

**USE MIC to Upgrade Process Air Compressor to Offload Reformer & Increase Plant Capacity**

USE MIC™ TO UPGRADE PROCESS AIR COMPRESSOR TO RAISE AMMONIA PRODUCTION

SINCE 2005

# Use Multistage Integrated Chilling to increase Ammonia Plant Capacity

by Kinetics Process Improvements

KPI is an independent Process Technology consulting and Engineering group specializing in Ammonia, Methanol & Petrochemicals Plants troubleshooting, Performance Improvements and Training since 2006. Houston & Bahrain offices.

## MIC™

- MIC™ stands for patented Multistage Integrated Chilling
- MIC™ is a staged thermal coupling of Ammonia/hybrid refrigeration with Process Air compressor

## Key Benefits of MIC™

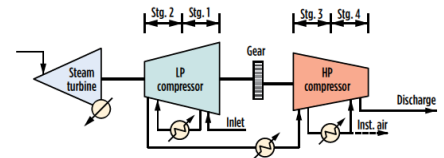
- Upgrade Air Compressor capacity up to 15% -NO extra power & NO Compressor modifications
- Offloads P/Reformer
- Lowers overall methane slip
- Offloads major compressors
- Saves Energy with reduced firing in Reformer and lower steam demand for major drivers
- Lowers Capex & Opex
- Attractive payback with additional Ammonia production

## Services

- Re-rate performance of Process Air Compressor with MIC™
- Evaluate Integration of MIC™ for additional Ammonia production
- Estimate Capex/Opex
- Evaluate Economics
- Provide complete solution with Basic Engineering

## References

- Studied and approved for two large Ammonia Plants with attractive payback
- "Ammonia Plant Upgrading- Multistage Integrated Chilling"- Patent Pending (2012)
- "Use Multistage Integrated Chilling to increase Ammonia production", Hydrocarbon Processing, April, 2015



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