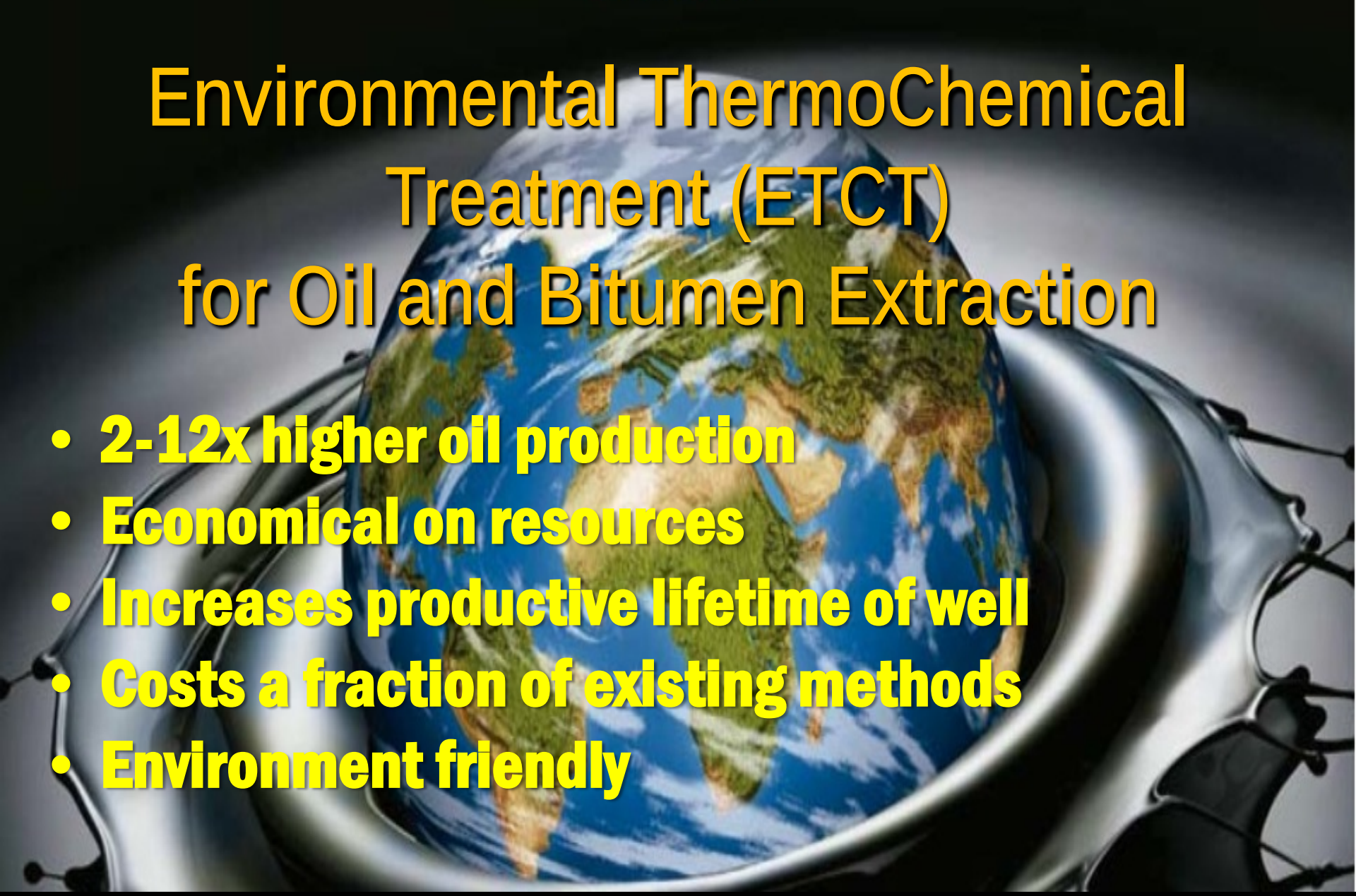

Environmental ThermoChemical Treatment (ETCT) for Oil and Bitumen Extraction

- **2-12x higher oil production**
- **Economical on resources**
- **Increases productive lifetime of well**
- **Costs a fraction of existing methods**
- **Environment friendly**

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TOO GOOD TO BE TRUE?

What if you could

- produce 2-12x more oil day-to-day, and 20-40% more over the well's lifetime?
- restore old and heavily-watered wells to their original productivity?
- produce crude oil for an average of $5 a barrel?
- exploit reservoirs too economically problematic to drill?

ETCT DOES ALL THAT

Preparing the ETCT system in Montana, USA

ETCT: GAME-CHANGER OR MIRACLE?

- Thermal fracturing is more powerful than hydrofracture AND saves millions of tonnes of water!
- 70% less expensive than hydrofracture or steam
- Cleans skin layer and collector deeply and thoroughly
- More efficient and environment friendly than any other enhanced oil recovery method

Environmental ThermoChemical Treatment (ETCT) – The most cost-effective, environmental friendly EOR method known in the world.

THE PATENTS

- TCTM Oil Ltd. is the exclusive owner of two patents, and has prepared a third. These patents expand upon the previous two patents, published in 2010 and 2012, and were invented by members of the original team of scientist developers.
- Old Patent No. 1
- Titled: “Gas evolving oil viscosity diminishing compositions for stimulating the productive layer of an oil reservoir”.
- Provides a method for heating oil reservoirs based on the thermo-chemical reaction of two or more reagents, causing the release of huge amounts of energy, heating up a large part of the formation all around the borehole, reducing the viscosity of the oil in the formation. A large amount of gases are created, enabling gas-lifting.
- Old Patent No. 2
- Further development of Patent No. 1 using a new method of application, plus a solution for placing packers. This enables the chemicals to be continuously transferred in-situ, while the oil is pumped out simultaneously and continuously.
- New Patent No. 1 - granted
- This patent specifies the chemicals and catalysts, and enables a better selection of materials with the aim of reaching either higher temperatures (enables hydro-cracking or thermal cracking in-situ), or higher pressure (enables fracturing of the formation (without injecting significant amount of water) and/or stronger artificial gas-lifting).
- New Patent No. 2 – pending final approval
- Defines the automated treatment process with our ETCT method, which raises efficacy and safety to a maximum level, while easing the manpower and technical requirements.

RESULTS OF LIVE TESTING IN RUSSIA

2 wells, 1.5 km deep, carbonate

Figures in Orange = total extra tonnage oil extracted in RED number of days

Well Number	Downhole Equipment	Operation Month	Start-Up Date	Basic Oil Rate	Well Exploitation Days	Average Daily Oil Rate	Additional Extraction, tons	Specific Oil Rate, t/day
1242	EVNT 25-1500		09.11.2011	3.5				
		November, 2011			22	9.3	127.9	
		December, 2011			31	9.0	169.5	
		January, 2012			31	8.1	143.5	
		February, 2012			29	8.4	143.2	
		March, 2012			31	7.4	123.3	
		Total			144		707.4	4.92
3003	EVNT 25-1500							
		January, 2012	04.01.2012	1.93	28	10.6	242.9	
		February, 2012			23	10.6	199.6	
		March, 2012			31	9.98	247.6	
		Total			82		690.1	8.44

in 144 days

in 82 days

COMPARING THE METHODS

Criterion	*SAGD*	*Hydrofracture*	*ETCT*
Principle	Heats the formation with steam to lower viscosity	Cold liquids at enormous pressure to fracture formation	Heats the formation to lower viscosity. Chemical reactions increase energy and gas-lifting Can treat and recover simultaneously
Damage to well	Rapid water-logging	Rapid water-logging	No irrigation or any other damage
Production over time	Non-economical after appx. 30% of oil is extracted	Rapid decrease in production, up to 60% per year	Can extract 60-90% of all oil from the well over its lifetime
Energy loss	+/- 25% to heat and to transfer water to the well	Strong pumps (>10.000 HP), proppants	*Negligible* losses
Depth limits	800-1000m (deeper, with costly thermo-insulated tubing)	Depends on well construction and strength of pumps available	We've done 5km and can go much deeper
Temperature reached	250° C	N/A	From 200-500° C, fully regulated
Investment	Very high infrastructure costs	High	Low to Moderate
Production costs	$50-60/BBL	$40-60/BBL	$2-20/BBL depending on geological conditions
Environment-friendliness	Water and air pollution.	Wastes and contaminates water	Negligible: by-products are nitrogen, water, and CO2. Any other solid materials remain down in the well. Heavily-watered wells can be restored
Repeatability	Increasing water content lowers economical effect	Repeated stimulation has lesser effect, with higher water contamination	Can be repeated many times or can run permanently

HOW DOES ETCT WORK?

- Two chemical solutions are delivered into the well's original borehole
- The chemicals mix and react deep in the productive layer, creating extreme heat and pressure
- Oil heats up, lowering viscosity by degrees, for several meters in every direction
- The oil reacts with the heat/chemicals, creating energy for gas-lifting
- Oil is extracted in multiples at an accelerated rate

it's that simple

Moreover, ETCT thoroughly cleans the skin layer (and often lowers the water cut), protecting the formation from further damage.

Above and beyond the initial windfall, production increases organically over time.

ADVANTAGES AND BENEFITS

- Multiple times faster extraction, every day
- 20-40% more total production over the well's lifetime
- Lowest production costs (by far) of any EOR method
- Replaces hydro-fracture and SAGD
- Restores heavily-watered oil fields
- The most environment-friendly method of EOR
- Fully automated and safe application

WHAT TO DO NEXT?

1. Fill in the technical data on our Well Survey Sheet
2. We calibrate the proper formula, provide a detailed estimate of costs and conditions
3. We do the live demo on your well
4. See your production rise by 2-12x and ROI increase many-fold
5. TCTM collects their fee based on your incremental output, or a flat fee per well

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