Process Flow Chart of Pigtail Production Workshop

Overview

Improve your business productivity by following clear and easy-to-read steps in this production process flowchart template from Edraw.

Key Takeaways

The production of fiber optic pigtails involves a structured workflow from raw material preparation to final inspection, ensuring high-quality and reliable components. 1.

Raw Material Preparation

The process begins with selecting the appropriate fiber optic cables (single-mode or multi-mode) and connectors (SC, LC, ST, FC, MTP, etc.) based on customer requirements. Protective sheathing and jackets are also prepared to ensure durability and protection of the fiber core during handling and installation. All materials are organized and labeled for easy access during production.

2.

Cutting and Stripping

Fiber cables are typically supplied on reels and must be cut to the required lengths using a fiber cable cutting machine. This ensures precision and consistency. After cutting, the outer jacket is stripped using a jacket stripper, and the tight buffer cladding is removed with a fiber miller stripper to expose the core for connector insertion.

3.

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Cleaning and Pre-handling

Cleanliness is critical in fiber optic production. The exposed fiber is cleaned to remove dust and residues, preventing contamination that could affect signal transmission. Cables are arranged in a sequence that facilitates smooth connector attachment.

4.

Connector Attachment

The fiber is injected with epoxy glue (commonly 353 epoxy) and inserted into the ferrule of the connector. This can be done manually or using automated machines. The fiber is then cured in a vertical or horizontal solidification furnace to harden the epoxy and secure the fiber in place.

5.

Polishing and Inspection

After curing, the half-finished pigtails are cleaned using an ultrasonic cleaning machine. The connector interface is polished to ensure the fiber core aligns perfectly with the ferrule. Microscopic inspection (400x or 600x) is performed to verify cleanliness and alignment, ensuring minimal signal loss.

6.

Testing and Quality Control

Each pigtail undergoes optical testing to measure insertion loss, return loss, and other performance parameters. Defective units are rejected or reworked. Visual management tools and standardized procedures help maintain consistent quality throughout the workshop.

7.

Packaging and Storage

Finished pigtails are labeled, coiled, and packaged according to customer specifications. Proper storage prevents damage and contamination before shipment.
8.

Workshop Layout and Workflow Optimization

A well-organized workshop follows Lean Manufacturing principles, including a continuous flow layout, clearly marked zones, and visual management tools like Kanban boards and KPIs. This ensures efficient material flow, reduces waste, and allows for rapid problem-solving and process improvement. By following this structured process flow, a pigtail production workshop can achieve high-quality output, operational efficiency, and consistent product reliability.

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Process Flowcharts

When developing the flow chart, it is important to focus on the actual flow as it would happen in production, this includes every step from raw material coming into the factory, quality

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