

# OPERATING COSTS SIGNIFICANT REDUCTIONS

## Energy Savings

- Reduced burner fuel consumption.
- Quantified as 20% average savings by CNRL large fleet (1100 sites) analysis. This was publicly acknowledged in their 2013 Stewardship Report in April of 2014.

## Chemical & Equipment Savings

- Reduced chemical defoamer consumption / elimination of expensive chemicals, dispensing apparatus capital cost and maintenance, plus reduced VOC and carcinogenic chemicals by elimination of these additive chemicals. Quantified by various operators as up to 100% reduction.
- Lower tank headspace corrosion by lower moisture levels above liquid level.

## Process Efficiency Improvements

- Cleaner oil as a result of higher average process temperature.
- Less headspace foam from higher average process temperature and less oil viscosity.
- Mechanical action of the floating Hexa-Covers also breaks foam and less foaming in tank headspace reduces the risk of site thief hatch foam over and spills and subsequent costs for site remediation.
  - More cubic meters of oil per load due to reduced foamy oil conditions.
- Hotter oil loads going into trucks resulting in faster truck loading at the pad and truck discharge cycles at the transfer point due to lower viscosity.
- Faster system temperature recovery after a desand operation resulting in better cleaning efficiency and lower burner fuel consumption.

## Health & Safety / Environmental

- Reduced water vapor release into tank headspace reducing icing problems of the thief hatch and goose neck. This reduces incidence of tank collapse when loads are removed by the truck and ice plugs at the thief hatch cause a vacuum in the tank. Also less incidents of icicles forming at the tank top as a safety hazard to operators and truckers.
  - Lower tank top emissions up to 66% for Moisture / BTEX and TVOC's resulting in less odors etc. Moisture seems to be a transport mechanism for heavy end vapors that are often the source of strong odors.
- Lower moisture release from tank head space when used in conjunction with VRU's reduces the vapor load on the VRU and reduced system upsets caused by freeze ups from moisture in the vapor stream.

## DILUENT

- Reduced sales tank headspace vapor losses for Diluent and subsequent loading on VRU systems, potentially saving \$ in Diluent costs, smaller VRU loads reducing capital and operating costs for VRU's.

## BOILER FEED WATER

- Energy savings, reduces oxygen scavenger chemicals and eliminates nitrogen blankets.

*A great opportunity to save operating costs*

