1. **Introduction**

In this Documentation the entire wash control logic is explained.

1. **Header Inclusions**

* **Includes.h**: Likely a header that includes essential system-wide declarations.
* **COOKING\_H**: An header related to cooking functions.
* **DIAGIDS\_H**: Header for diagnostic identifiers.
* **Wash.h**: A header for wash-related functions and structures.
* **DIAG\_H:** Header for diagnostics Functions.
* **DEBUG\_H**: Header for debugging functionalities.
* **FLOWSENSOR\_H**: Header for flow sensor-related functions.

1. **Macro Definitions**

* **WASH\_WATER\_INLET\_RESOLUTION**: It’s a Factor to convert the wash timeout value to minutes’ resolution to seconds.
* **DRAIN\_VALVE\_OPEN\_TIMEOUT**: This variable is used to set the timeout duration for keeping the drain valve open.
* **WASH\_WATER\_100MS\_FACTOR**: A factor was applied to calculate time in 100ms resolution for the water inlet timeout counter.
* **WASH\_TOGGLE\_TIMEOUT**: This variable is used to set the timeout duration for toggling the wash pump.

1. **Global Variables**

* **washState\_EN washState:** This is an Enumeration variable used to control the wash Logic state machine.
* **prevWashState**: A variable to store the previous wash state. it’s used to resume the wash state after washing is paused.
* wash: A structure (**washSettings\_ST**) containing wash-related settings.
* **BOOL variable WTReachedAtleastOnce** is used to indicate that, The Wash temperature is at least reached once.
* **washTimoutCounter:** This timeout counter is used to control the wash timings.
* **washcycles**: This variable will increment every wash cycle completion, this is used to control the multiple wash cycle iteration.
* **WashTurnOnCounter & WashTurnOffCounter** These two variables are used to control the 30 sec wash pump wash toggle functionality.
* **IsMotorTurnOnFlag 🡪** This variable is used to control the Motor, and heater On Condition.

1. **Function Declarations**

* **washSettingsRxCbk**: A function that appears to handle the reception of wash settings Comif Message.
* **washMain**: A significant function responsible for managing the entire wash process. It contains a state machine that controls the oven's various components and states during washing.

1. **Function washMain**

**Function Overview**

The **washMain** function serves as a state machine that manages the washing process based on the current **washState**. It checks and updates the state and performs specific actions accordingly. Here is an overview of the key actions and states handled by this function:

1. **Idle State (WS\_Idle):**
   * If the **start** flag in the **Wash** settings structure is **FALSE**, it transitions to the **WS\_WashCompleted** state.
   * Checks if the oven is idle and monitors the drain valve's timeout to close it if open.
2. **Configuring Wash Timings (WS\_ConfigWashTimings):**
   * Updates the machine status to indicate preparation for washing.
   * Checks if the oven door is open, and if so, transitions to the **WS\_washingPaused** state.
   * In this state Configuring the value, some actuators are Turned off state(steam and the motor, drainvalve). Configures temperature settings and sets various timers.
   * Checks if the Door is closed, is it true, it does further process.
   * The configured values are updating corresponding Variables.
   * If the temperature and wash runtime value, steam time , are not updated in the corresponding variables, the reports are sent to HMI
   * Initiates the water inlet process.
3. **Water Inlet State (WS\_waterInlet):**
   * Updates the **machine status** to indicate washing is in progress.
   * Checks if the oven door is open and handles pausing if necessary.
   * Monitors the water inlet timeout, this state gives the water to the Oven at a particular time, this water is used to wash the oven.
   * After the water inlet timeout has been completed, the motor and Heater to Turned ON and transitions to the WS\_WashPumpToggle state.
4. **Wash Pump Toggle (WS\_WashPumpToggle):**
   * Toggles the wash pump on and off based on timing. This state is used to pump the water inside the washPump.
   * Manages counters for turning on and off the pump.
   * This state completes the corresponding work, turns on the wash pump, and transitions to the WS\_Washing state when appropriate.
5. **Washing State (WS\_Washing):**
   * • Monitor temperature and control heating and motor operations. During the wash process, if (ovenTemperature <= (configuredTemperature - 5)) and the oven temperature is less than the wash configuration temperature,
   * • at that time, check if the IsMotorTurnOnFlag is True or not. If it is true, the heater and motor are turned ON.
   * • To check this condition also if (ovenTemperature >= configuredTemperature) and the oven temperature is greater than the wash configuration temperature, at that time the heater and motor are turned OFF.
   * • And the WTReachedAtLeastOnce flag will be set, and the IsMotorTurnOnFlag flag will be set False.
   * Check if the wash cycle's timeout is reached, if temperature conditions are met, Turn off the actuators, and proceed to drain the water.
   * WTReachedAtLeastOnce🡪 this flag is not reached the wash config temp, to send a report to HMI.
   * Finally Transitions to the **WS\_DrainTheWashedWater** state.
6. **Draining Washed Water (WS\_DrainTheWashedWater):**
   * Manages the draining process. During the draining process, the drain valve will be Open.
   * The Drained timeout to be complete, after that washcycle will be incremented 1.
   * After that this state is Transitions to the **WS\_ReLoadTheNextWashCycleDatas** state.
7. **Reloading for Next Wash Cycle (WS\_ReLoadTheNextWashCycleDatas):**
   * After the Drain valve is closed handle the preparation for the next wash cycle. and check the **if(washCycles < Wash->noOfWashCycles),** If this Condition is true, then it reloads the next cycle of the wash temp and wash timing and wash temperature.
   * if that condition is True, Transition back to the WS\_waterInlet state to start the next cycle, otherwise to WS\_WashCompleted when all cycles are completed.
8. **Wash Completed State (WS\_WashCompleted):**

• In this state it represents that the wash is complete.

• Resets various parameters and flags.

• Updates machine status to indicate idle.

1. **Washing Paused State (WS\_washingPaused):**
   * Pauses the wash process when the oven door is open.
   * Handles resuming the previous state based on specific conditions when the door is closed.
2. **No Water Pause State (WS\_NoWaterPause):**
   * Pauses the wash process when there is no water flow.
   * Resumes the previous state based on specific conditions.
3. **Default Case:**
   * Handles any unspecified or invalid states.