Software Requirements Specification (SRS) for Bleeding Mode

System Name: Pump System Bleeding Control

Subsystem: Static Pressure Monitoring and Alarm

Version: 1.0

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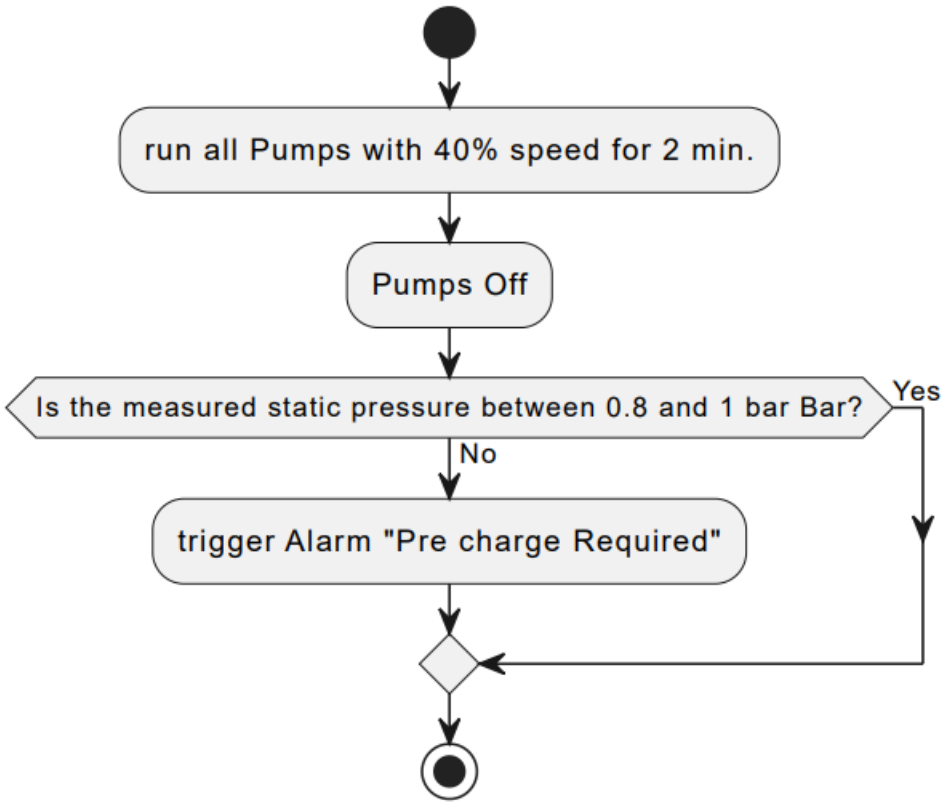
1. Introduction

Bleeding



1.1 Purpose

The purpose of this document is to define the software requirements for automating the bleeding process in a pump system, ensuring the static pressure is within the desired range, and triggering an alarm if pre-charge is required.

1.2 Scope

This software will control pump operation during a bleeding cycle, monitor static pressure, and manage alarm notifications if the static pressure falls outside the required range of 0.8 to 1.0 bar.

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2. Functional Requirements

FR1: Start Bleeding Process

- The system shall initiate the bleeding sequence on command.

FR2: Run Pumps

- The system shall run all pumps at 40% of their maximum speed for a duration of 2 minutes.

FR3: Stop Pumps

- The system shall stop all pumps immediately after the 2-minute run time elapses.

FR4: Measure Static Pressure

- The system shall measure the static pressure in the system after pumps are stopped.

FR5: Evaluate Pressure Range

- The system shall check if the static pressure is between 0.8 bar and 1.0 bar (inclusive).

FR6: Trigger Alarm

- If the pressure is outside the specified range, the system shall trigger an alarm with the message: **"Pre charge Required"**.

FR7: Retry Option

- After the alarm, the system shall allow for retrying the process once corrective action is taken.

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3. Non-Functional Requirements

NFR1: Accuracy

- Pressure measurements must be accurate to within ±0.05 bar.

NFR2: Performance

- The pressure evaluation must be completed within 2 seconds after pump shutdown.

NFR3: Usability

- The alarm message should be clearly visible and/or audible to the operator.

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4. System Interfaces

4.1 Hardware Interface

- Pumps (with speed control)
- Pressure sensor (digital output)
- Alarm system (audio/visual)

4.2 User Interface

- Start button for initiating the bleeding process
- Status display showing pump operation, pressure, and alarm state

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5. Assumptions and Constraints

- Assumes all pumps and sensors are functioning and calibrated.
- Assumes the system has a method to manually reset or acknowledge alarms.