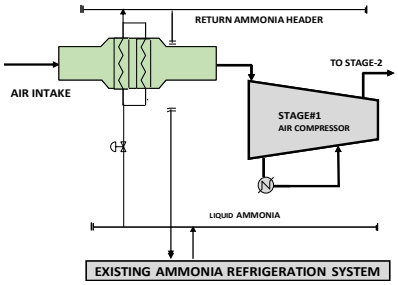
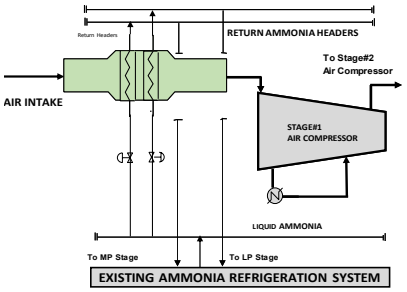
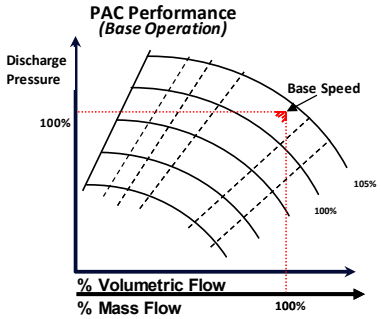
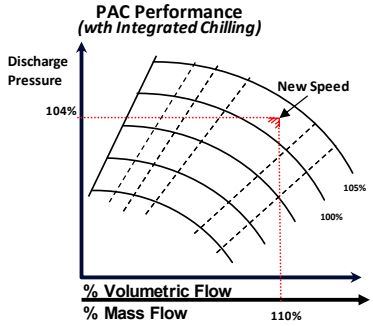


SIC™ - Single Stage Integrated Chilling



MIC™ - Multi Stage Integrated Chilling





'INTEGRATED CHILLING' PROVIDES MAXIMUM CAPACITY UPGRADE OF PAC WITH LEAST CAPEX & OPEX

"Integrated Chilling" to Upgrade Process Air Compressors

More Reforming
Reduced Inerts
More Ammonia
Less CO2 Emissions

SINCE 2006

Integrated Chilling to Upgrade *PAC**

Maximize Reforming with Least Capex & Opex

by Kinetics Process Improvements, Houston

KPI**-Houston is an **Independent Process Technology, Design & Engg Consulting** group specializing in Ammonia & Methanol Plants Revamps since 2006 to improve Capacity, Efficiency, Reliability & CO2 footprint. **Over 100 Revamp Studies completed

Integrated Chilling

- **I**ntegrated **C**hilling uses existing Ammonia Refrigeration System with Process Air Compressor (PAC)
- Single or Multistage Scheme
- No Additional Compressor

Benefits of Integrated Chilling

- **110% PAC Capacity-***with Single Stg*
- No Utilities for Integrated Chiller
- Least Cost & Space requirement
- Least incremental power for PAC
- Reduced firing in Reformer
- Reduced CO_2 footprint
- Efficient Synloop with lower inerts

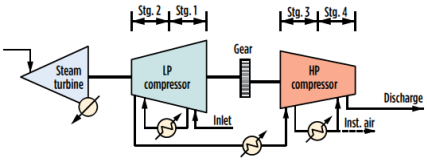
Services

- Integration Study with PAC
- **Basic Design Package**
- **Provide Performance Guarantees**
- **Engineering & Supply thro' approved Vendors**

References

- ***Approved for two large Ammonia Plants***
- ***Two Patents granted (2017 & 2019)***
- ***Refer "Increase Reforming Capacity", N2 & Syngas Conference, 2018***

***PAC**- Process Air Compressor*



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