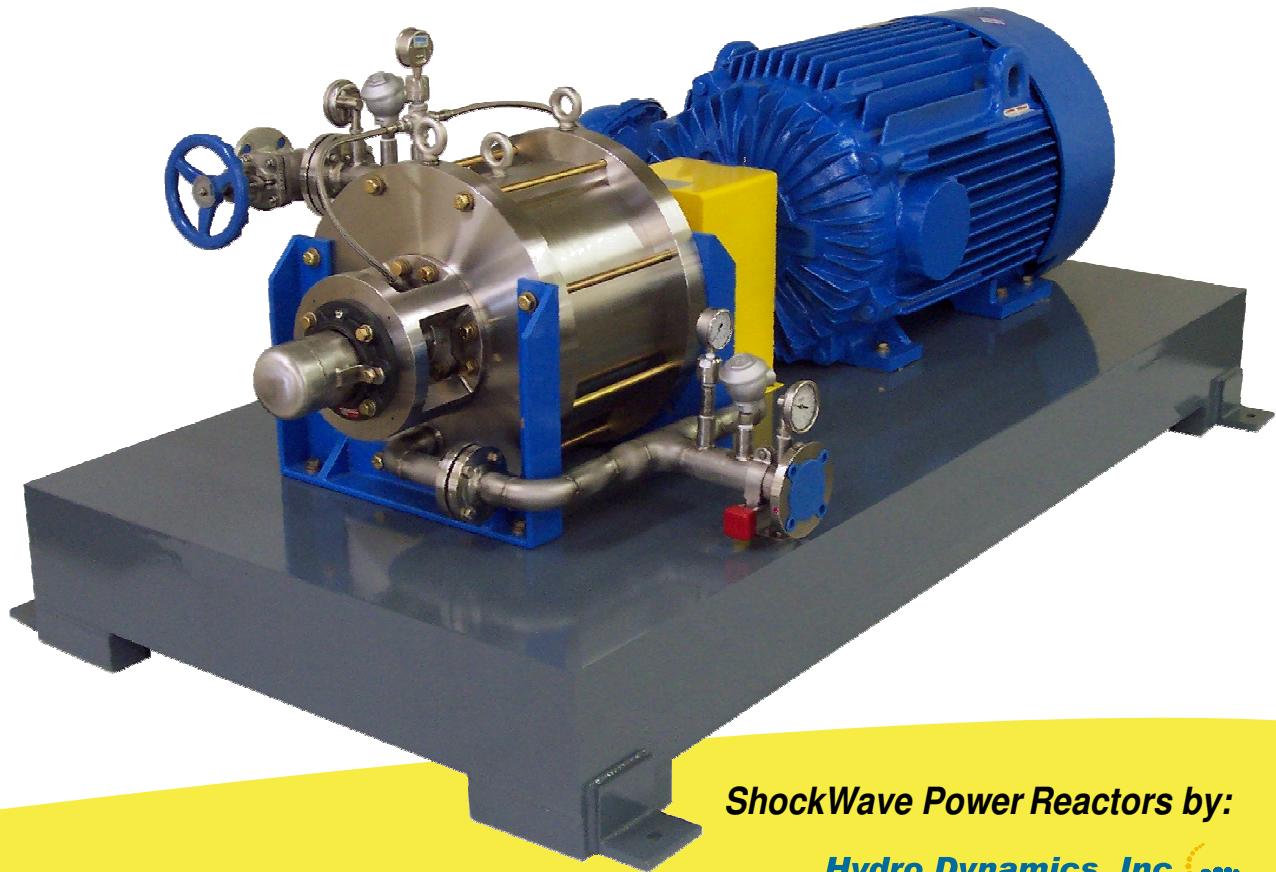




biofuels leadership in action



**ShockWave Power Reactors by:**

**Hydro Dynamics, Inc.**  
Harnessing the Power of Cavitation



# SPR technology at work for you

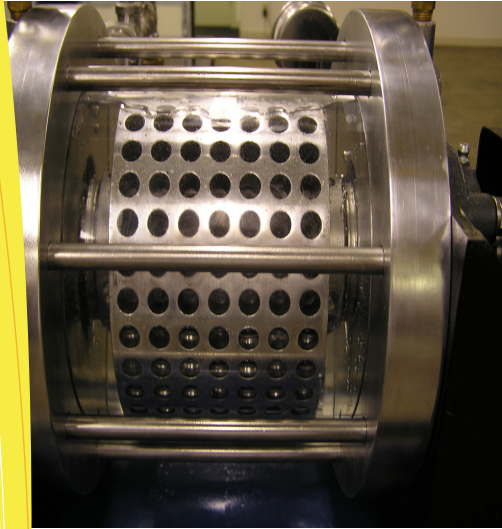
## DRIVING YOUR REACTION TO BETTER QUALITY

You want the maximum performance from your plant, and the ShockWave Power Reactor can help you achieve it. With only seconds of residence time, the ShockWave Power Reactor can drive your reaction to achieve ultra low glycerin values.

## better reactions quality biodiesel

Whether you use only RBD soy or switch between multiple feedstocks, the ShockWave Power Reactor can meet your transesterification needs. In both new plants and retrofitted processes, producers have used the SPR technology to produce high quality biodiesel from a variety of feedstocks. Here are some actual results:

Feed-stock	Mono-glycerides %	Total Glycerin %
Soy	0.20	0.06
Palm	0.26	0.08
Poultry Fat	0.11	0.05
Soy/ Poultry	0.28	0.08
Beef Tallow	0.25	0.07



### REACTION SOLUTIONS

ULTRA LOW MONOGLYCERIDES

ACHIEVE ANY CAPACITY

ULTRA LOW BOUND GLYCERIN

HIGH ESTER CONTENT

FLOWRATE FLEXIBILITY

CONTINUOUS OR BATCH

FEEDSTOCK FLEXIBILITY



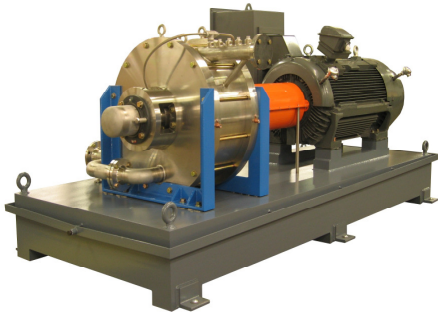
Whether retrofitting an existing plant or building a new one, you can use the ShockWave Power Reactor Technology to meet your goals. The Reactor's small foot print allows you to install it easily and economically. Batch or Continuous - it doesn't matter - higher quality biodiesel can be achieved either way.



## MEETING YOUR REACTION NEEDS WITH ROBUST DESIGNS

With an elegantly simple design, the ShockWave Power Reactor is built to perform year after year. The Reactor harnesses the power of cavitation while avoiding its destructive effects. With systems installed in biodiesel production for

over six years and in other industrial applications for over fifteen years, the ShockWave Power Reactor design is proven to last. When process intensification is needed, major companies all over the world turn to the ShockWave Power Reactor technology to achieve their goals. Built in the USA to exacting standards, the ShockWave Power is what you need when quality, reliability, and performance matter. Come visit us to see the technology in commercial scale biodiesel production.



## ULTRA LOW MONOGLYCERIDES

Drive the reaction towards completion with "controlled cavitation" to produce biodiesel with an ultralow glycerin profile

## INCREASE CAPACITY

Ideal for overcoming reaction bottlenecks. The right model can be easily installed to give you the reaction capacity that you need to maximize your plant capacity. With more efficient reactions, the reactor can make the most of every drop of methanol you use.

## PROVEN TECHNOLOGY

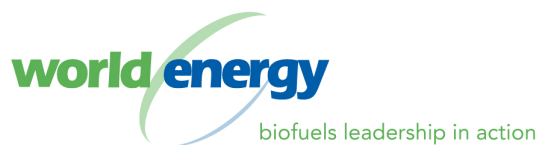
Producing biodiesel since 2005 and used in a variety of industries. ShockWave Power Reactors have been in industrial use for 15 years and counting.

## ShockWave Power Reactor Models

Model	Total Input Flow Rate		Input Annual Capacity*		Power Draw		Footprint	
	gpm	(lpm)	MM gal	(kton)	HP	(kW)	ft	(m)
BD 150	300	(1136)	150	(495)	600	(447)	6' x 11'	(1.8 x 3.4)
BD 100	200	(757)	100	(330)	400	(298)	6' x 11'	(1.8 x 3.4)
BD 75	175	(662)	87	(288)	300	(224)	4' x 7.5'	(1.2 x 2.3)
BD 50	100	(379)	50	(165)	200	(149)	4' x 7.5'	(1.2 x 2.3)
BD 35	75	(284)	37	(123)	120	(90)	4' x 7.5'	(1.2 x 2.3)
BD 25	50	(189)	25	(83)	100	(75)	3' x 6.5'	(1.0 x 2.0)
BD 15	30	(114)	15	(50)	60	(45)	3' x 6.5'	(1.0 x 2.0)
BD 7	15	(57)	7	(24)	30	(22)	2.5' x 5'	(0.8 x 1.5)
BD 3	5	(19)	3	(9)	12	(9)	2' x 4.3'	(0.6 x 1.3)
BD 1	2	(7)	1	(3)	4	(3)	2' x 4'	(0.6 x 1.2)

ALL VALUES ARE APPROXIMATE

\*Based on continuous flow and 95% uptime



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Reactors manufactured by Hydro Dynamics, Inc.



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