



Biodiesel Continuous Reactor

SRS Engineering Corporation has teamed up with Cavitation Technologies, Incorporated to provide the most effective biodiesel reactor on the market. The **Nano Biodiesel Reactor Skid System** employs state of the art technology. The **Nano Biodiesel Reactor** generates comparative advantages allowing us to install a biodiesel production system and produce biodiesel at lower operating costs than any of our competitors.

The Nano Biodiesel Reactor has many advantages over its competitors:

Feedstock Flexibility - In the US, a majority of biodiesel producers employ single-feedstock production designs and technology (typically soybean). In Europe, the feedstocks are mostly canola and sunflower.

Our system, on the other hand, has produced ASTM quality biodiesel using non-degummed soy oil. The difference between the cost of degummed and non-degummed soy may be \$0.02 or \$0.03 per pound, amounting to \$0.1875 per gallon or about \$3.4 million for a 17.8MMGY biodiesel production facility.

Simultaneous Use of Feedstocks - With our system various feedstocks can be blended to produce ASTM grade biodiesel. Some of these feedstocks can include, but are not limited, to palm oil, yellow grease, and beef tallow. This flexibility allows producers to shift between feedstocks based on customer demand and market cost dynamics without hindering production or substantially increasing supply costs. This permits the user to mix a high FFA feedstock (say 10%) with a low FFA feedstock (say 2%) in order to arrive at a blend (say 3%) which can be used to produce ASTM quality biodiesel.



The Nano Biodiesel Reactor

Advanced Proven Technology....Reliable....Powerful



High FFA Feedstock - We have already produced ASTM quality biodiesel using vegetable oil up to 6% FFA and animal fat and yellow grease up to 3% FFA. We CAN use feedstock with up to 10% FFA but it must be diluted with a low FFA feedstock.

Reactor Has No Moving Parts - With no moving parts in the reactor, reactor failure and potential lost production time waiting for service is eliminated. The warranty for the system is typically 12 months.

Full Conversion into Biodiesel - Our reactor achieves 100% conversion of the mono-, di-, and tri-glycerides with one single pass through the reactor

Instantaneous Reaction - The multi-stage process creates sub micron-size particles (nano particles) which are bound at the molecular level within nano seconds. Other processes take much longer. Our faster reactor time leads to effective emulsification which allows the user to use a variety of feedstocks with a broader range of free fatty acid concentrations.

High Yield Biodiesel - We have produced biodiesel with 100% yield using feedstock less than 1% FFA and 97% yield with 2% FFA tallow. We have produced 100% yield biodiesel with low FFA vegetable oil feedstock with only 11% glycerin.

High Quality Biodiesel - We have created biodiesel that has exceeded ASTM standards. This biodiesel has less viscosity and a higher cetane number which offers more power and less pollution.

High Quality Glycerin - Because the reaction is so efficient, industrial-grade glycerin ranging from 87% to 90% pure is produced depending on the quality of the feedstock.

Reduced Energy Consumption - Our power requirements are about 17Kwh to produce 2,440 gallons in one hour. This translates to 0.10 cent/per kw = \$1.70 for 2240 gal or 0.00075 cents per 1 gallon. This compares favorably with other systems which may require 4X this amount. We estimate the cost in electricity to run the Bioforce 9000 Modular Biodiesel Production System is less than one penny for each gallon of biodiesel produced. A 40GPM system will use approximately 3 motors 15HP, 5HP and 3HP – tot: 23HP, if you use conversion HP to KWH

- Our system can reduce or eliminate high temperatures and pressures often associated with traditional systems.
- Conventional techniques of biodiesel production typically utilize pressures in the range of 6 to 10 atm and temperatures in the range of 70 to 200°C vs. ambient with cavitation-based nano technology. Because our process occurs at an ambient temperature of 25 degrees Celsius when using vegetable oil-based feedstocks and up to 55°C for tallow and yellow grease, we eliminate traditional high pressure vessels and high energy temperature and pressure costs.
- An added benefit is that because temperatures and pressures are lower, we eliminate or reduce potentially dangerous high-pressure systems associated with larger pressurized vessels. Our power requirements are 480V, 60 Hz, 3 phase with power consumption of 2KWH per 1000 liters of biodiesel produced.

Twelve Month Warranty - 12-month factory warranty comes with all components for the Nano Biodiesel Reactor Skid.

To find out more information about this highly effective biodiesel reactor, call us today at **(800)497-5841** or email us at sales@srsengineering.com

