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PROCESS IMPROVEMENT PLAN TEMPLATE

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PROCESS IMPROVEMENT PLAN

<PROJECT NAME>

COMPANY NAME
STREET ADDRESS
CITY, STATE ZIP CODE

DATE

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INTRODUCTION

The process improvement plan is a component of the Project Management Plan. The purpose of the process improvement plan is to document how the project team will analyze various processes, determine where improvements can be made, and implement improvement measures. Like a large part of project management methodology, process improvement is an iterative process that is performed throughout the project's lifetime.

The CAX Cable project was initiated by BTS Tech in order to develop a new coaxial cable product capable of delivering high-definition picture and sound quality for residential use. This project includes the development of the cable product as well as the manufacturing process required to produce the product. The CAX Cable process improvement plan describes how the manufacturing processes will be analyzed in order to continually monitor and improve production efforts. The process improvement plan will be followed iteratively throughout the project's lifecycle and includes all processes involved with the manufacturing of the CAX Cable.

The process improvement plan lays out the necessary steps to identify, measure, and implement the necessary process improvements for the CAX Cable product.

PROCESS BOUNDARIES

Process boundaries must be identified as part of the process improvement plan. This establishes where each process begins and ends as well as what the process inputs and outputs are. Additionally, there must be accountability for each process with a process owner assigned who is responsible for overseeing process improvement measures. Boundaries are important to ensure that the work being done to improve the process falls within the boundaries and not outside of the process which would result in extraneous work with no impact on the process.

The CAX Cable Project consists of two processes which comprise the overall manufacturing process: cable stranding and cable jacketing. Cable stranding consists of the stranding of the internal metallic cable element with protective Kevlar fibers in order to improve cable tensile strength. Cable jacketing consists of jacketing the stranded core with an extruded polyethylene cover in order to protect the internal cable structure from environmental effects and ensure the transmission of data signals. As part of the process improvement plan the stranding and jacketing process boundaries have been established below:

Stranding:

- Start – the stranding process starts immediately upon an order being placed for material from the operations manager
- Completion – the stranding process is complete once the stranded core (of pre-determined length) has been built and spooled on a cable reel and moved to the holding area
- Inputs – the inputs for the stranding process are: core length (based on order), materials, written work order, and user defined inputs on the stranding machine

- Outputs – the outputs for the stranding process are: a stranded core on a cable reel (of pre-determined length), and an acknowledged work authorization from the stranding machine technician
- Data Required – the data required for the stranding process is: total cable length, finished cable diameter, and core material types
- Process Owner – the stranding process owner is J. Green, Senior Process Technology Engineer

Jacketing:

- Start – the jacketing process starts immediately upon receipt of a stranded cable core from the receiving area.
- Completion – the jacketing process is complete once the stranded core is jacketed, spooled on a cable reel, and sent to the finished cable holding area
- Inputs – the inputs for the jacketing process are: a stranded cable core and an acknowledged work authorization from the stranding machine technician (which includes all jacketing material specifications)
- Outputs – the outputs of the jacketing process are: a jacketed (completed) CAX Cable with a specification chart and acknowledged work authorization from the jacketing line technician
- Data Required – the data required for the jacketing process is: extrusion temperature, cooling trough temperature, material specifications, total cable length, finished cable diameter, and jacket print specifications
- Process Owner – the jacketing process owner is B. White, Process Technology Engineer

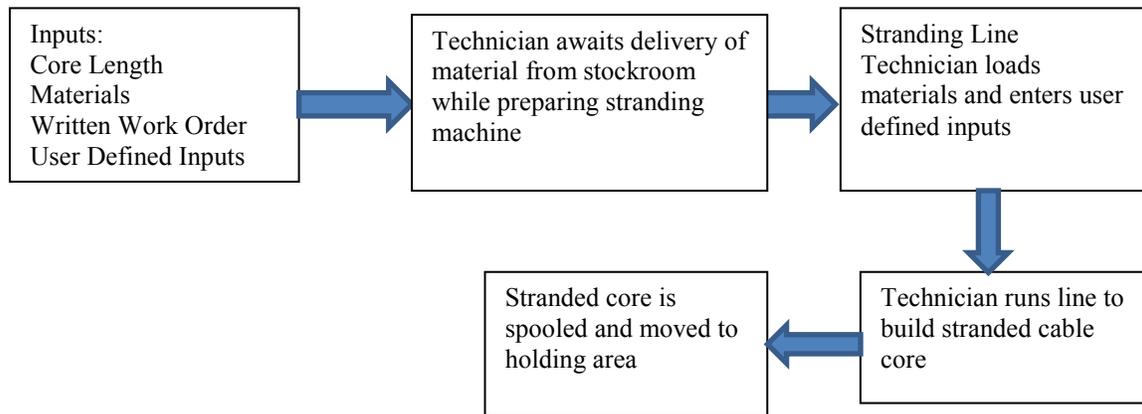
PROCESS CONFIGURATION

Process configuration is an illustrated and/or graphical depiction of the project's processes. By presenting the process configurations in this manner, the project team has the ability to visualize the processes which can be helpful in facilitating analysis, identifying area where the processes are weak, and determining ways the processes may be improved throughout the project. It is important to note that like all other project documentation, as changes are made to the processes, the configurations must be updated.

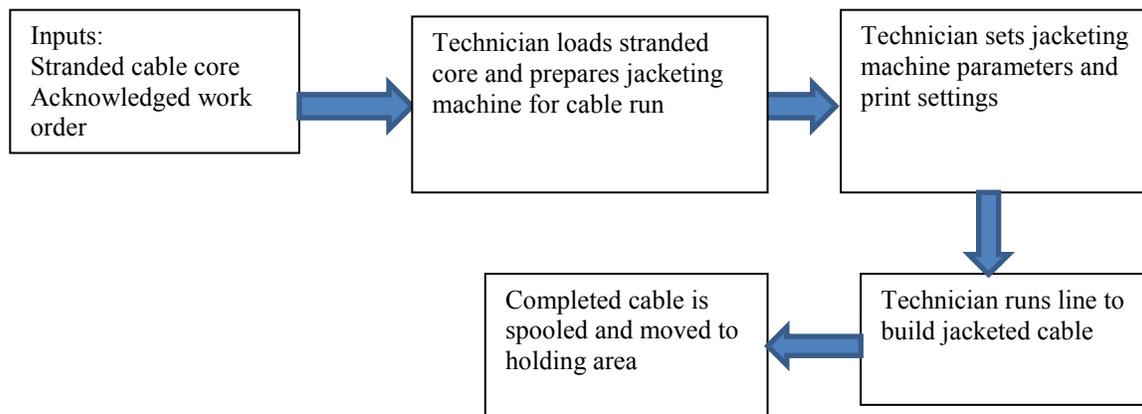
BTS Tech has modeled its initial CAX Cable manufacturing processes on existing processes currently is use for other cable products and families. The process improvement plan for this project provides BTS Tech with an opportunity to analyze and improve the cable manufacturing process for CAX Cable which, ultimately, may result in process improvements for all BTS Tech cable products. The project team will utilize the stranding and jacketing process configurations, in conjunction with process metrics, to conduct process analyses, determine potential areas for improvement, and implement improvement measures. To do this, the team will follow the processes as planned during initial cable runs in order to verify process boundaries and gather metrics. As the team identifies potential process areas of improvement, adjustments will be

made and the modified process will be run to validate the process and to gather additional metrics for comparison.

Stranding Process Configuration:



Jacketing Process Configuration:



PROCESS METRICS

Metrics are an extremely important part of process improvement and project quality. A metric is a measure or measures which allow the project team to assess various performance parameters of a given process. These measures allow the team to continuously monitor, measure, and track a process's performance in order to determine the efficiency and effectiveness of the process. The team must ensure that metrics are based on the project or customer requirements to ensure project quality. The metrics must also be based on what comprises an acceptable measurement as well as control limits within which acceptable measurements may fall.

Process metrics and control limits will be used, in conjunction with process configuration, to guide the process improvement efforts for the CAX Cable project. Since the stranding and jacketing processes for CAX Cable are based on the processes for other cable families, the metrics, acceptable values, and control limits are known. However, as part of the CAX Cable

process improvement plan, the project team will iteratively analyze the process configurations, metrics, and measured values in order to implement a cycle of continuous improvement. The existing metrics, values, and control limits are based on industry-wide customer requirements for cost and performance.

Stranding:

Metric	Acceptable Mean Value	Upper Control Limit	Lower Control Limit
Core material waste	7%	9%	5%
Stranding time per linear km	35 minutes	40 minutes	32 minutes
Time from material ordered to line ready	45 minutes	55 minutes	40 minutes

Jacketing:

Metric	Acceptable Mean Value	Upper Control Limit	Lower Control Limit
Jacketed cable waste	9%	13%	7%
Jacketing time per linear km	40 minutes	46 minutes	37 minutes
Time from receipt of stranded core to line ready	26 minutes	32 minutes	23 minutes

Measurements for each metric will be taken for every iteration of a stranding and jacketing for a trial CAX Cable. These measurements will be plotted on a control chart in order to ensure that process parameters fall within the acceptable range. As the process is validated for this new product and the values normalize, the project team will use the metrics and process configurations to determine areas within the processes where improvements can be made. As adjustments to the processes are made, the team will continue to track the metrics in order to validate any improvements to the process and for updates or changes to project documentation.

TARGETS FOR IMPROVED PERFORMANCE

In order to effectively improve a process a project team needs a thorough understanding of where there processes currently are, as well as where they want to be at the end of the project. While processes may fall within the acceptable control limits, building quality management into the project plan requires continuous improvement throughout the project’s duration. To drive this cycle of continuous improvement, the project team needs to establish targets for each specific metric. These targets should be specific, measurable, and achievable.

The CAX Cable project team has developed targets for improved performance in each of the metrics for both the stranding and jacketing processes. These metrics are based on existing BTS

Tech metrics for all other cable products and families. However, this project provides an opportunity to improve these processes which may potentially result in significant savings for cost and time for CAX Cable as well as all other BTS Tech cable products. The charts below provide the CAX Cable stranding and jacketing process metrics with both the current values and target values.

Stranding:

Metric	Current or Target Values	Acceptable Mean Value	Upper Control Limit	Lower Control Limit
Core Material Waste	Current	7%	9%	5%
	Target	5%	7%	3%
Stranding time per linear km	Current	35 minutes	40 minutes	32 minutes
	Target	32 minutes	37 minutes	29 minutes
Time from material ordered to line ready	Current	45 minutes	55 minutes	40 minutes
	Target	42 minutes	50 minutes	38 minutes

Jacketing:

Metric	Current or Target Values	Acceptable Mean Value	Upper Control Limit	Lower Control Limit
Jacketed cable waste	Current	9%	13%	7%
	Target	7%	10%	5%
Jacketing time per linear km	Current	40 minutes	46 minutes	37 minutes
	Target	35 minutes	40 minutes	32 minutes
Time from receipt of stranded core to line ready	Current	26 minutes	32 minutes	23 minutes
	Target	22 minutes	27 minutes	19 minutes

Based on current capacity of BTS Tech cable products, the targeted stranding and jacketing waste reductions will result in over \$550,000 in material savings annually. The stranding and jacketing process time targets will allow the operations group to increase throughput and achieve significant increases in scheduling flexibility which will allow BTS Tech to better meet its customer requirements.

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