NaNoEOR

Green NaNoFluid Oil Extraction

Green Nanoparticles for Carbon-Neutral Oil Production

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nanoeor.com

HIGHLIGHTS

NaNoEOR
Green NaNoFluid Oil Extraction

Green Nanoparticles for Oil Production Enhancement.

- Goal is to significantly lower crude oil production costs.
- Low-cost carbon-neutral oil production for about $9.00 / bbl. incremental production.
- Zero-emission carbon-neutral oil production achieves ESG standards that safeguard the environment.
- Canadian operators costly carbon tax is avoided.
- Generates carbon credit revenue from emissions offset buyers.
- Extremely low capital cost for nanofluid injection system.
- Equipment includes green nanofluid, pump, valves, and flexible steel hose.
- Nanofluid is injected at ambient temperature.
- In-situ exothermic reaction generates significant BTUs.
- High-temperature green nanofluid reduces heavy oil viscosity 99%.
- Generates significant BTUs to achieve heavy oil & oil sands production.
- First-of-its-kind green nanotechnology for light oil, heavy oil, oil sands, and hydraulically fractured shale oil production.
- NaNoEOR aims to inspire oil companies to license the green nanotechnology to extract hydrocarbons in a carbon-neutral approach to help reach net-zero emissions by 2050.

SOLUTION – GREEN EOR NANOTECHNOLOGY

NaNoEOR
Green NaNoFluid Oil Extraction

- **Green nanoparticles for carbon-neutral crude oil production.**
- Low-cost oil production for about $9.00/bbl. incremental production.
- Delivers green nanofluid to at 6,000+ ft.
- Zero-emission alternative to an OTSG steam generator for heavy oil and oil sands.
- More heavy oil and oil sands production than other conventional EOR techniques.
- The cost of new wells is avoided.
- Generates high-temperature heat reduces heavy oil viscosity 99% (~400,000 cP ultra-heavy oil reduced to 259 cP).
- Zero-emission carbon-neutral oil production achieves ESG standards that safeguard the environment.
- More oil recovery at a faster rate increases profit.
- Minimal maintenance helps reduce costly downtime.
- Off-the-shelf equipment system.
- Production enhancement of light oil, heavy oil, oil sands and shale oil.
- Replaces costly toxic chemical surfactants and/or solvents.
- New reservoir pressure benefits stripper well production.
- Generates significant BTUs for viscosity reduction & new reservoir pressure

NaNoEOR is a transformational nanotechnology that is in a "class by itself" and therefore "unique and innovative"

NaNoEOR Product Overview

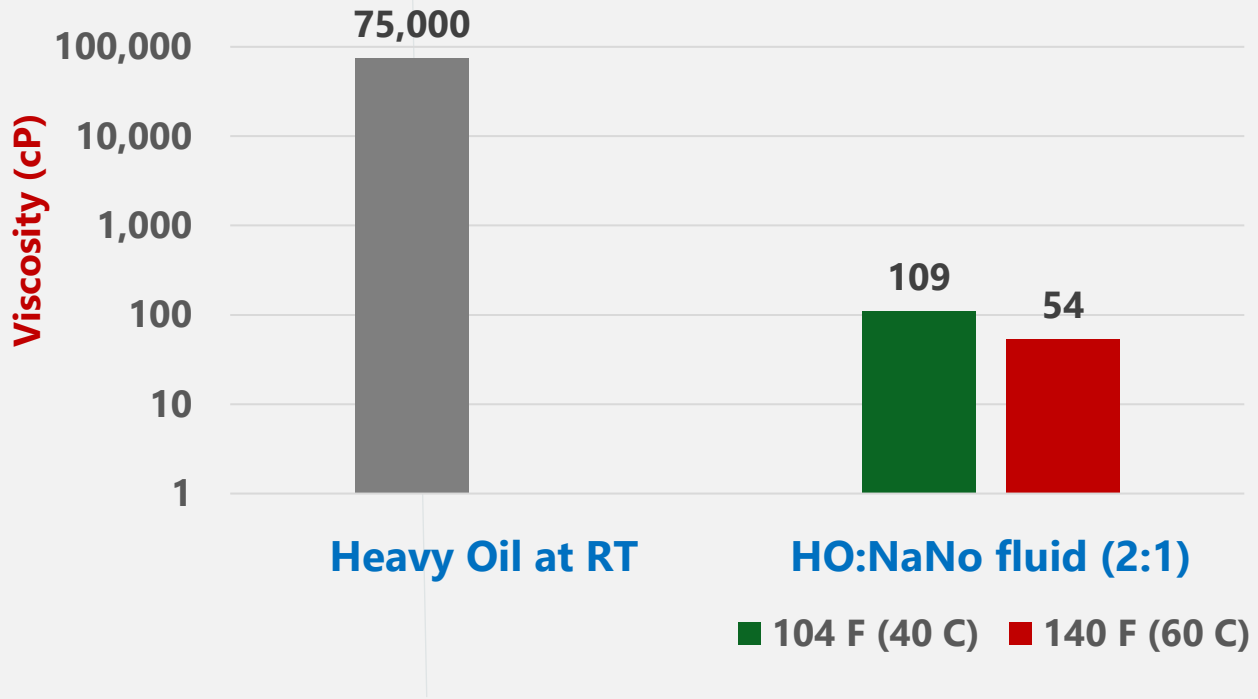
- The goal of NaNoEOR is to significantly improve oil recovery that eliminates greenhouse gas emissions to achieve carbon-neutral oil production.
- Green nanotechnology is a transformative in-situ EOR technique.
- Green nanofluid is Injected at ambient temperature.
- Extremely low-capital investment that just requires a novel non-toxic, 100% biodegradable green nanofluid, pumps, hoses, and valves.
- Permanently lowers viscosity remains unchanged on the surface.
- Game-changing green EOR nanotechnology will solve oil recovery problems.

VISCOSITY REDUCTION DATA

NaNoEOR
Green NaNoFluid Oil Extraction

99% viscosity reduction for heavy oil and oil sands

Permanently lowers viscosity that remains unchanged on the surface.



Net-Zero Emission 2050

VALUE PROPOSITION

NaNoEOR
Green NaNoFluid Oil Extraction

NaNoEOR green nanotechnology is a very profitable oil extraction technology

- **Green nanoparticles for carbon-neutral oil production.**
- Injection treatment cost ~$9.00/bbl incremental production.
- Reduces heavy oil viscosity 99% that remains unchanged at surface.
- Nanofluid is delivered to at least 6,000+ft reservoirs.
- Low CapEx and OpEx reduces production cost per barrel of oil.
- Canadian operators costly carbon tax is avoided.
- Low steam-oil ratio compared to conventional steam injection.
- Generates carbon credit revenue from emission-offset buyers.
- Off-the-shelf system – no equipment manufacturing.
- Achieves ESG standards to safeguard the environment.
- Simple green EOR solution.

NaNoEOR is a simple, low-cost and transformative green EOR nanotechnology.

More Oil Production + Lower Costs = Higher Profit Margins

- NaNoEOR achieves 99% viscosity reduction of heavy oil and oil sands.
- NaNoEOR avoids Canada's carbon tax for each barrel of oil produced.
- Best-in-class green nanotechnology oil extraction technology.
- Mission Statement: Seamlessly integrate green nanotechnology to provide cost-effective, carbon-neutral oil extraction solution.
- Company's Motto: Achieve the low-cost carbon-neutral oil production.
- Long-Term Vision is to help the oil industry transition to a decarbonized, net-zero business by 2050.

GREEN NANOFLUID BENEFITS FOR PRODUCTION ENHANCEMENT

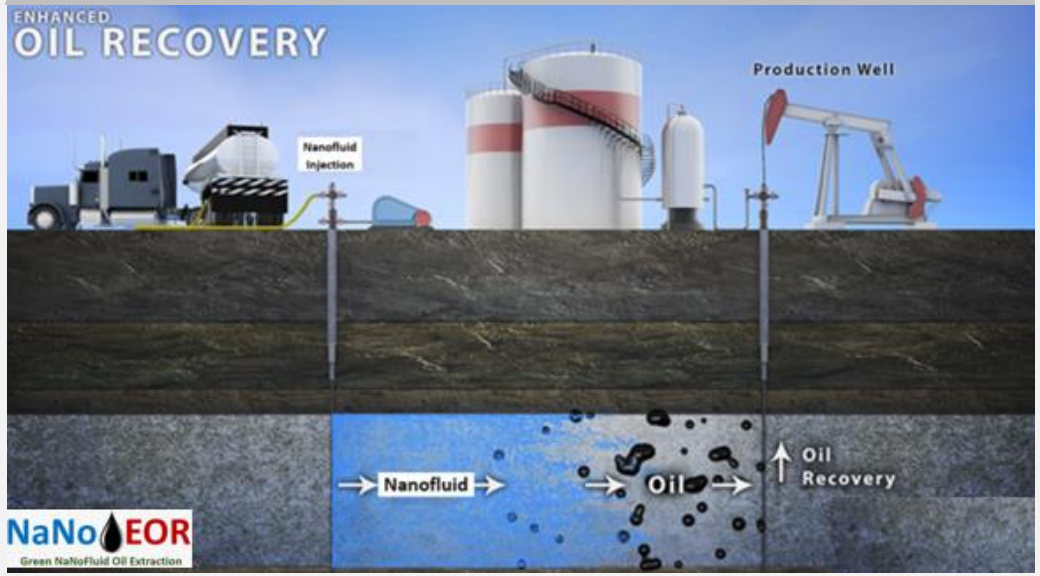
NaNoEOR
Green NaNoFluid Oil Extraction

- Extremely low CapEx and OpEx
- Injection treatment cost ~$9.00/bbl of incremental production
- Payback is 1 to 3 months
- Non-toxic, non-corrosive, and 100% biodegradable
- Reduces heavy oil and oil sands viscosity 99%
- Canadian operators costly carbon tax is avoided
- Increases proved oil reserves and asset value
- Extends longevity of declining oil wells
- Increases reservoir pressure enhancing stripper well production
- Wellbore remediation treatment for paraffin and asphaltene deposition
- Benefits light oil, heavy oil, oil sands, shale oil, and natural gas liquids
- Achieves ESG standards to safeguard the environment
- Generates carbon credit revenue from emission-offset buyers
- Licensing to help oil companies achieve carbon-neutral oil production 99% viscosity reduction (~400,000 cP ultra-heavy oil reduced to 259 cP)
- Creates sodium hydroxide In-situ surfactant
- Alters wettability makes reservoir rock more water-wet
- Reduces interfacial tension (IFT) of 70% to 90%
- Alters reservoir's rheology for better oil flow
- Increases permeability achieving a higher sweep efficiency
- Creates significant BTUs for new reservoir pressure
- Permanently lowers viscosity that remains unchanged on the surface
- Injected at ambient temperature in existing wellbores
- In-situ upgrading heavy oil achieves pipeline requirements
- Core flood lab tests achieved ~36% increased recovery of oil in place
- Prevents or delay heavy oil asphaltene precipitation
- Reduces heavy oil sulfur content ~42%

Revolutionary and Transformative Nanofluid

Game-changing **green** **nanomaterials** generates significant BTUs that reduces heavy oil viscosity 99%, increases permeability, creates new reservoir pressure, decreases interfacial tension, causes wettability alteration and improves sweep efficiency for increased oil production.

NaNoEOR™ nanofluid injection into any oil reservoir



GREEN NANOFLUID INJECTION IN THE RESERVOIR

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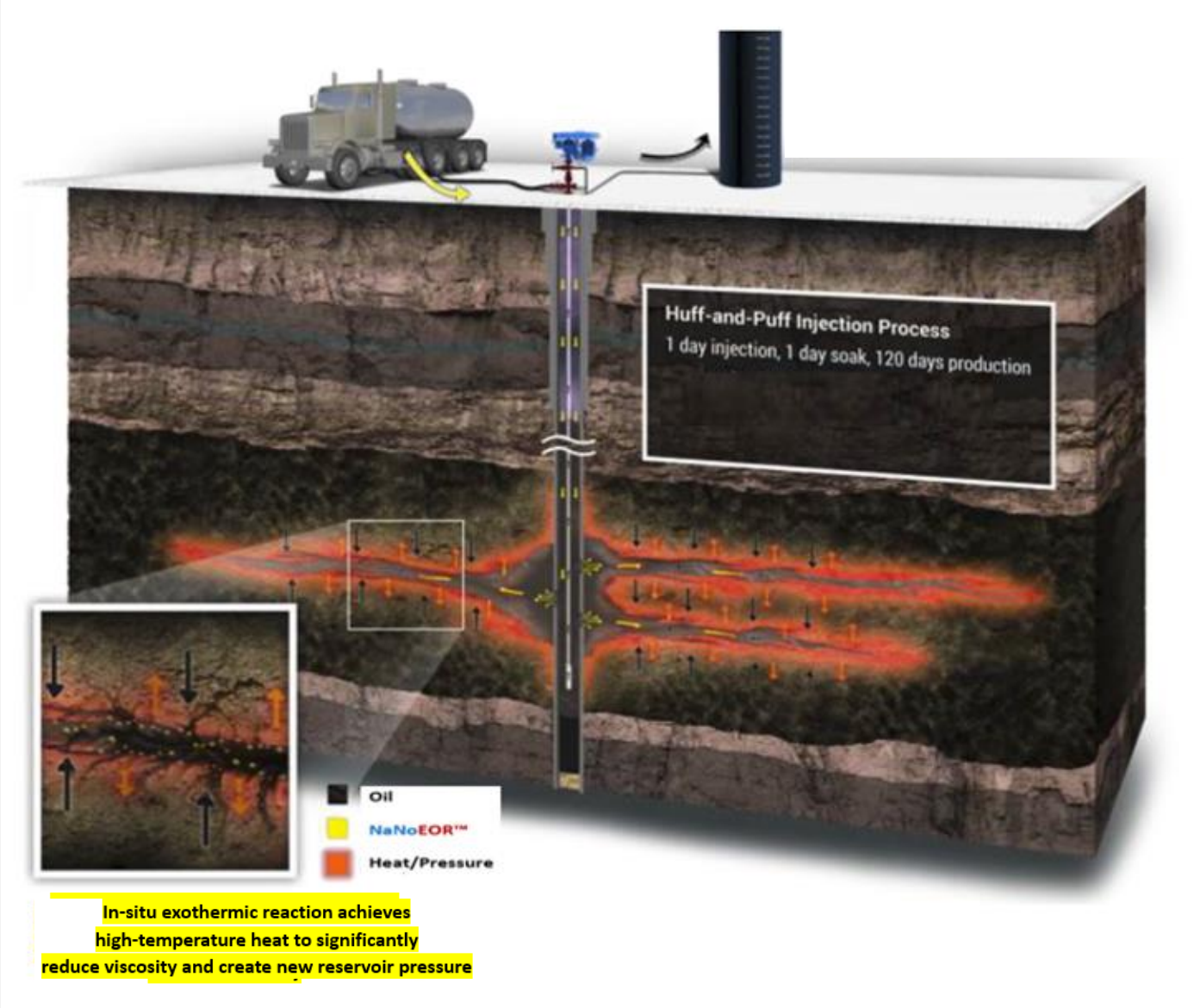

In-situ exothermic reaction achieves high-temperature heat to significantly reduce viscosity and create new reservoir pressure

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PROCESS FLOW DIAGRAM

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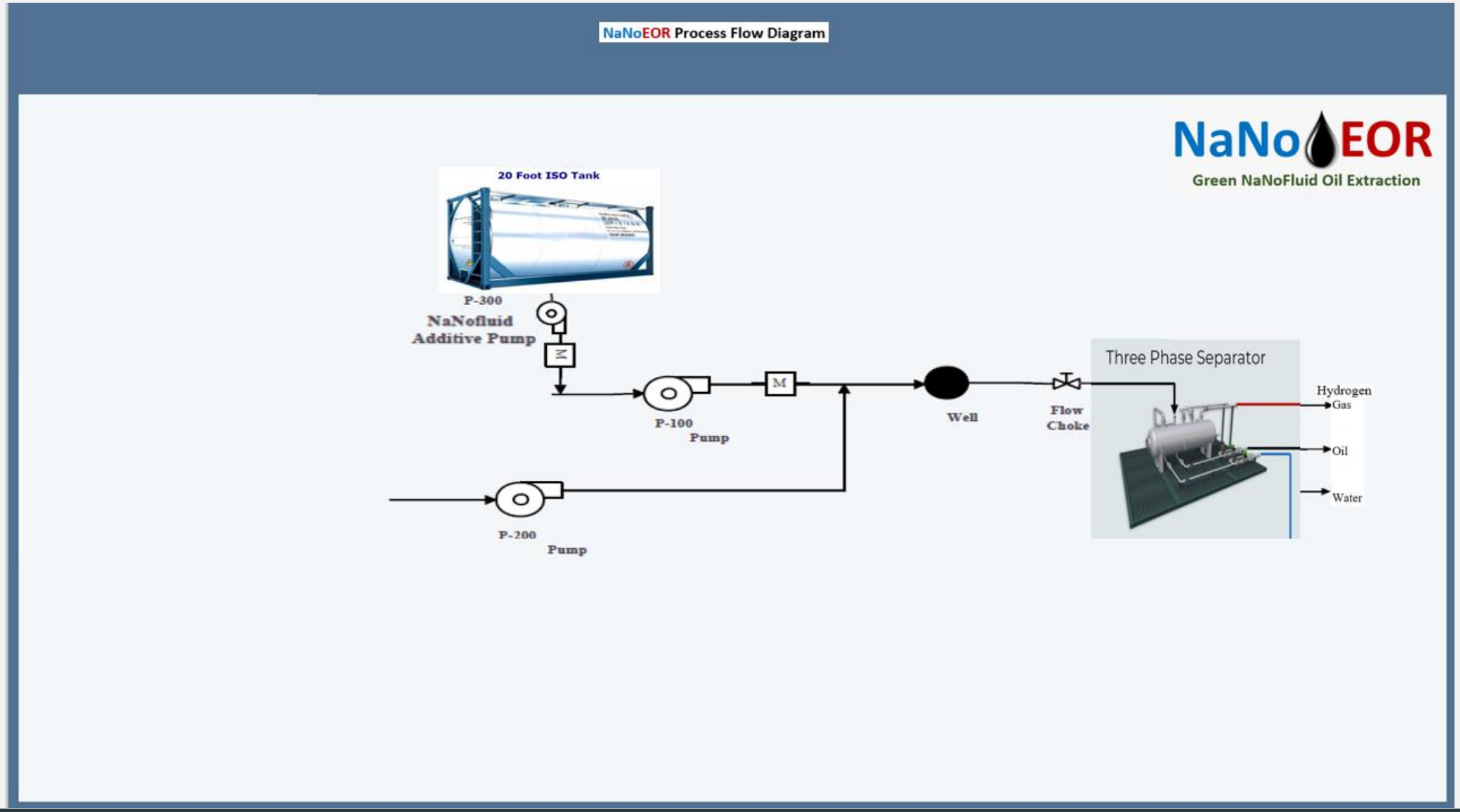

Green Nanofluid for Paraffin and Asphaltene Remediation

- Nanofluid generates heat that melts paraffin wax deposits.
- Remediates paraffin and asphaltene deposits in the wellbore and perforations.
- Thermal nanofluid treatment avoids costly pigging to scrape off the wax deposit.
- Non-toxic, non-corrosive, and 100% biodegradable.
- Quickly removes paraffin and asphaltene to boost oil production.
- Applied alone without costly hazardous toxic chemical solvents.
- Nanofluid treatment is injected at ambient temperature.
- Nanofluid can be pumped into the annulus with no shut-in period required.
- Efficient thermal treatment for fully blocked flow lines and perforations.
- Nanofluid does not push paraffin or asphaltene into the formation.
- Non-intrusive paraffin and asphaltene remediation technology.
- Equipment can be easily installed on an offshore platform.
- Equipment is only a 20 ft. ISO tank with nanofluid, pumps, valves, and flexible hoses.
- Outperforms traditional costly toxic chemical solvents.
- Lowers operating costs by easily melting oil well wax and organic deposits.
- Paraffin and asphaltene removal increases oil production for higher profitability.

Paraffin wax and asphaltene deposits have drastic negative effects on oil production.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG)

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Future Energy LLC has been involved in the development of California heavy oil projects for over 30-years. We are bringing a transformative zero-emission green nanotechnology that is a first-of-its-kind carbon-neutral oil production technology branded as NaNoEOR™.

What sets Future Energy apart is our novel green nanotechnology that will help oil and companies to achieve reduced emissions. Future Energy's green nanotechnology will help oil companies diversify into carbon-neutral oil production and generate carbon credit revenue to achieve higher net revenue. NaNoEOR will help Canadian operators avoid the costly carbon tax. NaNoEOR is an extremely low CapEx and OpEx. NaNoEOR can help oil companies offset their greenhouse gas emissions, to achieve decarbonization and net-zero emissions by 2050.

Future Energy is pleased to support Social Contract values. Future Energy is building a purpose driven nanotechnology license business that can help operators successfully implement our green nanotechnology to enhance their objectives to help them achieve Environmental, Social and Governance (ESG) standards that safeguard the environment. We desire to help the community's citizens health and well-being to provide the societal benefits to the environment by improving air quality, reducing water consumption, and maintaining high paying jobs improving the local economy.

CONTACT INFORMATION

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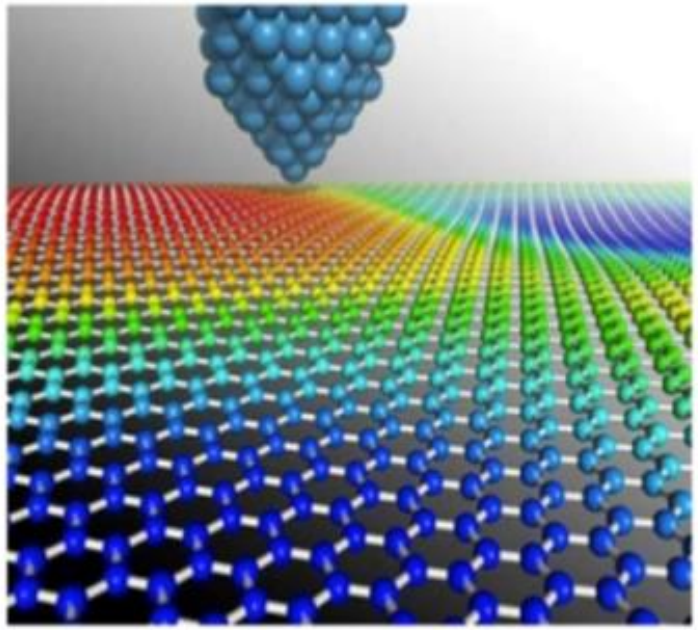
Enhanced oil recovery from the perspective of a disruptive green nanotechnology.



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FEATURED IN CANADA'S CLEAN RESOURCE INNOVATION NETWORK FEBRUARY 2023 NEWSLETTER