Saving Energy, Increasing Power and Reducing Emissions: Making a Strategy Work

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7 REACTOR CATOFIN UNIT
FIGURE 1: CATOFIN DEHYDROGENATION PROCESS

ISOBUTANE

FUEL GAS

FEED HEATER

REACTORS

PRODUCT RECOVERY
FIGURE 2: REGENERATION AIR SYSTEM

AIR

FUEL GAS

GAS TURBINE  AIR HEATER  REACTORS  HEAT RECOVERY  STEAM GENERATOR
7 REACTOR CATOFIN UNIT
INLET TRANSITION
Plexiglass Model For Modeling Turbulent Flow
Vertical Duct Burner Elements
Steam System with old HRSG

- Power Boilers
- HRSG
- Turbine Generator
- Mech Drive
- 1400 kw
- 150 # Header
- 750# Header
- 130 kpph
- 450 # Header
Increase Power Output by Locating New HRSG on 750 Header

- Power Boilers
- +130 kpph
- HRSG
- +5250 kw
- New HRSG
- 750 # Header
- 0 kpph
- Turbine Generator
- 450 # Header
- Mech Drive
- 0 kw
- 150 # Header
- 0 kw
BENEFITS

- Energy Saving: 1 Trillion Btu/yr
- Carbon Dioxide Reduction: 58,000 tons/yr
- VOC Reduction: 230 tons/yr
- Carbon Monoxide Reduction: 300 tons/yr
- NOx Offset: 130 tons/yr
- Increase Turbine Generator Power: 3850 kw
- American Chemical Council Energy Award
- Reliable: No Forced Outages in 6 Years
CONCLUSIONS

• Waste Heat Recovery Saves Energy and Reduces Emissions
• Integrating Power and Thermal Use Maximizes Energy Savings
• Waste Heat Recovery Often Requires More Engineering and Innovation