

# Reduced Measurement System Variation of fuel gas generation and consumption across refinery

## BUSINESS CASE

### Organization Trends

- The organization has 6 fuel generation plants and 7 fuel consumption plants
- The fuel gas header pressure must be maintained between 4.5kg/cm<sup>2</sup> and 5.2kg/cm<sup>2</sup>
- To enable cost optimization the refinery needs to ensure full consumption of the generated fuel gas before utilizing reserve LNG

## CHALLENGE

### What is the challenge

- On average, an extra 69.47 tonnes of fuel gas is generated each day vis-à-vis the consumption requirement
- Raw data from flow meter is not reliable leading to incorrect estimation of consumption
- Measurement system not corrected to record accurate process parameters when the process was changed

### Where is the challenge

- At the refinery

### When was the challenge identified

- In FY 2012

## IMPACT

### What is the impact

- Increased reserve LNG usage leading to higher production costs
- Risk of flare flow due to fuel gas header pressure exceeding 5.2kg/cm<sup>2</sup>
- High variation in fuel gas generation and consumption leading to unpredictability in fuel gas production and flow

## TARGET

### What is the Target

- Identify and analyse reasons for difference between fuel gas generation and consumption by implementing:
  - Daily monitoring of fuel gas generation data
  - Daily monitoring of fuel gas consumption data
  - Validation of differences between design and operating parameters of instruments like the flow meter
- Reduction in measurement error by:
  - Calibration testing of all instruments
  - Noise to Signal reduction in the collected data from instruments and environment

## OUTCOMES

### Operational outcomes

- Reduction of mean differential value between fuel generation and consumption from 69.47 tonnes to 19.4 tonnes
- Error from flow meters reduced to zero
- Implementation of flow correction in CCU and FCCU generation
- Reduction in rLNG usage
- Reduction in day to day variation of fuel gas generation and variation

### Business outcomes

- Correction factors like pressure, temperature implemented in DCS system across refinery
- Sampling frequency increased to once per week in order to obtain accurate density measure

## Delivered using:

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