



## A LITTLE ENGINE THAT COULD.

By Bruce Mulliken, Green Energy News  
August 22, 2009

No, this isn't a children's story about a small but powerful steam locomotive that comes to the rescue of a larger engine that can't make it up a steep incline. Nor is it a moralistic story to teach children about the power of positive thinking. ("I think I can. I think I can," said the little pony engine as it pulled the big train up the hill.)

This is actually a story about a little engine that could be a candidate for replacing the internal combustion engine - the ICE - as we know it.

As much talk as there is about battery electric cars and plug-in hybrids, it will be a long, long time before all of the world's internal combustion reciprocating piston engines are replaced with electric motors. Battery, fuel cell, or other energy generating or storage devices aren't quite there yet to energize those motors in every application now dominated by the ICE.

With the exception of what goes into the intake side of a conventional piston engine, and what comes out the exhaust, the ICE has been a workhorse of economies and societies. For decades the engines have been doing everything from pumping water, to propelling boats and ships, to whacking weeds, to digging ditches, to generating electricity, to bringing children to school, to pulling airplanes across the sky. The ICE has been a fabulous and successful tool for the work it has done. It has been NOT so fabulous for the contribution it's made to a deteriorating global environment or geopolitical strife.

At the intake side of the ICE the problem is in the fuels that are used, for most part liquid petroleum fuels. (I won't go into a long diatribe on oil. You know the problems.) But most current efforts to deal with the fuel-problem end of conventional engines (the intake) have been to develop new alternative fuels and adapt conventional engines to burn them. Perhaps another approach would be to develop a new type of engine that is more readily adaptable to alternative fuels.

Looking at the exhaust of conventional internal combustion engines a major problem is that burning gases (really exploding gases) in cylinders are forced out of the engine before combustion is complete. Combustion, or the rapid, chain-reaction oxidation of a fuel, is still taking place as the burning gases are leaving the cylinder, on their way into the atmosphere and into our lungs. The problem, you could say, of internal combustion engines is an "internal" one. An external combustion engine could solve the incomplete combustion problem. External combustion is more leisurely. The flame, or explosion, burns itself out completely while still working to make the engine run.



If the internal combustion engine could indeed be replaced with an external combustion engine, one of those possibilities is the external combustion engine design from Cyclone Power Technologies of Pompano Beach, Florida. The company describes its Cyclone engine as “ a Rankine Cycle heat regenerative external combustion engine, otherwise known as a “Schoell Cycle” engine. It creates mechanical energy by heating and cooling water in a closed-loop, piston-based engine system.” It’s a modern day steam engine and it’s named after its inventor, Harry Schoell, Chairman and CEO of Cyclone.

The Cyclone engine appears to have the adaptability that is inherent in the conventional ICE. According to the company, it can be engineered to be built in any size, to do any task from cutting grass to driving locomotives (and become the little engine that could.) The Cyclone can run on virtually any fuel and in certain applications it can also be a heat recovery engine, or run on concentrated thermal energy from the Sun.

There’s already commercial interest in Cyclone. The company has recently entered into licensing agreements for production of the engine, among them: A waste oil company in Virginia wants to use the Cyclone to burn waste oil; a firm in New Hampshire wants to use the engine to put waste heat to work; a company in Spain is considering the engine for solar thermal applications; and it’s also being developed for use in a military robot ( the EATR project) that will harvest vegetation along its path as fuel to run the engine. (It won’t run on human flesh, as reported by some uninformed internet blogs).

So far, Cyclone shows considerable promise as a possible replacement for the conventional internal combustion engine. If it didn’t work as its company claims, would there be as much commercial interest? Could it replace what’s under the hood of our cars? I think it can. I think it can.