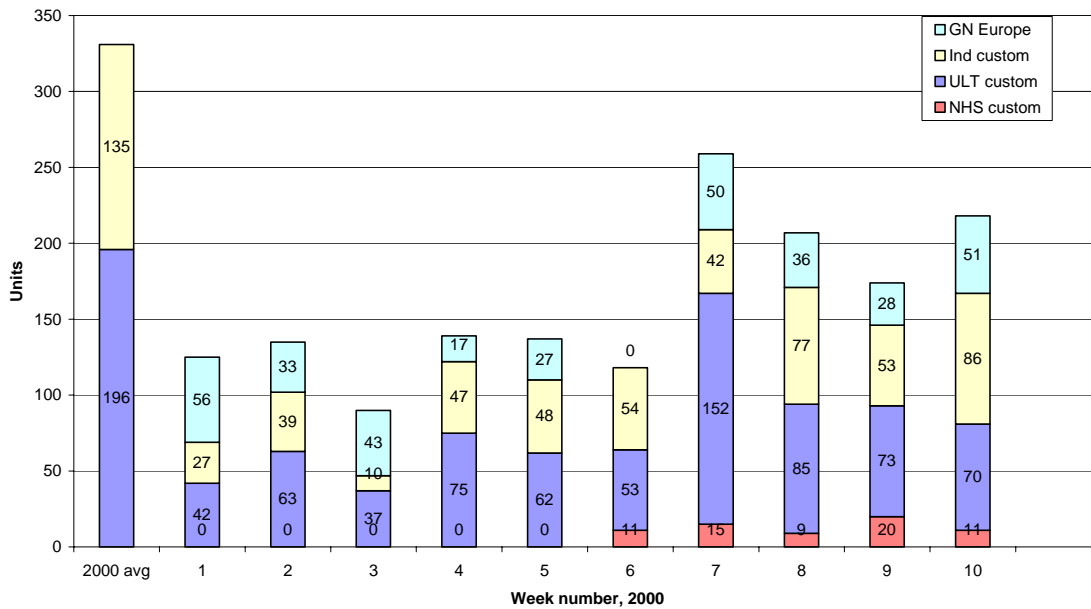
This chart shows the impact of Flow Processing on the service backlog. Turn times for service were at around 10 days, they are now at 1 – 2 days.

New Order Inputs



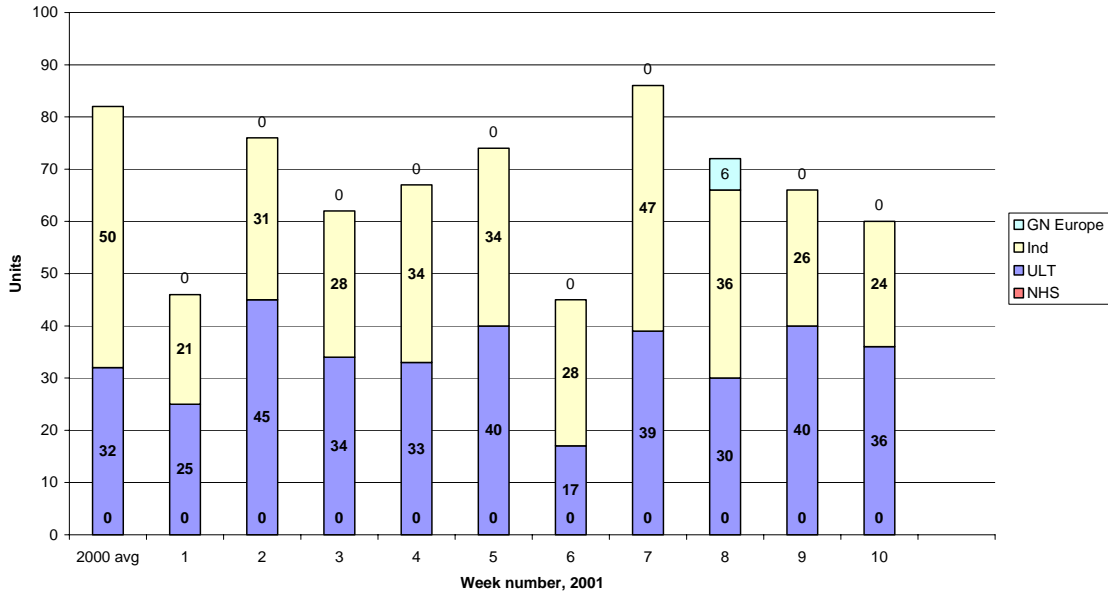
This chart shows the average new order inputs for 2000 and the weekly order inputs for 2001. It can be seen that inputs are starting to increase over last year.

New Order Work in progress



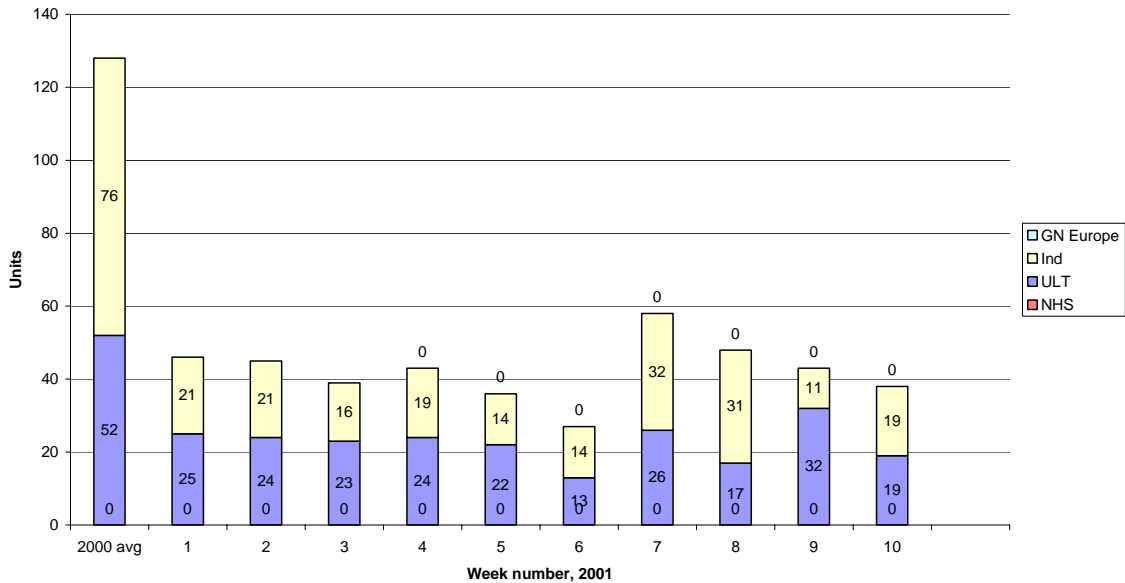
This chart shows the impact of process flow on the new order backlog. Turn times for new orders were at around 6 – 7 days, they are now at 3 days and coping well with the increased order levels.

Remake Inputs



This chart shows the average remake order inputs for 2000 and the weekly remake inputs for 2001. It can be seen that inputs are on average similar to last year.

Remake Work in progress



This chart shows the impact of Flow Processing on the remake backlog. Turn times for remakes were at around 6 days, they are now under 3 -4 days

The above charts show the significant impact that Flow Processing has had on work in progress, and therefore turn times, which have in turn improved customer confidence and service levels.

However, these are not the only benefits. With Flow Processing we find that we are much more efficient which has resulted in reduced overtime, re-allocation of staff and non-replacement of staff who have left. As a summary:

- 5.5 headcount reduction is a cost saving of approximately £60k per annum
- Overtime has been reduced by about £3k / month.
- Customer service phone calls reduced by some 50 calls per day
- Inventory management is much more closely controlled
- Re-allocation of one staff member as a full time trainer
- One manager and one assistant manager replaced two managers and nine team leaders
- Service and new orders back in the same building
- Spare space has been created for future growth

6. Conclusions

There is no doubt that Flow Processing has worked for the UK, turn times have never been so consistent. We have a multi product line that includes programmable, analogue and cosmetic devices that the system was designed to handle. Since implementation we have been busy but the system has not yet been challenged with a sudden large increase in orders. However, we have planned capacity to cope with future growth and the flexibility of the process should allow us to re-act quickly.

It is not an easy path to take but the end result is a more consistent and especially a more visible and controllable manufacturing facility.

The biggest issues are:

- associated with staff resistance
- allocating and maintaining the right project team
- managing the change to building and layouts
- following up and modifying the design as experience is gained
- training

Implementation is only the start and there needs to be constant re-assessment and monitoring. This aspect is much simpler as the new system improves visibility of problem areas and allows us to address them more effectively. We should also mention the help and support provided by *sister division* who freely offered us copies of documents etc. which they had developed.

7. Staff comments

“Flow Processing is working very effectively for *Hearing Aid Manufacturer*, it has succeeded in increasing productivity and reducing turn around times. At the start, even just by rearranging the workstations and making things a bit more organised; there was a noticeable improvement in the way in which people worked. The main advantages of introducing this system, is that it has given people the opportunity to learn and appreciate other various skills as well as their own. Because people are checking each other’s work as they go along, and also flexing into other areas when required, this enables them to understand the whole process of building a hearing device much better than when they are just concerned with their own part of the job. These methods also encourage teamwork, as everyone is working together at every stage, in order to pick up any faults or queries, which can now be dealt with more directly. The one disadvantage is that some skills have had to be broken down quite drastically in order for the system to flow properly and this does mean that some jobs have become more repetitive” – Karen, production worker.

“IT DEFINITELY WORKS – Before Flow Processing we were 10 – 14 days behind with repairs. During holidays it was longer. Now it is 24 – 48 hours turnaround. Most important, it is better for the customer – without the customer we would not have jobs. On the profits side of it, it has to be better as before Flow Processing there was overtime and outwork. That has now ceased so therefore wages etc has reduced and so has improved revenue and profits. Well done to everybody involved as it probably was a big decision to make but it works.

Downs of Flow Processing (as we were told at the meeting with the BPCG consultants) Flexing up and down the lines is not being done. It (work) is being moved across from one line to another at the same workstation. So you don’t really need multi-skilled workers. We were told that multi skilled workers would be needed. We were told that told that our jobs would be the same but that we would just be doing them in a different way. (Personally my job is completely different). We have more skilled workers working further down the line with far more knowledge and skills than Diagnostosers. So frustration comes into the workplace when there are problems with aids and you have to go to the Diagnostosers.” – Dorothy, production worker

“The impact of Flow Processing on the business activity should not be understated and its successful introduction reflects the need to appoint a committed team to oversee the whole activity. Clearly the benefits of the system are already significant as stated above. However there is more to optimising the system than maximising the throughput if we are to make best use of all resources. We are not complacent and the current process review will result in further improvements, which will facilitate the assimilation of future expansion of product and capacity. In addition the inherent quality control aspects of the system, when fully effective will eliminate rejects from the manufacturing activity. Flow Processing may not have been the only option but results suggest that it is appropriate and relevant to our future business”. – Quality Manager.

“As the production manager I am responsible for the day-to-day running of the department so as you can imagine Flow Processing has had a big impact on me. Before the days of Flow Processing as a department we were continuously under pressure and fighting a losing battle trying to keep turn times down and dispensers happy.

Since the implementation of Flow Processing by the BPCG experts in October of last year the transformation to the UK operation has been amazing. Looking back to just twelve months ago it would have been difficult to have imagined that such improvements in efficiency would have been possible in such a short period of time. Turn times for both new orders and repairs have come right down, but moreover we have achieved this without the need for overtime and with fewer members of staff.

The system has given us back control, with more flexibility. We can manage the department far more easily and effectively, if there is a problem in any area it shows up very quickly and action can be taken to rectify it.

In short Flow Processing has delivered efficiency, consistency and accountability. I feel that we now have an operation in the UK that we can all be very proud of". –

Salvatore, production manager

“IMPLEMENT FLOW AS SOON AS POSSIBLE.

The consistent turn time on repairs and new orders makes all the difference; the drop in complaint calls to move to the top of the priority order is dramatic. With the reduction in chasing this allows time to spend on other projects. The benefits far outweigh the implementation time required.” –

Les, ex service manager

“When Flow Processing first started I must admit I did not think that this would actually work, but it has been proven that it does work, because in a short space of time we have gone from a 15 day turn around to 3 day turn around. We still need to work more as a team and lost more check – do – check. Also, more cross training so people are more flexible” Janet, QC

“From my perspective the main advantage of Flow Processing is that I have direct access to the caser. i.e. any problems can be dealt with in ‘real time’. I also have a greater understanding of the problems faced at the next stage of production and work together to over come them”

John, wiring

“I think Flow Processing was the right way forward, we have cut turnaround times considerably and are more consistent. Although it was hard to start with because of the changes in the way production was done. It relies totally on team work and I feel with more hard work we could be one of the most efficient manufacturing plants in the group” – production worker

“There was a lot of disruption at first and people felt they were being watched all the time”...”At the time this started new order were taking 8 days in house and repairs 10 –12 days, We were turning out 120 – 140 products per day. Today (17th October) we turned out 183”....” There were some initial problems with staff personalities which have now been addressed”

Sally Anne, wiring, October 2000 (3 weeks after implementation)