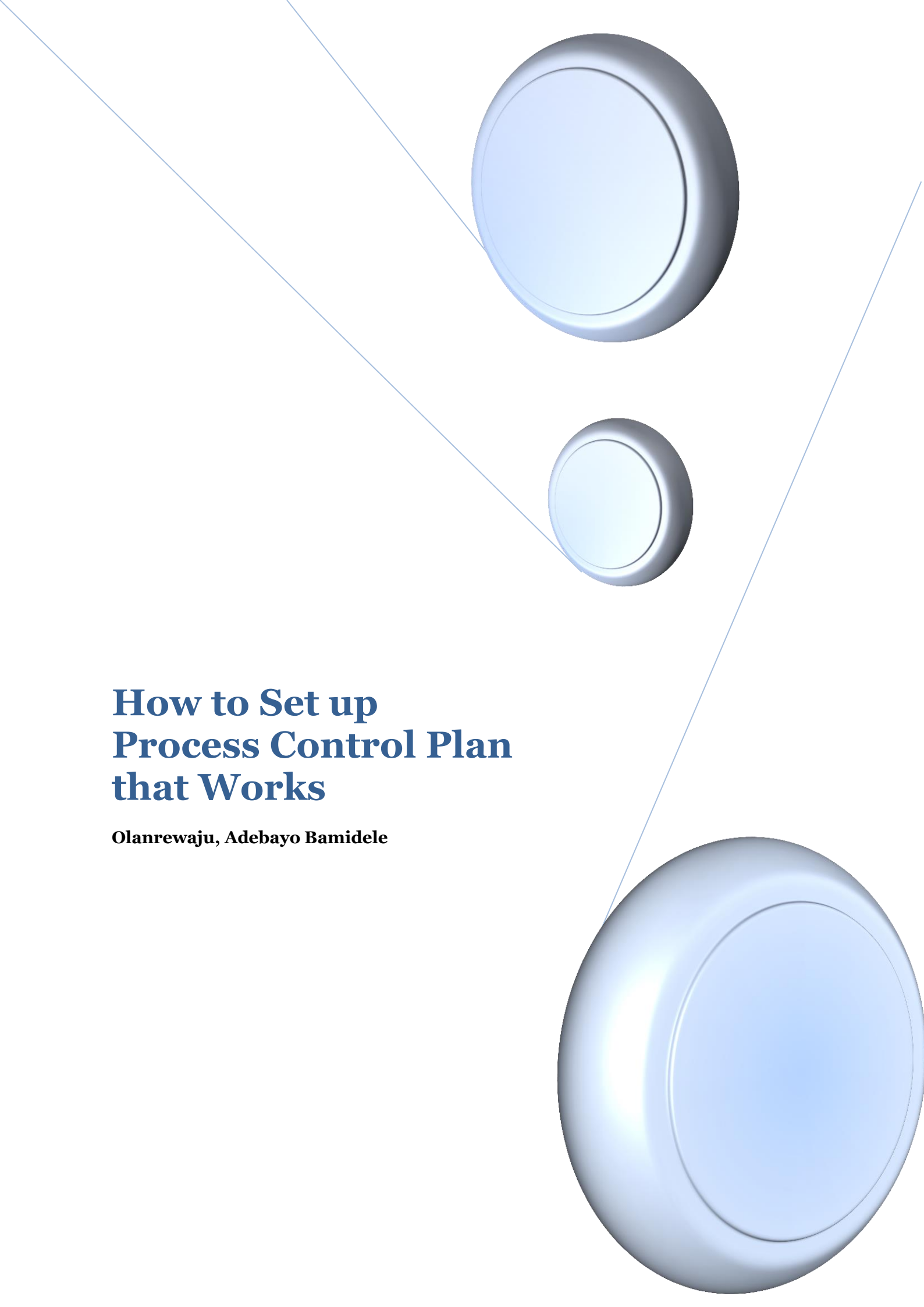

How to Set up Process Control Plan that Works

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For a company to consistently perform at optimal level, they need to place increased priority to cost reduction and waste elimination in their processes. This, in addition to high level of product quality is necessary for a company to succeed in this ever-competitive business world.

Many manufacturing industries have demonstrated competence at detecting problems and developing corrective actions to correct the problem. But it is one thing to detect problem and solve problem as they arise, yet another thing to sustain the corrective actions or process improvement efforts over a long period of time. When a corrective action is not sustained, the process gradually returns to its initial problematic state, hence, the need of a Process Control Plan.

Process Control Plan helps in monitoring processes and assuring that process improvements efforts are maintained over the life cycle of the part or product. Control Plans can be utilized in any industry to ensure product quality including manufacturing, aerospace and others as they help in maintaining manufacturing efficiency, thereby impacting the company's bottom line positively.

What is a Process Control Plan?

Process Control Plan is a document that describes the steps such as measurements, inspections, quality checks or monitoring of process parameters needed at every phase of a process with the goal of assuring that the outputs from the process conforms to already determined requirements. The Plan provides operators or inspectors with the necessary information required to ensure that the process produce quality parts. They are living documents and should be updated as the measurement methods and controls are improved throughout the life cycle of the product.

A good process plan should include steps taken if a non-conformance is detected in the course of the process. It should be noted that the Process Control Plan isn't an alternative to a detailed work instructions, hence does not replace it, it is instead used in conjunction with an inspection sheet or checklist. The Plan only helps in assuring that quality is maintained in a process in the event of employee turnover by establishing a standard for quality inspection and process monitoring.

The Process Control Plan is not just a form to fill out, it is a plan developed by the team to control the process and ensure that the process produces quality parts that meet the customer requirements.

Benefits of a Process Control Plan

Developing and implementing Control Plan has a 3-fold benefits as described below:

- **Waste Reduction and/or Elimination:** The use of a good Process Control Plans helps reduce or eliminate waste in a process. Businesses today must reduce waste everywhere possible.
- **Improvement of Product Quality:** The Plan helps to improve product quality by identifying the sources of variation in a process and establishing controls to monitor them.
- **Facilitates Focus Important Product Characteristics:** Control Plans helps to channel focus on the product characteristics most important to the customer and the business, called critical-to-Quality Characteristics. The essence of this is to see ways to reduce scrap, eliminate costly reworks and prevent defective product from reaching the customer thereby improving the throughput of the process.

Levels of Control Plans

Prior to completing the Control Plan, the team needs to determine the level appropriate for the process being controlled. There are three designations for a Control Plan level based upon what point the product is at in the New Product Development (NPD) process. These are:

1. **Prototype –** This level Control Plan should include descriptions of the dimensions to be measured and the material and performance tests to be completed during the initial stage of the product development.
2. **Pre-Launch –** This level of Control Plan should contain descriptions of the dimensions to be measured and the material and performance tests to be completed after prototype but prior to launching the product and batch production.
3. **Production –** This level of Control Plan should contain a comprehensive listing of the product and process special characteristics, the process controls, measurement methods and tests that will be performed during regular batch production.

Sources of Information for a Control Plan

The information contained in the control plan can originate from several sources such as follows:

- Failure Mode & Effect Analysis (FMEA)
- Special Characteristics Matrix
- Lessons Learned from similar parts
- Design Reviews
- Team technical knowledge about the process
- Field or warranty issues

Steps in setting up a Process Control Plan

The Process Control Plan needless to say should be developed by a Cross Functional Team (CFT) with good understanding of how the process to be improved or controlled operates. This will help to identify more areas of improvement opportunities.

- **Set up a multi-functional group**

This is the first step of the development process. Ensure that everyone with relevant knowledge of the process is present to add values to the Plan. This should include a process engineer, R&D officer, QC personnel and someone in close contact with the customer(s).

- **Review and confirm the flow chart**

Have a good idea of the process steps which might be clearly represented in a flowchart. This information goes into the left columns of the document.

- **Review and confirm special characteristics**

At process FMEA can help a lot in pointing to high risks that need to be addressed. It is imperative for the team to have a good understanding of what the customer considers very important based on customer requirements.

- **Review and confirm the control method**

Based on how critical a step is, and on the risks perceived, the team should decide what controls are appropriate for more efficient process. The team should be able to demonstrate to the management how to control risks in an efficient manner so as to be able to sustain the approach over time.

- **Review the sampling method**

Checking a point on 100% of pieces requires more effort than “3 in 15 parts”, for example. An appropriate sampling method should be devised.

- **Verify the effectiveness of the measurement system**

Checking for the sake of checking should be discouraged. There have to be results. For instance, you might want to find out, are nonconforming parts really detected or are some conforming parts put aside? Asking these questions helps to determine the effectiveness of the measurement system applied.

- **Confirm the person in charge**

Determine who will be primarily responsible for the application of the process control plan, and its adaptation over time as new risks, new issues, and new requirements appear.

- **Confirm the escalation process**

Confirm who the team go to when a decision goes beyond them and needs to be made by a higher level of management.

- **Write control plan draft and train the personnel**

The next stage is now to fill out the remaining columns of the draft. Train the personnel who would be responsible for implementing the Plan. Adapt the operators’ and inspectors’ work instructions. Observe, at least during a pilot run or a mass production batch how the Plan is being implemented.

- **Review and modification**

Remember that the Process Control Plan is a living document and as such they should be constantly updated to accommodate new issues or customer requirements. Also, certain controls might be overly burdensome, poorly specified, lacking clear criteria etc. the review process will help to detect these. It is very important at this point to mention that every time the Plan needs to be revised, the corresponding work instructions and the changes should be communicated to the operators.

- **Control the implementation in the mid- to long-run**

After the Plans are completed, there is need to gain buy-in with the operators, the management and all other people who will be directly or indirectly affected by the Plan. This can be done through communication.

About the Author

Olanrewaju, Adebayo Bamidele *is a Lead Auditor of ISO 9001, FSSC 22000 / ISO 22000, 14001, 45001, Certified Six Sigma Master Black Belt (CSSMBB), process engineer, and quality management professional with strong working experience and proven skills in manufacturing excellence, ISO management systems implementation, lean / digital manufacturing, and project management. He is an author of over 15 books and has published over 45 online courses on various e-learning platforms including Udemy, Alison, Learndesk & Study Plex.*

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