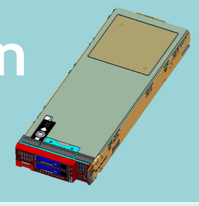
Manufacturing Processes Documentation Improvement and Standardization for New Generation Blade Product



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Abstract

The new product introduction process is the heart of every company that manufactures products. Its effectiveness will play a critical role to gain competitive advantage. There is a need to reduce the quantity of assembly and packaging defects during proto builds for a new generation blade product. It was demonstrated that in order to achieve this, standards methods are required to ensure products are assembled, tested, and packed around the world in the same manner. These processes need to be the best in class to guarantee high quality and that wastes are eliminated to attain the expected revenue. For this, the product preparation process was used to create the standard methods. The objective was achieved once the methods were implemented and used during the proto builds in the different worldwide manufacturing sites. This resulted in the required reduction of the assembly and packaging defects

Introduction

The new product introduction (NPI) process for a new generation blade product is used as the means to meet the project scope and purpose. The project purpose is to create the manufacturing process methods that will become the standards for all worldwide manufacturing sites to implement. Thus, improving and standardizing the manufacturing processes documentation for the new blade product.

During the NPI process, two proto builds are completed: the Site Pilot and the Manufacturing Verification Build (MVB), prior to release the product to market. The manufacturing methods created will be used by the different manufacturing sites to execute these builds.

Background

A new generation blade product is to be launched on June 2018. This is to be manufactured in different sites between three regions: Americas, Europe, and Asia Pacific, and this include internal manufacturing and Original Design Manufactures (ODMs). The current process is for each site to create their own methods and there is no sharing of best practices among them. There is a crucial need for standard methods that will provide the instructions to assemble, test, and pack the products with the best processes, eliminating waste and inefficiencies. Historical data of previous generation's blade products shows that several issues seen in sustaining lifecycle can be prevented if standard documentation is provided and followed.

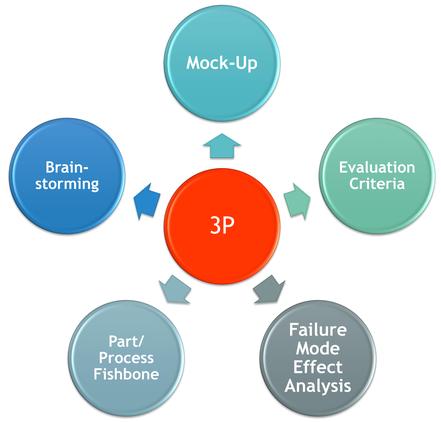
Objective

The objective of this project is to reduce the quantity of assembly and packaging defects during proto builds.

Methodology

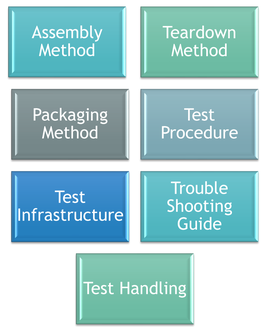
The methodology used can be summarized in three main tasks.

1. Methods creation: The Product Preparation Process (3P) was the main tool used, while executing several continuous feedback gathering cycles.



3P Main Tools Used

The methods created and signed-off by all the sites were:



Methods Created

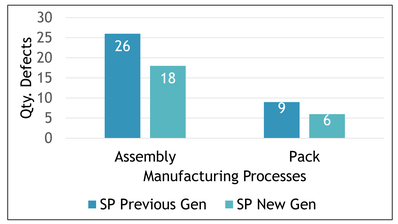
2. Methods implementation and absorption:

- Sites were required to use the methods and provide their feedback for Site Pilot and MVB.
- Methods were updated to address defects found during the builds and shared with sites.
- A methods audit was performed in the lead site with very good results. It was demonstrated the methods were used.
- Absorption was completed on the methods shared by all sites.

3. Assembly and packaging defect analysis and comparison: To finalize, after each of the proto builds the assembly and packaging defects were analyzed and compared.

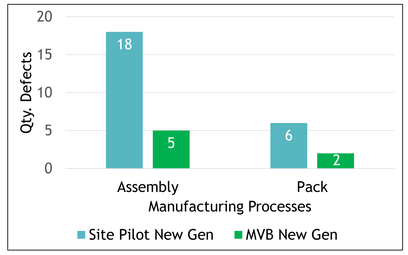
Results

For Site Pilot builds, the assembly and packaging defects quantities were compared with the ones seen on the previous generation Site Pilot for the blade product. Both assembly and packaging defects were reduced: assembly defects by 8 and packaging defects by 3. This resulted in a combined reduction of 11 less defects when compared to the previous generation Site Pilot.



Site Pilots Results Comparison

After MVB was completed, the defects for assembly and packaging were tabulated and compared; but this time, to the Site Pilot previously completed. In this case, assembly defects were reduced by 13 and packaging defects by 4. Once these were combined, resulted in a reduction of 17 defects when compared to Site Pilot for the new generation blade product.



MVB Results Comparison

A percentage reduction comparison was performed for Site Pilot and MVB. These were calculated based on the 80 total units processed on each of the proto builds.

Summary of % Reduction for Assembly and Packaging Defects for New Gen Blade Product

Proto Builds	*Assembly % Reduction*	*Packaging % Reduction*	*Assembly and Packaging Combined % Reduction*
Site Pilot	10.0%	3.8%	13.8%
MVB	16.3%	5.0%	21.3%

Conclusion

The project objective was successfully accomplished. The assembly and packaging defects quantities were reduced for this new generation blade product. The creation and implementation of the methods as the standards to be followed by all manufacturing sites proved to be determinant to accomplish this. The 3P process played a crucial role to achieve the defect reductions in the best way possible. The project proved to be a total success.