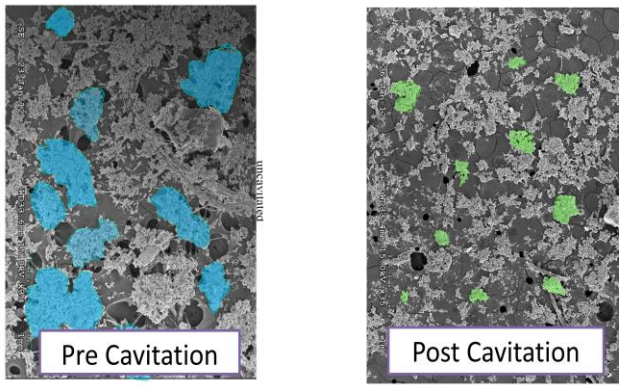
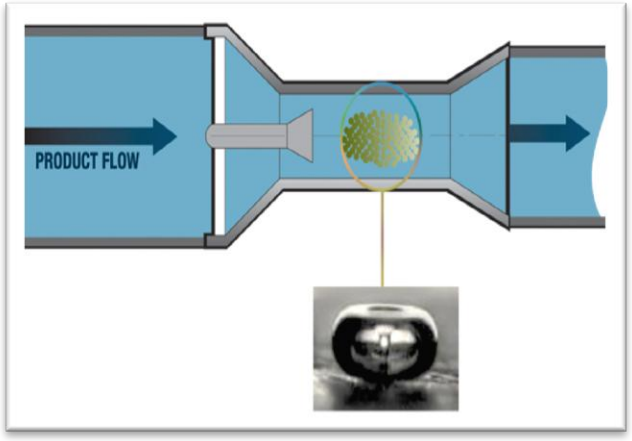
Particle Size Reduction



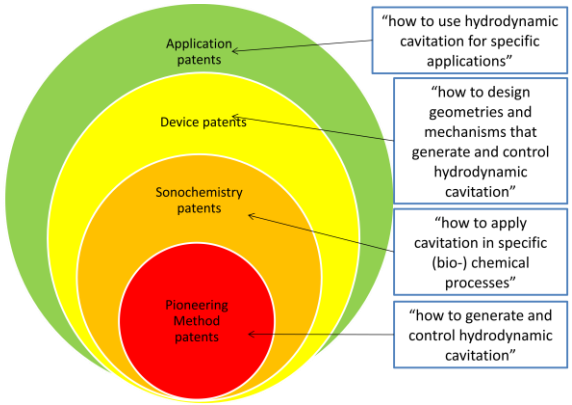
Controlled Flow Cavitation (CFC™)



The principle:
Liquid at higher pressure is pushed through a smaller orifice. That increases the velocity and reduces the static pressure. If the pressure is as low as the boiling point, water evaporates and vapor bubbles are generated.
The collapse of the bubbles, if controlled, can generate enormous shear forces that disrupt agglomerates and lyse cells.

IP Portfolio Philosophy for Best Customer Protection

An application patent cannot be practiced without a device patent, which cannot be practiced without our sonochemical patents, which cannot be practiced without our method patents.



Issued Patents

Application Patents
Ethanol – yield enhancement US 8,143,460; US 7,667,082
Biodiesel – catalyst reduction US 7,935,157; US 7,754,905
Fossil crude oil desulfurization US 8,002,971
Fossil crude oil processing US 5,969,207
Water treatment US 7,247,244
Synthesis inorganic materials US 6,365,555; US 6,589,501; US 6,869,586
Synthesis organic materials US 7,041,144; US 7,314,516
Micro bubbles in liquid US7,338,551

Device Patents
US 5,931,771; US 6,802,639; US 6,857,774; US 7,086,777; US 7,178,975; US 7,207,712; US 7,314,306; US 7,357,566; US 7,422,360

Sonochemistry Patents
US 5,937,906 US 6,012,492 US 6,035,897

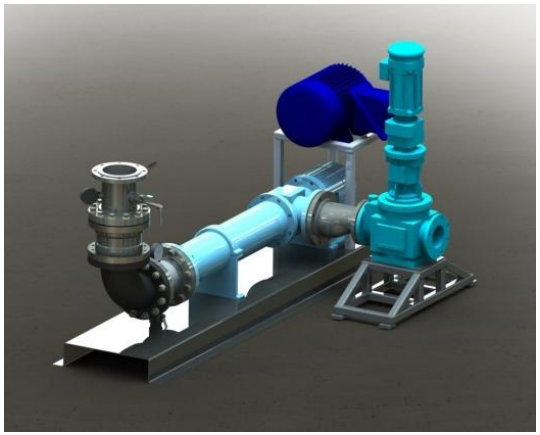
Processing Method Patents
US 5,492,654; US 5,810,052; US 5,931,771; US 5,971,601; US 5,810,052

arisdyne systems®

Applying the Power of Controlled Cavitation

Sonochemical Applications for Anaerobic Digestion

- Methane gas yield improvement: 20 to 30%
- Digested sludge reduction: 15 to 25%



Contact Dr. Peter Reimers
216-458-1991x450 (office)
216-789-5060 (mobile)
preimers@arisdyne.com
www.arisdyne.com

Competitive Advantage

Proven Performance:
- Yield enhancement
- digested sludge reduction

Cost:
- Durable
- Energy efficient
- No capex

IP Protected:
- 30+ patent families CFC™

Cavitation System Characteristics

Energy efficient – highest power concentration

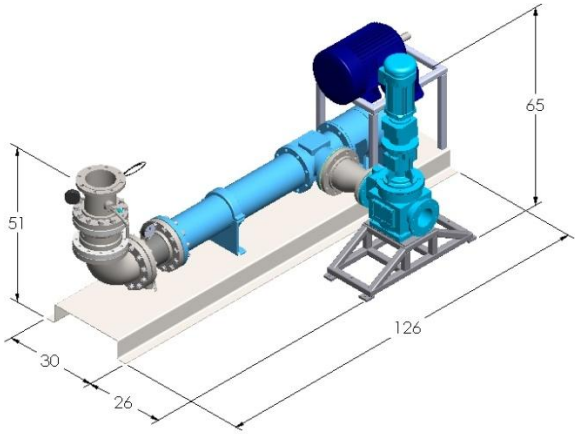
Small footprint – elegant single-stage design

Robust and durable

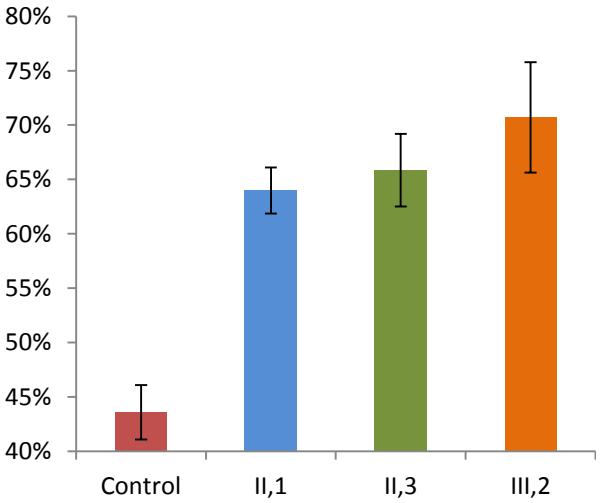
Anti-clogging design – clean-in-place (CIP) is not necessary

No erosion – due to location-control of bubble-collapse

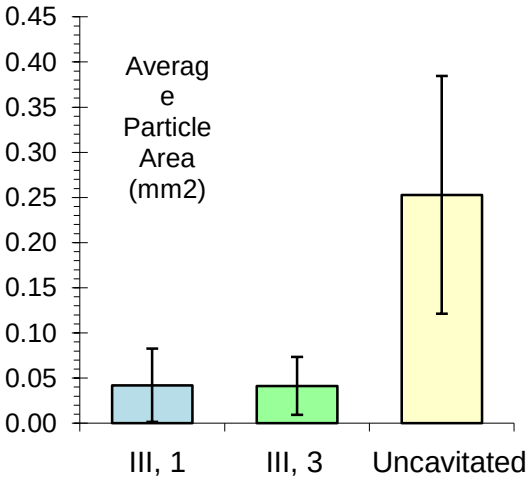
Typical Skid-Mounted CFC Unit



Carbon Conversion (%biogas) at Different Energy Levels



Particle Size Shift (mm^2)



Installations/Customers Throughout Various Industries

Abbott Labs	Bristol Meyers
Clorox	Dow Corning
DuPont	Eli Lilly
Hoffman LaRoche	Proctor & Gamble
Kraft Foods	Merck
Nextar	Parke-Davis
Purdue Phasrma	Unilever

and many others that are protected by Non-Disclosure Agreements