INDUSTRY APPLICATIONS

Disrupting the Economics of Heavy Oil Production

ALFALUZ

ALFALUZ: AN INTRODUCTION

Alfluz is an **oil production technology** company with offices in Houston, Texas and Calgary, Canada.

Over the course of the past few years, we have perfected our proprietary **M-CRACK system**, which uses charge modification principles to quickly separate contaminants from heavy oil during the production process without the use of dilutants. The main output from the M-CRACK is increased yield of pipeline-ready oil, **which in turn significantly increases overall profit margin.**

Designed to maximize the many benefits of Petromax®, our green "plug and play" M-CRACK system is installed directly in line with the production pipeline. Heavy oils, combined with Petromax® and cold water, decrease in density and viscosity as they move through the system.

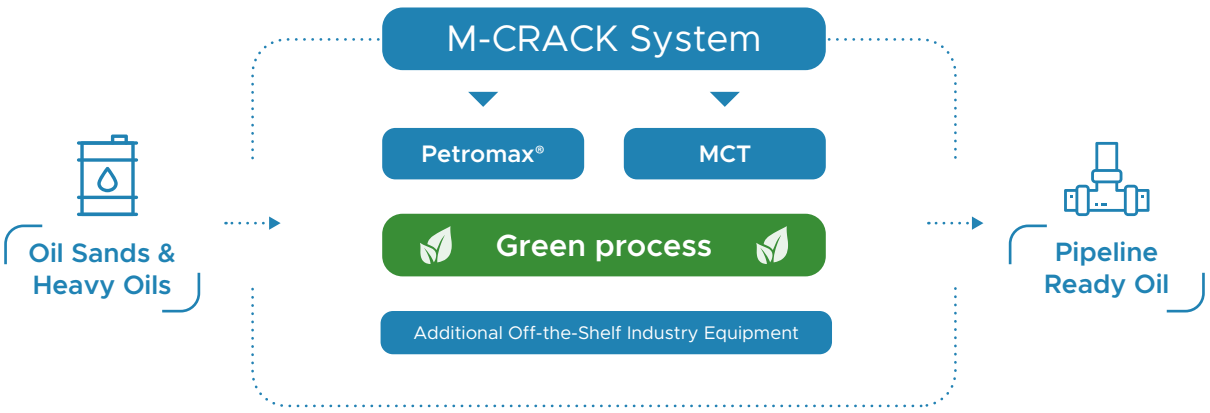
The resulting repulsion among oil, solids and heavy contaminants instantaneously breaks the water/oil and oil/water emulsion, leaving the solids free of oil and eliminating the H_2S. Remaining salts and heavy metals then move to the water phase, and the remaining solids - including resins, asphaltenes, sulfur, crystalized paraffin, heavy metals and crystalized salt - are significantly separated.

The two outputs of our three-step M-CRACK system are:

1. Clean water that is separated and recirculated within the M-CRACK system and the Central Processing facility

2. A lighter, more valuable and pipeline-ready commercial oil processed with zero environmental impact

Our unique M-CRACK system is comprised of standard industry equipment and proprietary components that make the magic happen



MAIN BENEFITS OF THE M-CRACK SYSTEM

- Reduces operating and remediation cost
- Eliminates H_2S
- Reduces viscosity and density
- 100% Green: Water-based, non toxic, biodegradable, no CO_2 emissions
- No dilutants required
- Fast and easy to apply
- Increases production capacity
- Immediately pipeline-ready
- Increases yield and profit margins
- Significantly reduces sulfur, asphaltenes, salts, heavy metals, toxins
- Works at ambient temperatures
- Uses economical, readily-available equipment

Market Sectors

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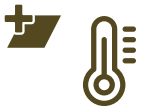
THE GREENEST WAY TO MAKE A GREAT PROFIT

Petromax® Environmental Benefits

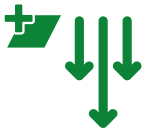


No heat required

Non toxic

Biodegradable

M-CRACK System Environmental Benefits



Significantly reduces

- Sulfur
- Asphaltenes
- Salts
- Heavy metals
- Toxins
- H_2S

No dilutants required

Reduces greenhouse gas emissions

Substantially reduces pollution caused by oil processing

Dramatic reduction of water consumption

Elimination of toxic tailing generation

Dramatic displacement of CO_2 emissions

Significant increase in energy savings

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OIL SANDS

Mining

Type of Operation:

Oil recovery and partial upgrading at mine site with high energy and water efficiency and minimum CO_2e emissions

Froth Processesing

Application:

Separate and partially upgrade bitumen at the point of extraction with minimum or zero need for diluent and no tailings generation

Oil upgrade and fine particle removal

Benefits

- Dilutent-free **heavy oil** upgrading
- Dramatic **reduction of water** consumption
- Dramatic displacement of **CO_2e emissions**
- Elimination of **toxic tailing** generation
- **Significant increase** in commercial transportation capacity

Tailing Ponds

Type of Operation:

Reclamation of Toxic Tailings generated due to the Disposal of Waste Water from Bitumen Separation and Up-grading processing facilities.

Application:

Separate the fine and ultra fine particles of the MFT

Benefits

Cost effective solution to consolidate Solids from MFT while recover valuable materials contains in this waste materials coming from the CPF

Thermal Bitumen Production, SAGD & Others

Type of Operation:

Located between the PAD and the FWKO, partially up-grade the Bitumen

Application:

Bitumen up-grading and Water Cleaning before the CPF.

Benefits

- Dilutent-free **heavy oil** upgrading
- Dramatic displacement of **CO_2e emissions**
- Dramatic reduction of **water treatment costs**
- **Significant increase** in commercial transportation capacity

OIL SANDS

Pipeline

Type of Operation:

Pipeline Cleaning and reducing costs of transportation.

Cleaning

Drag Reducer

Application:

Remove deposits in the pipeline that reduce its diameter and consequently its transportation capacity.

Reduce friction that increases the needs of energy

Benefits

Cost-effective solution for **removing scaling and deposits**

Cost-effective prevention solution **without impacting the oil quality**

Dramatic increase in **energy savings**

Tank Cleaning & Rail Car Cleaning

Type of Operation: Contactless Entry Cleaning

Application: Without human entry, clean bottom tank sludge from the lethal and explosive environment while reducing risk and maximuming the cleaning speed.

Benefits Fast, Safe, cost effective and inexpensive

Type of Operation: Oil Recovery

Application: Recover additional oil once the sludge has been extracted

Benefits Convert recoverable waste into revenue stream

Type of Operation: Resource Optimization / Waste Reduction

Application: Reduce waste and optimize resources by recovering more oil and using less water

Benefits

Cost Reduction

Dramatic reduction of negative impact over the environment

CONVENTIONAL HEAVY OIL PRODUCERS

Heavy Oil Upgrading

Type of Operation:

Viscosity Reduction

Density Reduction

Contaminants Reduction

Application:

Upgrade heavy oil and reduce water and energy consumption with minimum or zero use of diluent

Benefits

Low Capex	Low Opex	Non-polluting	No dilutant required	Increase profit margins

Pipeline

Type of Operation: Cleaning

Application: Easily remove paraffin, asphaltene, heavy metals and solid deposits that obstruct the pipeline and reduce its transportation capacity.

Benefits

Cost-effective solution to address scaling and deposits
Cost-effective prevention solution without impacting the oil quality

Type of Operation: Drag Reducer

Application: Reduce the drag between the inner pipeline wall and the moving oil.

Benefits

Cost-effective method of reducing drag
Dramatic energy savings

MID STREAM

Heavy Oil Upgrading

Type of Operation:

Viscosity Reduction

Density Reduction

Contaminants Reduction

Application:

Upgrade heavy oil and reduce water and energy consumption with minimum or zero use of diluent

Benefits

Low Capex | Low Opex | Non-polluting | No dilutant required | Increase profit margins

Tank Cleaning & Rail Car Cleaning

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SOIL REMEDIATION

Oil Spills Soil Remediation

Type of Operation:

Types of oil spills: Pipelines, oilfields, rail cars, crude oil tankers, and spills along river and ocean shorelines.

Application:

Mobile plant that cleans the solids from oil and water at the source of contamination while recovering valuable oil and water that can reduce the cost of the environmental emergency response.

Benefits

- Fast Soil Cleaning
- Low CO_2 emissions
- Safe Operation
- Minimal environmental impact
- High speed oil and water recovery
- Economical cleaning method

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