

4,670 Gallons Per Minute

89.5% Efficiency

Winner of the Wendy Schmidt Oil Cleanup X CHALLENGE

The Moment of Proof

A Revolution in Oil Spill Recovery



Patented Grooved Technology. Only from Elastec/American Marine.

WENDY SCHMIDT
OIL CLEANUP

X CHALLENGE

ELASTEC 
AmericanMarine
Innovative Environmental Products

www.elastec.com

The Gulf

Managing the tactical burn operation for BP in the Gulf of Mexico in 2010, we recognized an opportunity to improve existing high volume skimmers. This is why we entered the Wendy Schmidt Oil Cleanup X CHALLENGE with our grooved disc skimmer. The X CHALLENGE provided the incentive, and Elastec/American Marine provided the innovation.



It is an honor to have competed with the most prestigious pollution recovery equipment manufacturers in the world, and we celebrate the entrepreneurial spirit of each of our competitors. We are deeply grateful to the X PRIZE Foundation and Wendy Schmidt for stimulating new technologies in oil spill recovery.

Donnie Wilson
CEO, Elastec/American Marine





MOMENT OF PROOF: Hydro-Fire® Boom and American Fireboom Burn 11+ Hours in the Gulf

By the time the Deepwater Horizon well was capped, 411 controlled burns were conducted in the Gulf of Mexico with the majority employing Elastec/American Marine's fire booms. The success of our patented Hydro-Fire® Boom and American Fireboom systems with burns lasting four times longer than the competition's - some up to 12 hours in duration - has encouraged further advancements in our already superior fire boom product line.

Burn Data Summary*

FACTORS	Hydro-Fire® Boom	American Fireboom	PyroBoom	Oil Stop	Kepner
No. of Systems Used	27	37	13	3	2
Longest Continuous Burn	11 hrs 48 min	11 hrs 21 min	3 hrs 13 min	27 min	43 min
Average Maximum Barrels Burned per System	5,173	3,916	1,750	28	296

"Hydro-Fire® Boom systems collected the most oil and were responsible for the highest volume of oil burns per system."

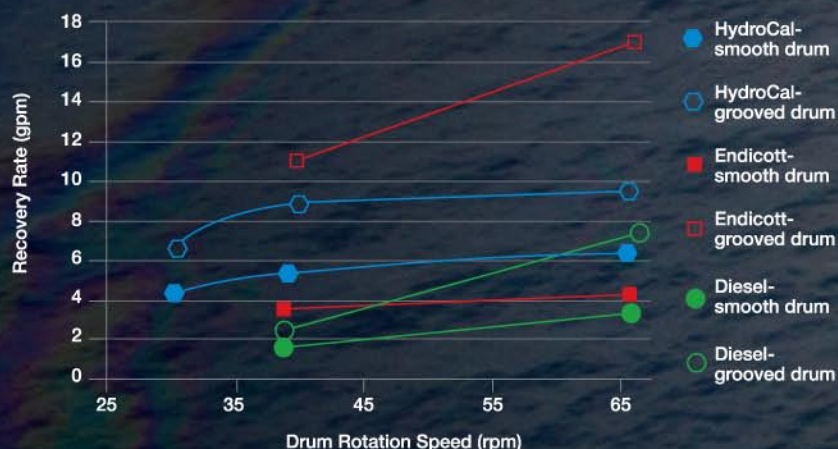
*Fire Boom Performance Evaluation:
Controlled Burning During the
Deepwater Horizon Spill.
BP America

The Grooved Technology

MOMENT OF PROOF: Patented Grooved Technology Optimizes Oil Recovery

Working in conjunction with a graduate student at the Bren School of Environmental Science & Management at the University of California, Santa Barbara, we doubled the oil recovery rate (ORR) of our smooth drum skimmers by incorporating grooves into the oleophilic surface.

Recovery efficiency of smooth and grooved drums
at 10°C and 25 mm oil slick thickness



The Grooved Technology has been extensively tested at the US National Oil Spill Response Research & Renewable Energy Test Facility, Ohmsett in New Jersey, and the US Army Corps of Engineers' Cold Regions Research and Engineering Laboratory, CRREL, in New Hampshire. Our patented grooved drum skimmers are proven to perform efficiently in both tropical and arctic conditions.



The Opportunity



Revolution through Competition

When Elastec/American Marine was on the front lines orchestrating the controlled burns for BP in the Gulf, a void in efficient mechanical equipment to recover oil became apparent. We saw an opportunity to invent a better skimmer.

Wendy Schmidt, also saw the opportunity for improvement, and together with the US based X PRIZE Foundation*, developed the Wendy Schmidt Oil Cleanup X CHALLENGE to inspire a new generation of highly efficient, rapidly deployable mechanical systems to remove spilled oil from the ocean surface. Ten finalists qualified for the competition from over 350 worldwide entries. Elastec/American Marine brought home the \$1 million top prize.

We need to come up with better solutions to capture oil on the surface of the ocean and to minimize the harm it causes to marine life, coastal wetlands, beaches, and to our livelihoods. It is a harm that can last for generations.



Wendy Schmidt

Wendy Schmidt is President of The Schmidt Family Foundation working to advance clean energy development and supporting the wiser use of natural resources.



When the idea of entering the Wendy Schmidt Oil Cleanup X CHALLENGE was proposed, we knew the requirement of recovering 2,500 gallons of oil per minute at a 70 percent oil-to-water efficiency would definitely be a challenge. Not to mention a 90-day design to deployment deadline! But failure was not an option.

Jeff Cantrell
VP, Elastec/American Marine



With over 200,000 square feet in manufacturing facilities, 140 employees, our own fabrication and machine shops, we have the deep infrastructure to build a high performance skimmer.

Donnie Wilson
CEO, Elastec/American Marine



*X PRIZE Foundation works to encourage breakthroughs in several disciplines including ocean and deep space exploration through incentivized competitions. The Foundation addresses the world's Grand Challenges by creating and managing incentivized prize competitions that stimulate investment in research and development worth far more than the prize itself. www.xprize.org

The Challenge

Team Elastec focused on three objectives for our skimmer entry in the Wendy Schmidt Oil Cleanup X CHALLENGE: oil collection, encounter rate, and transfer system. We not only had to design a sophisticated piece of machinery with many moving parts, but we also had to learn how to operate it to maximize its effectiveness. We created our procedures and re-examined them in detail. Potential problems were analyzed and corrective actions established. Picking up a minimum of 2500 gallons of oil while traveling forward, and then repeating the process in wave conditions was a huge challenge.

Don Johnson

Project Manager for Team Elastec



Collection

Our patented grooved drum skimmers had the proven recovery rates and efficiencies we were looking for but we needed to increase the surface area. We built a prototype skimmer for the X CHALLENGE incorporating grooved discs rotating concentric to the axis. The volume of oil recovery increased dramatically with almost no additional water.



Encounter

The next challenge was to develop a vessel that could capture and hold the oil, capable of high transition speeds with the stability to maneuver in a wide range of ocean conditions. Glosten Associates designed a forward advancing craft that worked perfectly in both calm and wave conditions.



Transfer

Special high-performance pumps and power units were selected for the vigorous job of transferring the collected oil to Ohmsett's tanks.

The Proof

4,670 ORR 89.5% ORE

A Revolution in Oil Spill Recovery

Testing each of the ten final entries at Ohmsett provided the ability to replicate spill scenarios in a controlled environment. The resulting data is paramount in the process of proving new concepts and technologies. Elastec/American Marine's results proved that we have a winning technology to revolutionize mechanical oil spill recovery systems.

We were encouraged that all competitors would be judged by the same criteria with unbiased testing at a globally respected testing facility, Ohmsett, in New Jersey. Collection rates and efficiencies would no longer be unconfirmed claims and estimations, but proven statements.

Donnie Wilson
CEO, Elastec/American Marine



Team Elastec Met the Challenge

The X CHALLENGE unleashed the intellectual power and the spirit of Elastec/American Marine entrepreneurs Stewart Ellis, Jerome Riley, Jeff Cantrell, Donnie Wilson, Charlie Storey, Don Johnson, Paul Smith (Glosten Associates), and Brian Orr.

Wendy Schmidt Oil Cleanup X CHALLENGE Testing Results

Rank	Team	Combined MEAN ORR	Combined MEAN ORE	Calm MEAN ORR	Calm MEAN ORE	Wave MEAN ORR	Wave MEAN ORE
		(gpm)		(gpm)		(gpm)	
1	Elastec	4670	89.50%	4706	88.90%	4633	90.10%
2	NOFI	2712	83.00%	2958	91.90%	2466	74.00%
3	Koseq	2065	87.90%	2311	98.20%	1818	77.60%
4	OilShaver	2007	90.70%	2008	92.60%	2006	88.80%
5	Crucial	1888	71.30%	2149	79.70%	1626	62.80%
6	Lamor	1413	92.50%	1362	91.40%	1465	93.60%
7	Vor-Tek	2269	57.30%	3014	72.10%	1525	42.50%
8	OilWhale	1021	42.80%	1557	44.60%	485	41.00%
9	PPR	962	92.10%	1045	96.90%	878	87.30%
10	Voraxial	693	49.20%	941	63.90%	445	34.50%

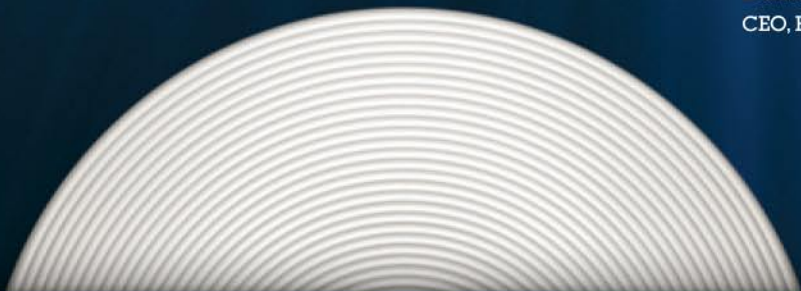
Source: www.iprizecleanoceans.org/competition-details/competition-results

- No 3 official Test Runs within 20% of the arithmetic mean of the 3 Official Test Runs as required by the competition guidelines. Without three Official Test Runs in both Calm and Wave conditions, a team is not qualified to win the competition. Mean results shown here derived from the three test runs with the least deviation from mean.
- xxx • Individual test run results meet or exceed competition criteria for 2500 gallons per minute ORR and 70% efficiency of oil to water collected.
- xxx • Individual test run results less than competition criteria for 2500 gallons per minute ORR and 70% efficiency of oil to water collected.
- ORR • Oil Recovery Rate in gallons per minute
- ORE • Oil Recovery Efficiency in percentage of oil to water collected
- gpm • Gallons per minute



Water is our most precious natural resource, more so than oil. We are developing and adapting a new line of skimmers with our patented grooved disc technology for a multitude of spill scenarios, from open-water environments to quiet estuaries, for large flowing rivers, and small streams. Our hope is that the Wendy Schmidt Oil Cleanup X CHALLENGE has not only set a higher bar for the mechanical recovery of oil spills, but that it will send a profound message to work together with our global neighbors to keep our oceans clean.

Donnie Wilson
CEO, Elastec/American Marine



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www.xprize.org
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