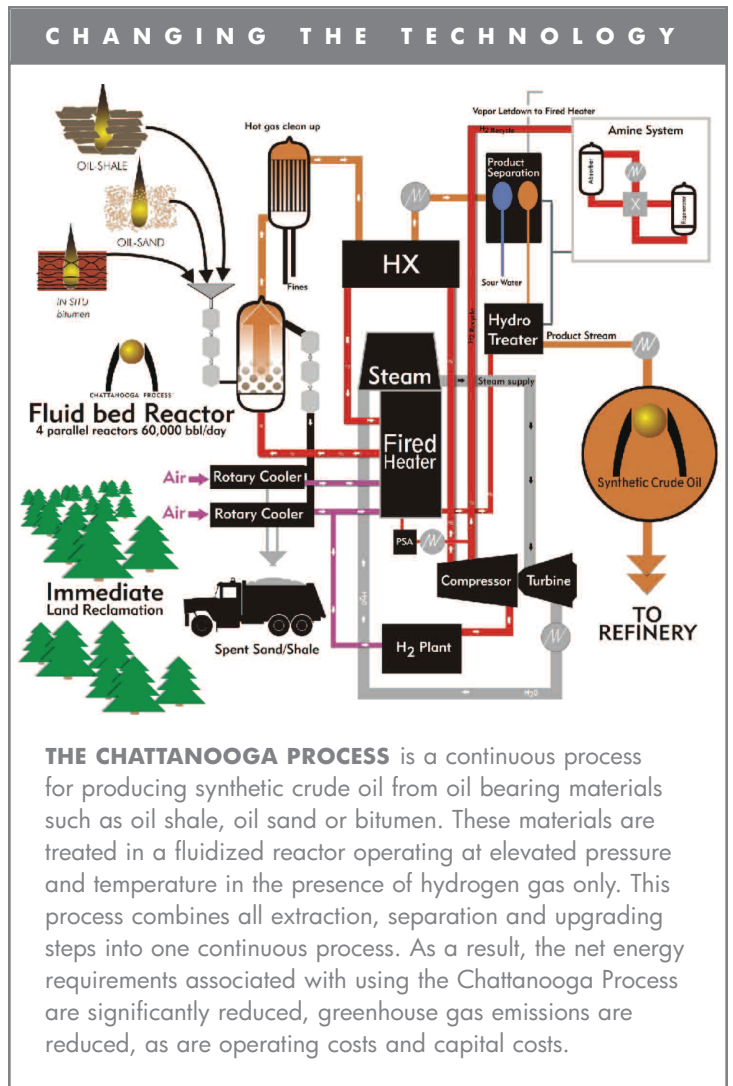


# CHATTANOOGA PROCESS™

**AN INTERNATIONAL TEAM** of industry engineers and experts has developed a patented process, known as the Chattanooga Process, which can be used for converting unconventional oil resources into synthetic crude oil. The Chattanooga Process is designed for applications involving oil shale, in-situ bitumen, oil sand and heavy oil. The approach used in developing this technology supports accelerated commercialization of the Chattanooga Process by industry as a result of the following aspects:

- **Designed for commercial application because it relies upon proven technology and sub-processes**
- **Supported by conclusions from billions of dollars previously invested in researching oil shale technology**
- **Verified by applied research designed to test the technology in commercial use**

**RESEARCH RESULTS:** The reaction kinetics of the Chattanooga Process for bitumen were proven in Pilot Plant I testing conducted at the National Centre for Upgrading Technology (NCUT) in Devon, Alberta, Canada. These tests produced 32° - 36° API synthetic crude oil from bitumen. Pilot Plant II testing conducted at NCUT achieved fluidization and extracted 100% of the oil contained in oil shale. Specifically, yields in excess of 51 gallons/ton for Colorado oil shale a comparable results for Kentucky oil shale were achieved. These results were used to verify that the Chattanooga Process is commercially viable both for Eastern and Western oil shale.



**COMMERCIALIZATION STRATEGY:** The strategy for industry acceptance of the Chattanooga Process uses the thriving Canadian oil sands industry as a model. The successful completion of a demonstration plant is expected to facilitate industry acceptance of Chattanooga Process technology. Because all process technology and equipment beyond the reactor is existing, well-demonstrated off-the-shelf commercial technology, uncertainties associated with implementing this new process are reduced, encouraging adoptions of the technology by industry. Chattanooga Corp is exploring potential industry partnerships for establishing a demonstration facility. The Chattanooga Process is also well suited for the upgrading of bitumen, thus providing the oil sands industry a more cost-effective alternative to existing technologies. Chattanooga Corp is also opportunistically exploring partnership arrangements in the oil sands industry.



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**COMPETITIVE ADVANTAGES:** Based on the significant research and pilot testing conducted in the US during the 1970's and 1980's, the following conclusions about the most viable technology for oil shale retorting have been determined

**“...fluid bed retorting, hydrogen atmosphere and temperature for processing is under 1000°F”**

**(Dr. Burt Davis, Center for Applied Energy Research)**

The Chattanooga Process is the only technology that meets all of these criteria and is also the only technology proven commercially viable for both Eastern and Western oil shale, which is critical to the emergence of a viable US oil shale industry. In addition, the Chattanooga Process technology is also the only technology that can be used to meet the DOE target for producing oil from oil shale. As such, the Chattanooga Process is the one technology that meets all of the requirements that can allow the oil shale industry to revolutionize the economics of the energy industry.

- **Fluid bed reactor and its associated fired hydrogen heater are central to the Chattanooga Process.**
- **Hydrogen is used as the heat conveyor to the reactor, reactor bed and fluidizing gas and reactant.**
- **Immediate land reclamation is possible because oil processing occurs at temperatures of under 1000°F, yielding coarser spent sand/shale suitable for reclamation without additional processing.**

