



Future Technologies – Oily Wastewater Treatment

October 2004

Future Technologies – Oily Wastewater

Agenda

- New Environmental Regulations
- Treatment Options – Solids & Oil
- Treatment Options – Dissolved Chemicals
- Conclusions

New Environmental Regulations

- New Environmental Regulations
 - Current PME Regulations
 - New Hazardous Waste Regulations
 - MOMRA Regulations
- New Fines & Penalties
 - GER
 - MOMRA
- Compliance Deadline 8/07

Solids & Oil Removal

- API Separator Technology
- Other Technologies

Solids & Oil Removal – API Separator

- Elevated API Separator

State of the Art Design



Solids & Oil Removal – API Separator

- Elevated API Separator
- Minimize API length
- Water Jets – Sludge Hoppers
- Gorman Rup trash pumps
- Continuous sludge removal
- Minimize piping, maximize clean-outs
- Chain alignment sensors & adjustment blocks
- Alignment Chain & sprockets from same manufacturer

Solids & Oil Removal – API Separator

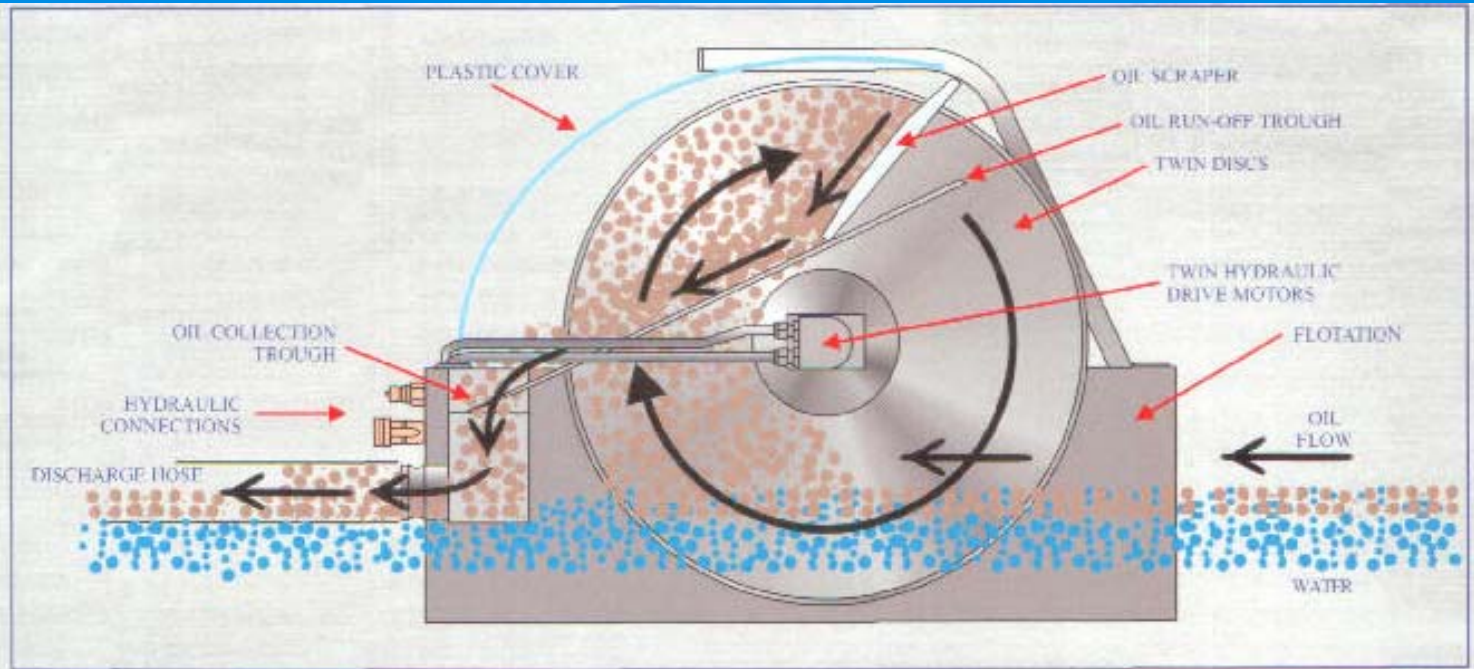
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- Rotating T Disk Oil Skimmer

Vikoma "T" Disk Skimmer



Saudi Aramco

Vikoma "T" Disk Skimmer



Discs inducing flow of pollutants to skimmer



Oil draining down run-off shoots into trough

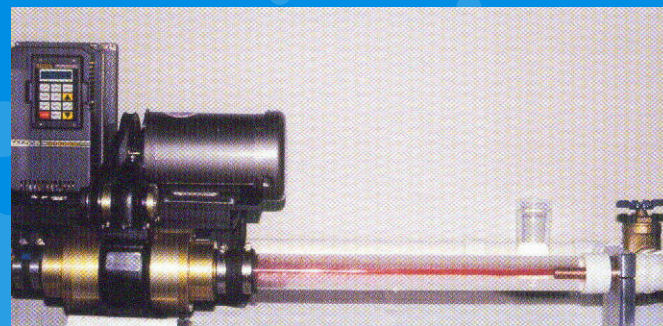
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- **Radio frequency oil sensors**

Solids & Oil Removal – Other Technologies

- Multi Media Filtration
- DAF / IAF
- Centrifuges
- Voraxial Separators

Future Technologies – Oily Wastewater Vortexial Separators



Solids & Oil Removal – Other Technologies

- Multi Media Filtration
- DAF / IAF
- Centrifuges
- Voraxial Separators
- Walnut Shell Filters

Treatment Options – Dissolved Chemicals

- Venturi Scrubber - Ammonia

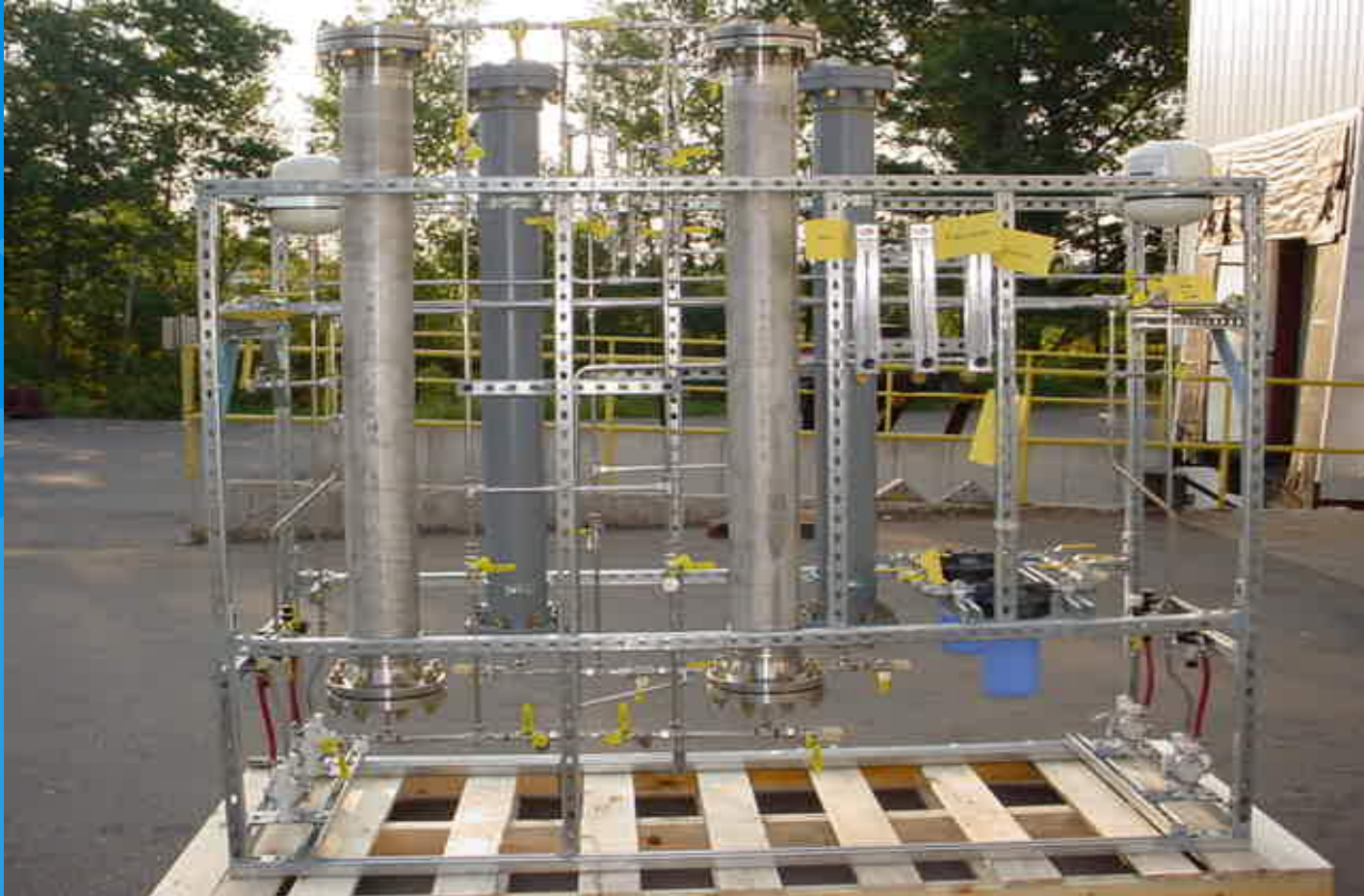
Future Technologies – Oily Wastewater Venturi Scrubber



Treatment Options – Dissolved Chemicals

- Venturi Scrubber - Ammonia
- Resin Adsorption – Organics
- GAC Filtration - Organics

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Treatment Options – Dissolved Chemicals

- Venturi Scrubber - Ammonia
- Resin Adsorption – Organics
- GAC Filtration - Organics
- Breakpoint Chlorination – Ammonia & Cyanide
- MBR – Organics & Inorganics

Future Technologies – Oily Wastewater Conclusions

- New Technologies offer solutions
- New uses of older technology also offer solutions
- Upgrading can reduce operational problems
- Increased PME compliance

Thank you

أرامكو السعودية
Saudi Aramco

