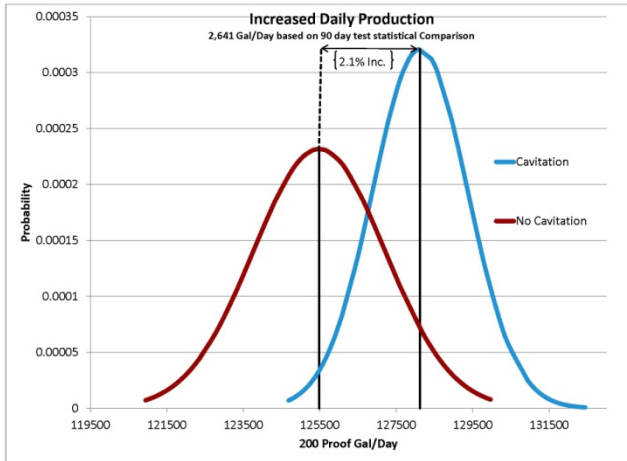


## Production Impact



## Summary of Cavitation Tests to Date

Date	Testing Site	Testing Laboratory	Plant Size (M gal/yr)	System	Ethanol Yield Increase	Mass Loss Increase
Aug 2009	NCERC	NCERC	Pilot	Pilot (ICM/DT)	3.3%	2.8%
Mar 2010	A	OARDC	100	ICM	3.6%	3.3%
Apr 2010	B	OARDC	100	ICM	2.2%	N/A
Jun 2010	C	Plant Lab	50	Delta T	4.6%	N/A
Dec 2010	D	Lab N	50	ICM	4.5%	N/A
Jan 2011	E	Lab N	50	ICM	4.2%	N/A
Feb 2011	F	NCERC	50	ICM	4.4%	5.0%
Mar 2011	G	OARDC	50	Delta T	1.2%	1.5%
May 2011	H	OARDC	50	Delta T	3.4%	2.6%
Jul 2011	I	OARDC/TEC	50	Delta T	1-3%	1-3%
Oct/Nov 2011	J	OARDC/TEC	50	Delta T	2%	N/A
Apr/May 2012	K	OARDC/TEC	100/50	Other	2.4-2.5%	N/A
Jan-Mar 2013	L	OARDC/ASI	100	ICM	1.5%	1.83%
Apr 2013	N	OARDC/ASI	100	ICM	3.0%	3.75%
Jul 2013	O	OARDC/ASI	100	ICM	6.5%	7.45%
Nov 2013	P	OARDC/ASI	100	ICM	3.25%	4.64%
Jan 2014	Q	OARDC/ASI	90	Other	3.22%	6.13%

## Cavitation System

- Footprint – 6 ft. x 12 ft.
- Power requirements – 400-600 hp
- Pump flow rates – 650-2000 gpm
- No waterstream added
- Differential temperature - <2°F
- Jet cooker – optional
- Hammermill screens – 7-10+
- No adverse impact on Alpha-amylase
- Low maintenance; no moving CFC™ parts
- Reduced power options available
- Powerful CFC™ technology protected by over 200 patents (Ethanol - U.S. Patent 7,667,082, U.S. Patent 8,143,460, and U.S. Patent Application 12/961,597)



Rev. 2/4/2014



Applying the Power of Controlled Cavitation



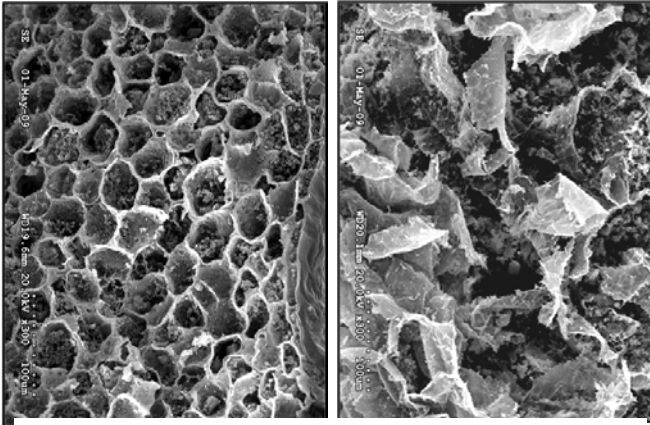
Contact Fred Clarke  
216-458-1991x442 (office)  
216-386-3164 (mobile)  
fclarke@arisdyne.com  
[www.arisdyne.com](http://www.arisdyne.com)

Collaboration Partners:

- National Corn-to- Ethanol Research Center
- Critical Path Management, LLC
- Ohio State Agricultural Research and Development Center



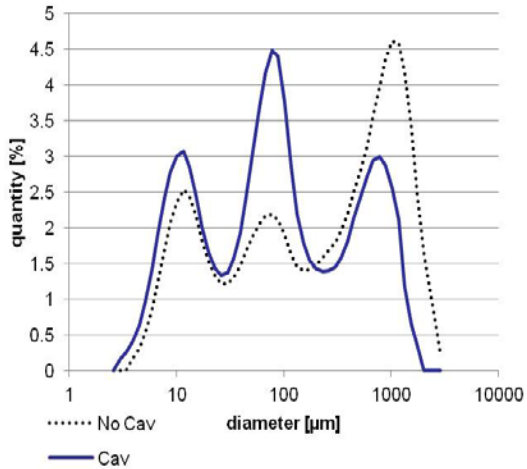
## CFC™ System Design



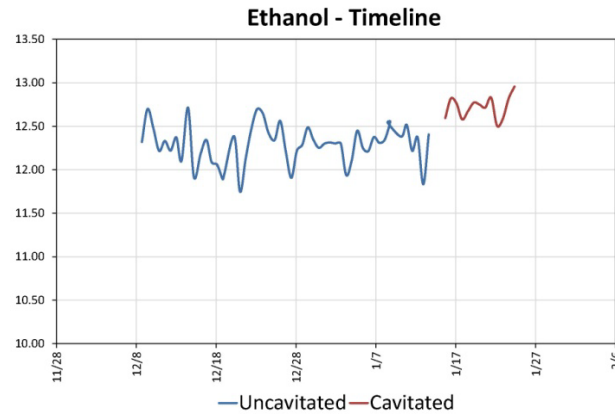
Uncavitated

Cavitated

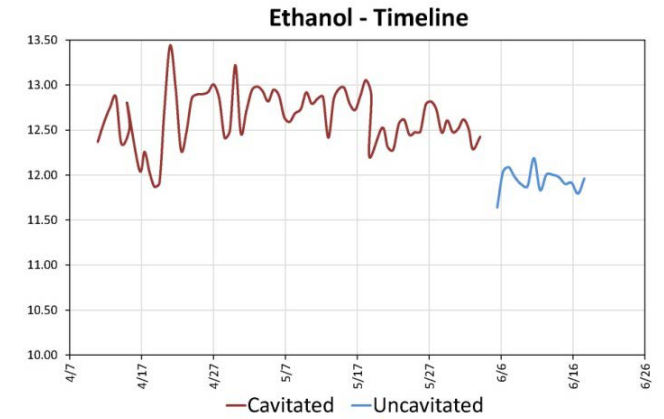
## Particle Shift



## Production Observations – start up



## Production Observations – shut down



## Comparative Increased Starch Access Technologies

	Conventional Dry Milling	Disc Milling (ICM)	Colloid Milling (Edeniq)	Colloid Milling/Cavitation (Hydrodynamics)	CFC™ Shearing (Arisdyne)
# of units at 100+ MMGPY	3	2	7	5-7	1
Est. Horse Power	1200	870+	1400	3000	500
Cost Estimate @ 5¢/KwH	\$36,000/mont h	\$30,000/mont h	\$40,000/mont h	\$85,000/month	\$13,000/mont h
Footprint <ul style="list-style-type: none"> <li>Area (est.)</li> <li>Volume [cu. Ft.] (est.)</li> </ul>	30'x30' 9000	16'x24' 9600	50'x30' 9000	50'x30' 9000	6'x12' 432
Maintenance	Weekly	Weekly?	Weekly?	Weekly?	Semi-Annually
Consumable Repair Parts [\$ /year]	\$> ?	\$>?	\$>?	\$>?	\$0