

# Delivered additional Profit of US\$ 1.43 million by fuel optimization in the Primary Reformer

## BUSINESS CASE

### Organization Trends

- The organization runs a plant for the extraction of Ammonia
- In steam reforming Ammonia plant there is a surplus of high-level heat that is produced in primary reforming, secondary reforming, shift conversion and Ammonia synthesis
- Most of the waste heat is recovered for producing high pressure steam that is used in turbines for driving compressors, pumps and fans
- The Primary Reformer is a fired chamber and used for steam reforming of Natural gas and steam mixture. It is the heart of the Ammonia plant. Hence maximizing the life span of the Reformer is crucial for optimum operation

## CHALLENGE

### What and how much is the challenge

- The life span of the reformer has to be increased as it is the heart of the Ammonia plant
- In order to achieve this the fuel energy must be optimized and the temperature of the primary reformer tube skin must be maintained below 900 degree Centigrade

### Where is the challenge

- In the Ammonia plant line 2 in June 2014

## IMPACT

### What is the impact

- Increase in the ratio fuel energy in reformer to feed energy in reformer might lead to a shorter life span of the reformer resulting in additional CAPEX to set up a new primary reformer

### How much is the impact

- Potential CAPEX of US\$ 6.7 million for setting up a new primary reformer

## TARGET

### What is the Target

- There must be a significant reduction in ratio of fuel energy in reformer to feed energy in reformer to increase life span
- Need to achieve the target ratio before February 2015
- Primary Reformer tube skin temperature must be maintained below the recommended temperature
- Recycle the gas firing optimization as per the need

### How much is the Target

- Maintain the temperature below 900 deg C
- Reduction in Ratio of Fuel energy in Reformer to Feed Energy in Reformer from 0.4249 to 0.408 (entitlement 0.40064)

## OUTCOMES

### Improved Profits

- Delivered cost benefits of US\$ 1.43 million by fuel optimization in the primary reformer
- Cost avoidance (CAPEX) of US\$ 6.7 million
- The ratio recommended has been achieved thereby enabling cost optimization
- The temperature has been decreased to 900 degree C as per the recommendation

### Leaders of Tomorrow

- Belief system within employee towards fuel optimization to reduce costs and to enable sustained performance of the primary reformer

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