

IMPACT OF LEAN MANUFACTURING IN THE AEROSPACE INDUSTRY

EXECUTIVE SUMMARY

It is no surprise that in today's world, lean is everywhere, and in everything. The concept is so appealing that some companies don't mind spending a lot of money for its deployment. But like any other change, this has to be introduced into a company with a lot of patience, study and preparation. Our Engineering team at UofT has thereby decided to look into the application of lean manufacturing in the Aerospace industry. We will compare the scenario with the automotive industry, where the application of the concept has been successful and in full flow.

The Aerospace industry is the leader in terms of workforce employment and output value. Hence, it is a no brainer that the concept of lean manufacturing should be deployed here. However, it is not as easy as it sounds. Change can't be brought about in a single day or without studying the market. The industry is far too complex and lean is not too prominent in it. We took a look at the history of automotive and aerospace manufacturing, and how the trends have developed over the past century. Anybody who talks about lean knows about the Toyota Production System (TPS). The revolutionary concept has been looked upon as a part of this project to set the platform.

A few examples pertaining to the Aerospace industry have been studied. In particular, the case of the F22 Raptor has been looked at, where an actual effort to apply lean has been made. As suggested earlier, not having proper preparation can lead to loss in profits, much less breaking even. That's exactly what happened in this case, where a sudden miscalculated deployment of lean system led to increased labour work time and falling profits. Boeing 777X has also been analyzed, where a planned lean system is scheduled to be employed in about 2020. The chances of success in this case are much higher, as preparation is the right way to go. Lean Manufacturing techniques are also being employed at Airbus, yielding good results. The details have been given in the report.

To put things in perspective, an explicit comparison between the automotive industry and the aerospace industry has been made. The descriptive differentiation includes the concept of the three C's (Configuration, Continuation, Conception), and a few depictive graphs.

With all the above information in hand, we summarise a possible procedure by which lean can progressively be employed in the aerospace industry. We talk about the change in the jobs and other functional changes. We conclude that the future of lean probably lies in the Industry 4.0 and discuss the possible modifications in detail.