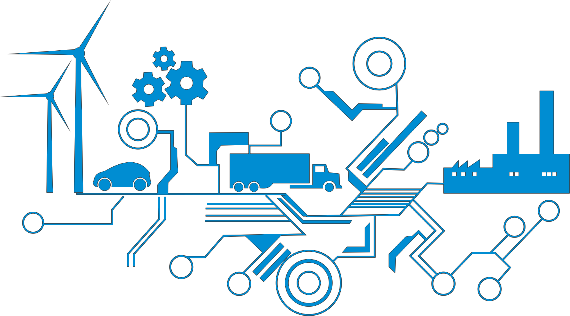
POWERTRAIN



Group

Title

Group Members:

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**Revision History**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version No. | Date | Prepared By/  Modified By | Overview of Changes | Approved By |
| 0.1 | 24-10-16 | Team members names |  |  |
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# 1Introduction

Major overview ..

## About Powertrain

Armstrong/Pico is a feature rich car which is being developed…….

## Requirement

The 3 major requirements considered .. and brief description …

## Plan

The idea is to make a modular design which realizes the above features:…….

GANT Chart and activity split

## Feature Comparison

Compare the features. .

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Features | Low end car | Mid end car | High end car | Armstrong | Requirement mapping | Assigned to |
| Dashboard | Display of features such as speed of car, RPM, Temperature of engine coolant, Indicators, Fuel level etc., | Extra features such as digitized display of speed of vehicle and RPM, Fuel Gauge, warning light for- ABS, seat belt, Battery charging, Door Ajar | All the features in Mid end cars with improvisation in display such as digitized and graphical display on screen | All the features of Mid end cars | 2,3 | Abc  (123456) |
|  |  |  |  |  |  |  |

Figure 1‑1- Features and requirements analysis

# Feature Name of Armstrong/ Pico

Compare the features. .

## 2.1 Detailed Requirements

Describe ..

2.2 Functional Diagram

Describe ..

### Comparison of Existing (Infineon, Renesas , Atmel etc )

Describe ..

### Proposed Design

Describe ..

## Functional requirements

Describe ..

### Systems and Subsystems

Describe ..

### Inputs and outputs of the Systems

Describe ..

## Test Cases

Describe ..

## UML Diagrams

Describe ..

## Model Implementation

Describe ..

## Code Generation of the Model

Describe ..

### Autocode Generation

Describe ..

### AUTOSAR complaint code generation

Describe ..

## Model Implementation

Describe ..

## Test case Validation

Describe ..

## Results

Describe ..

## Sprayer Model

Describe ..

### Data Dictionary

Describe ..

### Code Generation

Describe ..

#### Autocode Generation

Describe ..

#### AUTOSAR Code Generation

Describe ..

### Testing

Describe ..

Simulink Test/harness

# Battery Temperature Warning

In electric powertrain system, energy from the battery will convert to kinetic energy to power the vehicle or thermal energy that will otherwise be wasted to ambient environment. Also sudden temperature increase may indicate the undesired reaction happened in the battery.

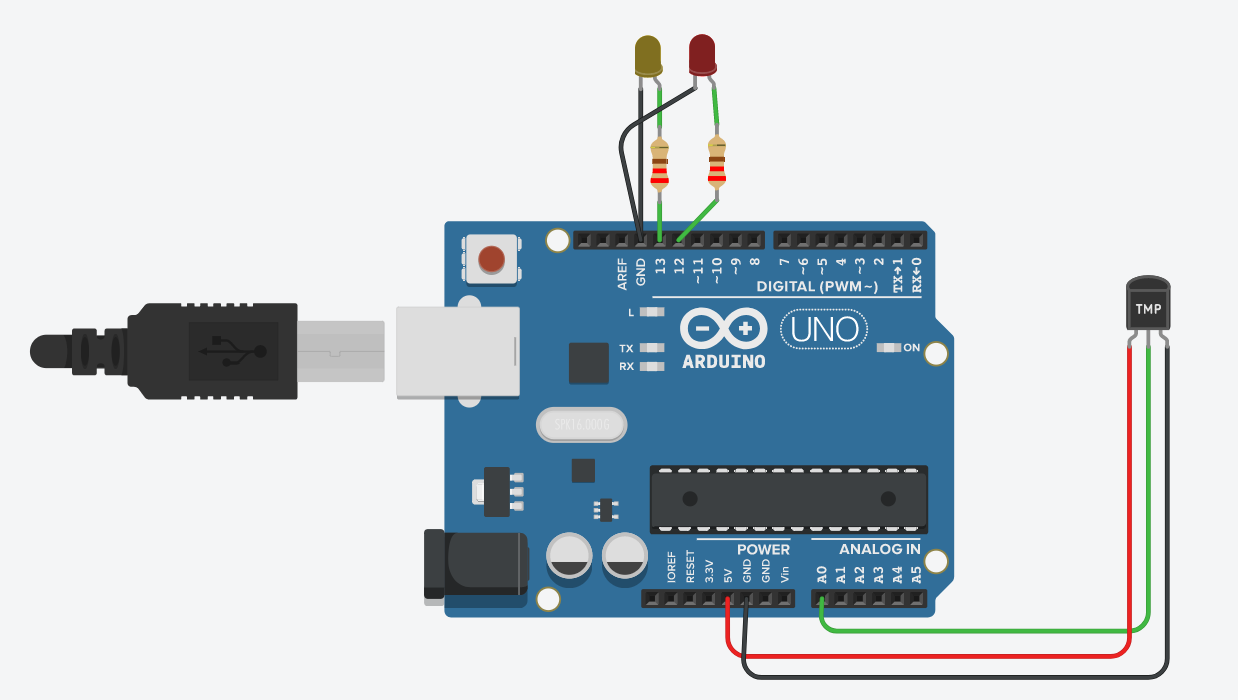
## Detailed Requirements

|  |  |
| --- | --- |
| Requirement ID | Requirement Description |
| BTW100 | Warning shall be given when battery temperature reaches critical. |
| BTW200 | Warning shall be given when sudden battery temperature increase occurs. |

## Functional requirements

|  |  |
| --- | --- |
| Requirement ID | Requirement Description |
| BTW001 | The system requires 5V DC power supply. |
| BTW002 | The system will measure battery temperature every 2 seconds. |
| BTW101 | Upon battery temperature reaches critical, red LED trigger counter will be reset to 10. |
| BTW102 | When red LED trigger counter is greater than 0, red LED will blink and the red LED trigger counter by 1, for every 2 seconds. |
| BTW201 | Upon sudden temperature increase, yellow LED trigger counter will be reset to 10. |
| BTW202 | When yellow LED trigger counter is greater than 0, yellow red LED will blink and the yellow LED trigger counter by 1, for every 2 seconds. |

### Systems and Subsystems



|  |  |  |  |
| --- | --- | --- | --- |
| Name | Quantity |  | Component |
| U1 | 1 |  | Arduino Uno R3 |
| R1, R2 | 2 |  | 220 ohm Resistor |
| D1 | 1 |  | Yellow LED |
| U2 | 1 |  | Temperature Sensor [TMP36] |
| D2 | 1 |  | Red LED |

### Inputs and outputs of the Systems

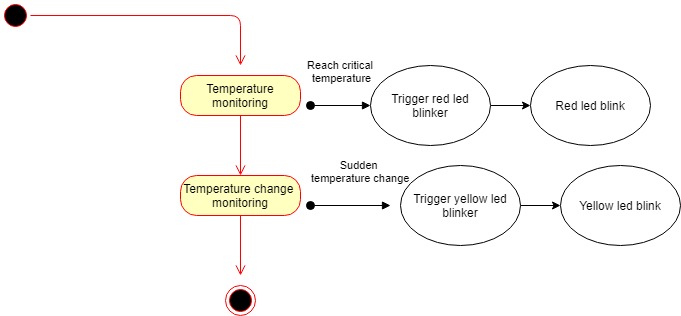
Inputs: Battery temperature

Outputs: LED warnings

## Test Cases

|  |  |  |
| --- | --- | --- |
| Test Case ID | Test Case Description | Expected Result |
| BTWT001 | Set to room temperature(25C) for 2 seconds | No LEDs blink |
| BTWT002 | After test BTWT001, increase temperature by 10C by 2 seconds (to 35C) | No LEDs blink |
| BTWT003 | After test BTWT002, increase temperature by 25C by 2 seconds (to 60C) | Yellow LEDs blinks 10 times after |
| BTWT004 | After test BTWT003, increase temperature by 40C by 2 seconds (to 100C) | Red and Yellow LEDs blinks 10 times after |
| BTWT005 | Set the temperature by 0 and Increase temperature by 25 C | Yellow LEDs blinks 10 times after |

## UML Diagrams



## Model Implementation

Describe ..

## Code Generation of the Model

Describe ..

### Autocode Generation

Describe ..

### AUTOSAR complaint code generation

Describe ..

## Model Implementation

Describe ..

## Test case Validation

Describe ..

## Results

Describe ..

## Sprayer Model

Describe ..

### Data Dictionary

Describe ..

### Code Generation

Describe ..

#### Autocode Generation

Describe ..

#### AUTOSAR Code Generation

Describe ..

### Testing

Describe ..

Simulink Test/harness

# Feature 3

Same template as above .. etc

Each feature will be updated by the corresponding feature owner

More .. .based on users

# References

IEEE Format of Referencing