



Problem Statement

Plant Gas Outlet Pressure value & flow rate will change due to the following

- Due to plant gas consumption rate, if consumption is more – the pressure will drop, if the consumption is less – the pressure will increase, due to the unregulated flow – the gas supply to the user is increased – and the gas is wasted.
- Due to the Argon, CO₂ -Tank Gas Level.
- Both the gas levels are not same most of the times.
- Due to pressure variation in the gas plant outlet – the flow from the individual gas plant will vary.
- Due to variation of individual gas flow rate and gas tank level – the mixing ratio will change.
- If the mixing ratio is differ – the weld gas quality is affected – it reflects in the welding.
- Due to the variation in the mixing ratio – the effectiveness of the weld gas reduces – due to this – welder increasing the gas flow knob to the maximum range – ultimately results in GAS WASTAGE.
- The leakage gas in the distribution pipeline is not quantified.

PROPOSED - PRESSURE & FLOW REGULATION SYSTEM

The Automatic Gas Plant Outlet –

- a) Pressure & Flow Regulation system,*
- b) Argon & CO₂ Gas mixing (any ratio) system and*
- c) Gas Leakage Quantifying system*

- eliminates the gas wastage, and accurate gas mixing irrespective of

- Gas Level in the storage tank,
- Pressure value in the gas plant outlet,
- User Gas Consumption Flow Rate & Volume,

LEAKAGE

The proposed system Quantifying the GAS Leakage in the distribution pipeline, and user can see the gas leakage rate and leakage quantity in real time basis.

The un-measured gas consumption is eliminated in the proposed system.



Automatic Store Indent

The system will generate store – gas purchase indent after reaching the predetermined gas level or volume of gas consumption



Automatic Store Indent

Plant wide pressure and flow monitoring and control using Smint “Weld Gas Energy Saver” & “Gas Pressure & Flow Optimization Unit”



GAS Mixing Ratio

User set the gas mixing ratio according to the weld requirements, the proposed system adjust the gas mixing ratio irrespective of gas consumption rate.



Analyzing and Anomaly reporting

Artificial Intelligence based analyzing the acquired data for any anomaly and predicting the failure well in advance and reporting – alerting the user immediately. This will ensure gas saving and prevent performance degradation.



Automatic Report Generation & Emailing

The user required report shall be automatically generated (in the form of Graph - using the database) and send as email or mobile application attachment



Reduce – Eliminate Gas Leakage

The proposed system monitor and quantify the leakage gas volume and identify the gas leakage pipeline segment.

Reduce your carbon footprint and make a positive impact in your community.





PLANT CONDITION MONITORING

Automatic Store Indent
Generation & Emailing

Automatic Indent Generation User Setting

LPG Gas Level / Volume trigger (50 to 2%)
Argon Gas Level/ Volume trigger (50 to 2%)
CO2 Gas Level / Volume trigger (50 to 2%)

After reaching the Gas level as per the user **set value** – the condition monitoring system automatically generates **Store Purchase Indent** and send to the stores – purchase – finance - department email id's automatically as a pdf/excel file attachment.



Data Analytics

Condition Deviation Alert

Condition Deviation alert

Argon Gas Low level alert
CO2 Gas Low level alert
Argon gas low flow rate alert
CO2 Gas Low flow rate alert
Argon gas low outlet pressure alert
CO2 Gas low outlet pressure alert
Mixed Gas leakage alert
Mixed Gas low - High pressure alert
Mixed Gas high flow rate alert
Mixed Gas low flow rate alert



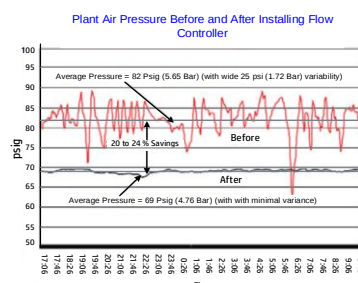
Automatic Report Generation

Maintenance & Service - Schedule Alert

Automatic M&S alert Generation User Setting

Air Compressor Maintenance alert intimation – operation hours duration

After reaching the set operation hours, the condition monitoring system automatically generates the SCHEDULED M&S alert and send to the maintenance and service team as per the schedule.



Reporting

Trend, History, Events
Viewing as tables, graphs

Viewing of various parameters

Daily, Weekly, Monthly, Yearly report – Table & Graphical format
Argon, CO2 Gas - Consumption report
Weld Gas consumption report
All gases Graph
Trend Graph
History Graph
Events Table
Set table
Alert Table