

Garment Engineering

Gone are the days when we used to look at garments as a piece of Artwork and charge for creativity and make sufficient profit, the days when we used to get enough duty drawback and Tax exemptions, when the margins were thrice as much and the labour was cheaper and we could afford to be non compliant. We used to get 47 Rs to the dollar.... but the Golden era seems to be over!!!

Coming back from the flash back, now we are confronted by a totally different scenario. Duty drawback is reduced, Dollar is only Rs 39 to the Rupee, wages have gone up by 40% in some states. With all these odds against us survival is becoming tougher and we need to start looking at our industry with a different perspective ... We need to innovate!



This is a free trade economy and hence we have advantages provided we intelligently look at the structure of our business and change it to suit the need of the hour. Garment making is not an art anymore, we need to consider scientific ways of doing things, and Garment engineering is one of the techniques which, if done at the right time by the right people can bring long term benefits to the business and will change the profitability of the company.

We let the buyers tell us how the garment should be constructed BUT it's us who have to make it, and being the manufacturing experts that we are, we should be telling them what is most suitable for production!

Do you send the samples without putting enough thought into how they should be made? Then we have a sealed sample on which we start doing R&D at the production stage but it's too late by then!!

Talking about R&D, in any well run organization R&D is a huge part of the business. To survive and compete we need to change our mind set and we need to start to question every cent that we spend in making of the garment.

Garment Engineering

Garment engineering is a questioning technique, it questions each process/operation of the total work content and by using innovative methods of construction and technology you can reduce the work content and increase profitability.

Garment Engineering – where should it begin?

It should start in the design cell, because if we do this at the production stage it's too late, garment engineering directly affects the costing so it must be done at the development stage.

Designers, whilst designing, **must** look into the manufacturing aspect of the garment, they must understand the skills and strengths of the company and design accordingly, this may be difficult because it can reduce their freedom, but creativity within constraints is even a bigger challenge for them.

Who should be involved?

Designers, Sample room manager, Industrial Engineering department and production management all of them should give their input from cutting to finishing. Be sure that one person per department is involved. But be careful **Everyone's responsibility is no one's responsibility**

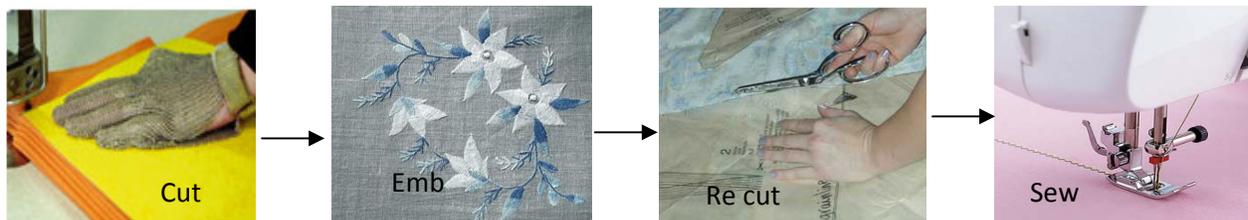
Processes involved in Garment Engineering

Start by carefully writing down flow of the garment listing the entire work content from cutting to dispatch. Under each process describe how it is done, checking the way it is done, trying to find a better or simpler way.

Process Flow- Is defining the sequence of the various stages through which the garment will pass.

E.G. If a Garment has embroidery before sewing and then washing afterwards the process flow would be:

CUT—EMBROIDERY—RE CUT-- SEW – WASH—FINISH





Whilst doing an engineering assignment one should define the processes first, it may be possible in to change the process sequence to simplify the Garment or to improve Fabric consumption.

For Example:

Taking the above sequence if the Embroidery lead time is 5 days, then planning must take this into consideration these 5 days will be added to each of the functions that precede this activity. This delay would ask the Engineering department “could the sequence of activities be altered to avoid this delay” I.E. Can the embroidery be done after the garment has been sewn, if this is the case then blocking can be avoided and perhaps this would result in a saving of fabric and labour.

Steps for Garment Engineering – we use the term CRAFT

1. **CHOOSE** – the operation / process to be studied by making sure it is worthwhile spending time to improve it.
2. **RECORD**-every detail about the job, even if it seems to have no effect on the method; sometimes the most minor detail can make a huge difference in the Garment Engineering process.
3. **ASSESS** all the details by asking **WHY? WHERE? WHAT? WHO?**
4. **ALTERNATIVES** Consider all the alternatives available for improvement and **DEVELOP** the most suitable.
5. **FIT** best alternative and make sure it is understood by all concerned.
6. **TAKE CARE** of the new technique once it is installed successfully by continually checking that it is still being performed correctly.

Key areas for analysis

1. **Seam types** – Various seam types should be analysed and considered to simplify/reduce the work
2. **Stitch types**- Explore various options in terms of seam types what is possible just by changing the seam type For example replace lock stitches by chain stitch in case of Multineedle seams
3. **Machine types**- Optimum use of technology to maximize , look in to machine type, bed shapes and automation that’s possible



4. **Attachments** – Attachment can help immensely in simplifying and reducing the work content, sometime operations can be combined using attachments to increase line balancing efficiency.



5. **Special work aids**- Special work aids can be designed to simplify/reduce the work content



This is a Venturi Tube which uses air pressure to pick up the labels, so there is no fiddling around while picking up the labels.

6. **Fabric consumption**- Fabric being 70% of the garment cost is vitally important to monitor and if the engineering is done properly we can certainly expect to save fabric or reduce consumptions.
7. **Cutting**- how should it be done- we do not have Tailors now, we have operators instead and they should be working with clippers in their hands
8. **Finishing**- Finishing is an area which is generally overstaffed being the last link of the value chain all the problems from the previous stages have to be sorted out here, Garment Engineering can reduce considerable manpower from this area.

Some Guidelines to follow

1. Double needle lockstitch machine instead of 2 rows of Single needle machine
2. Safety stitch machine instead of SN +3Thread overlock
3. Multi needle chain stitch instead of lock stitch.

4. Fuse instead of inserting interlinings
5. Use of Binder instead of attaching and finishing the binding in 2 steps.
6. Avoid inner layers of fabric, if it's not affecting the outside appearance.
7. Use Top and bottom feed overlock to gather and attach simultaneously.
8. Reduce seams by using a single piece of fabric. (Watch for consumption)
9. Cut bindings long so that minimum joins are to be sewn.
10. Eliminating marking operations.
11. Use notches on to panels.
12. Self folding of edges instead of facings
13. Matching only where it's necessary.
14. Overlock instead of double folding.
15. Continuous zippers instead of single piece
16. Folded labels
17. Preshrunk elastics
18. Standardisation of collar, cuffs, epaulets
19. Cut to size; don't cut one size that fits all.
20. Eliminate back tacks where possible.

This can be a start for you, by understanding the principles described above and thinking about how the garment can be constructed, and how you can improve the operations can save your company lots of money, keeping you competitive and profitable! Let us get Scientific !!!