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Fueling the future - A quest with electromagnetic radiation

Fossil fuel is the life blood of our civilization. It enables cogs to turn, wheels to roll and effects every aspect of our lives. It even makes earth's climate more liveable by powering technology that moderates temperature extremes. Alex Epstein eloquently shows that fossil fuels benefit rather than harm humanity. As such, it is our moral responsibility to unlock the known 6.4 trillion barrels of unconventional heavy oil and bitumen deposits. Fulfilling our moral responsibility faces the headwinds of Intense environmental and political opposition. Emerging electromagnetic (EM) technology silences rational environmental protest but not the irrational political echo chamber support for unsustainable green energy. EM is a clean technology. It requires no solvents, no external water, emits no CO₂, and has a small environmental footprint. Present commercial thermal EOR applications limit themselves to the low frequency (10 Hz to 700 kHz) end of the radio frequency portion of the electromagnetic spectrum. Long wavelength radio frequency emission produces a large EM field but injects heat slowly. Within the EM field, polar in situ formation water molecules vibrate and create frictional heat that ultimately produces a steam chamber. Reservoir temperature increase is a function of the water molecule vibration rate. RF technology presently uses EM frequencies that reduce vibration cycles between 10 to 700 thousand times per second. Low water vibration rate is the main limitation of current RF heat injection because the frictional heat build-up takes years to reduce oil viscosity sufficient for

efficient production. Microwave technology is more effective, because it vibrates water molecules at 2 to 3 billion times per second and produces higher frictional heat. However, the EM field is much smaller than the present commercial RF technology. Expanding the reach of the Microwave heat injection involves the thermal runaway principle and pulsed radiation transmission. Reservoir heat build-up is intense with a patent pending monopole microwave antennae. Pulsing microwave transmission dramatically improves production economics of heavy oil and bitumen. This new technology can open-up currently immobile reserves and can help fuel the world's energy needs for decades to come.

Speaker Biography

Franz O Meyer is an accomplished Senior Executive and Entrepreneur with demonstrated success spanning oil and geology. He serves as CEO of MwSol corp., a startup whose mission is developing clean and innovative technologies. Dr. Meyer received his bachelor's degree in Geology from SUNY at New Paltz, and his master's and PhD degrees in geology from the University of Michigan where he specialized in invertebrate palaeontology under the supervision of Dr. Bruce Wilkinson. Franz O. Meyer is a pioneer in the interpretation and use of Gamma-ray logs and their application in carbonate deposits for sequence stratigraphy. He was a regular consultant for companies such as Aramco and ADCO. His recent research activities include electromagnetic radiation to heat oil reservoirs and dolomite stratigraphy. His work has been featured in Science, SEPM, and Geo Arabia.

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