

**Project Design Phase-II**  
**Solution Requirements (Functional & Non-functional)**

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|---------------|--|
| Date          | 24 October 2022                            |
| Team ID       | PNT2022TMID51558                           |
| Project Name  | Gas Leakage Monitoring and Alerting System |
| Maximum Marks | 4 Marks                                    |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task)   |
|--------|-------------------------------|--|
| FR-1   | User Registration             | Registration through Form<br>Registration through Gmail<br>Registration through LinkedIn             |
| FR-2   | User Confirmation             | Confirmation via Email<br>Confirmation via OTP   |
| FR-3   | Hardware Requirement          | Optical<br>Soil<br>Ultra-Sonic Flow Meter  |
| FR-4   | Software Requirement          | Flow change<br>Pressure point<br>Statistic   |
| FR-5   | User Welfare                  | Calibration<br>No Poisoning of the Sensor<br>Reliable in All Environmental Conditions<br>Easy to Use |

**Non-functional Requirements:**

Following are the non-functional requirements of the proposed solution.

| FR No. | Non-Functional Requirement | Description  |
|--------|----------------------------|--|
| NFR-1  | <b>Usability</b>           | The sensor-enabled solution helps prevent the high risk of gas explosions and affecting any casualties within and outside the premises   |
| NFR-2  | <b>Security</b>            | The device is intended for use in household safety where appliances and heaters that use natural gas and liquid petroleum gas (LPG) may be a source of risk.   |
| NFR-3  | <b>Reliability</b>         | Gas Leakage Detection System (GLDS) can detect leakage at homes, commercial premises or factories. GLDS detects the leakage soon after it happened and sends users an immediate alarm on the incident. |

|       |                     |   |
|-------|---------------------|---|
| NFR-4 | <b>Performance</b>  | The Gas Leakage Detector is a wall mounted device fitted close to the floor level with an alarm setting at 20% of lower explosive limit. Whenever there is a leak, the in-built sensor detects and alerts the user in less than 5 minutes, much before it can cause any accidents   |
| NFR-5 | <b>Availability</b> | The circuit for an LPG leakage detector is readily available in the market, but it is extremely expensive). Presented here is a low-cost circuit for a Gas Leakage Detection that you can build easily.   |
| NFR-6 | <b>Scalability</b>  | The system proves the need for gas detection alarm systems to be 100% reliable. A backup power supply can be included in the system design to augment for power failure condition. Also, calibration of the gas sensor can be done in other for a specific gas to be sensed instead of the LPG numerous gases<br>it sense |