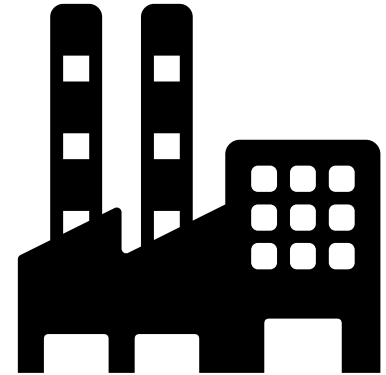


Malema, a PSG Brand

ENGINEERING INTERN

Flow Measurement Technologies

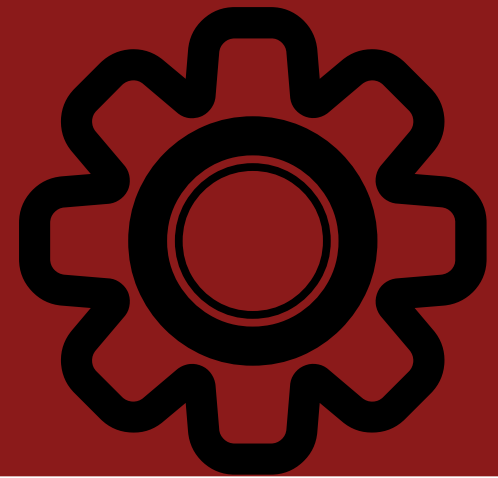


Internship Overview and Role

About Malema

Malema is a leading manufacturer of precision flow measurement technologies, serving critical industries including biopharmaceutical, semiconductor, and industrial manufacturing. As part of the PSG brand family, Malema delivers innovative solutions for ultrasonic flow meters, vortex meters, and pressure transducers.

As an engineering intern, my role encompassed diverse technical responsibilities: upgrading firmware on pulse modules, conducting functional testing, creating mechanical designs in SolidWorks, simulating on ANSYS, and supporting manufacturing operations through ERP system management.



Key Internship Goals

The primary objectives of this internship were to develop hands-on technical skills in flow measurement technologies, contribute meaningfully to product quality assurance, and gain practical experience in manufacturing processes and engineering workflows.

Through collaboration with production and engineering teams, I aimed to enhance process efficiency while building expertise in firmware development, diagnostic analysis, and quality control procedures.

Firmware Upgrades and Functional Testing

A core responsibility during my internship involved upgrading firmware on pulse modules for ultrasonic flow meter sensors. This critical task ensured sensors operated with the latest software capabilities and performance optimizations. Each upgrade followed strict protocols to maintain system integrity and reliability across all deployed units.

Functional Testing

Conducted comprehensive functional testing to verify operational standards and establish clear pass/fail criteria for each sensor unit. Testing protocols ensured every component met Malema's rigorous quality benchmarks before deployment to customers.

Diagnostic Analysis

Utilized specialized diagnostic software to monitor sensor warnings, analyze performance data, and validate output accuracy. This systematic approach enabled early detection of anomalies and ensured all units performed within specified tolerances.

Mechanical Design & ERP Management

Developed comprehensive technical drawings that enabled accurate production of flow measurement components.

Collaborated with engineering teams to refine designs and maintain documentation standards. Integrated design outputs with ERP system records to streamline the transition from engineering to manufacturing phases.

3D Mechanical Design

Created detailed 3D mechanical drawings using SolidWorks software for flow switches, transducers, and meters. Ensured precision in component specifications to support manufacturing requirements.

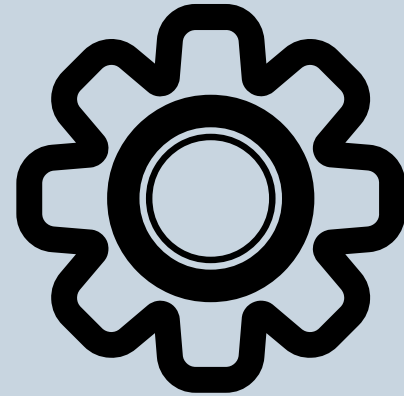
ERP System Management

Managed production workflows and engineering documentation using the Manage2Manage (M2M) ERP system. Updated product databases to support manufacturing operations and maintain accurate records.

Manufacturing, Assembly & Calibration

Assembly Operations

Assisted in hands-on assembly of flow switches, vortex flow meters, rotary meters, and ultrasonic measurement systems. Gained practical experience working with precision components and following detailed assembly procedures on the manufacturing floor.



Calibration & Testing

Performed calibration and testing procedures to ensure measurement accuracy and quality compliance. Verified sensor outputs against established standards and documented results for quality assurance records.

Quality Control Support

Supported quality control operations including inspection of precision components, cleaning procedures, and careful packaging. Maintained attention to detail ensuring products met strict industry requirements.

Flow Measurement Technologies

Understanding the diverse range of flow measurement technologies was essential to my internship experience. Each technology serves specific applications based on fluid properties, accuracy requirements, and environmental conditions. Working with these systems provided valuable insight into precision engineering.

Technology Overview

The cross-industry applications of Malema's flow measurement solutions highlighted the importance of versatility in engineering design. From sterile pharmaceutical environments to aggressive semiconductor chemicals, each application demands specialized expertise and rigorous quality standards.

Core Technologies

Ultrasonic Flow Meters: Non-invasive measurement using sound waves for precise liquid flow detection.

Vortex Flow Meters: Measure flow rate by detecting vortices shed from a bluff body.

Rotary Meters: Positive displacement meters for accurate volumetric measurement.

Pressure Transducers: Convert pressure into electrical signals for monitoring and control.

Industry Applications

Biopharmaceutical: Critical fluid handling in drug manufacturing and sterile processing.

Semiconductor: Ultra-pure chemical delivery systems requiring precise flow control.

Industrial Manufacturing: Process optimization across chemical, food, and energy sectors. These technologies ensure accuracy, reliability, and compliance in demanding environments.

Collaboration and Process Improvement



Cross-Functional Teamwork

Worked closely with production and engineering teams to streamline workflows and ensure seamless communication. Collaborated on troubleshooting technical issues and implementing solutions that enhanced overall operational efficiency.



Manufacturing Excellence

Contributed to improving manufacturing efficiency and product quality through process optimization initiatives. Supported assembly and testing of chemical and slurry motors and valves, ensuring compliance with quality standards.

Key Achievements and Learning Outcomes

Technical Skills Developed

Gained proficiency in firmware upgrades for pulse modules and ultrasonic flow meter sensors. Developed expertise in SolidWorks for creating detailed 3D mechanical drawings. Mastered Manage2Manage ERP system for production workflows and engineering documentation management.

Manufacturing Knowledge

Improved understanding of manufacturing workflows from assembly to final quality control. Gained hands-on experience with calibration procedures ensuring accuracy and compliance. Developed knowledge of precision component inspection, cleaning, and packaging processes.

Professional Growth

Enhanced collaboration abilities working closely with production and engineering teams. Strengthened problem-solving skills through diagnostic analysis and troubleshooting. Contributed to improving manufacturing efficiency and product quality at Malema.

THANK YOU



Questions? Let's discuss!



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