



Cyclone Power Pullers

Iowa State University's 1/4 Scale Tractor Pulling Team

SEPTEMBER 2010 EDITION

2010 Recap

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During the 2010 season, the Cyclone Power Pullers designed “CydeWinder,” a four engine, two wheel drive tractor with major innovations since 2009. Although last minute problems contributed to a 21st place finish in Peoria, it can be considered a learning experience. An overview of “CydeWinder” will be given in the following pages. Our X-Team finished with a 4th place finish after clutch problems negated chances of achieving both pulls. Over the past months, the Cyclone Power Pullers have made appearances with the Mid American Pulling Association (MAPA) across Iowa. This has helped us gain extensive pulling data and has been extremely beneficial. With competition rule changes coming up this season, a complete overhaul of the design might be in the works. We look forward to whatever may happen.

“The central driveline on ‘CydeWinder’ is entirely contained inside the aluminum frame”



2010 A-Team Design in Review

After a 4th place finish in 2009, Iowa State University was looking to finally gain a championship. “CydeWinder”, the 2010 tractor, is a 4 engine, 2 wheel drive tractor, resembling the 2009 tractor “Wild Cyde”. Major changes have been implemented including moving from a formed steel frame to a cast aluminum frame. Doing this improved several areas, including manufacturability and drive train efficiency. The central driveline on “CydeWinder” is entirely contained inside the aluminum frame, which incorporates two 90⁰ degree gearboxes to transmit power from all 4 engines. The next big change from 2009 is the electronics. Mounted at the operators right hand is a Sauer Danfoss Microcontroller/Display Screen. This controls a wide variety of the tractors systems while providing electronic readouts and trouble shooting data from the engine control units. The steering system was converted from a hydraulic system to a lighter, electro-hydraulic system. The clutch is contained in a cast aluminum housing which provides for more efficient transmission of power and provides improved manufacturability and durability. To sustain our usual success in serviceability, a hinged operator station was implemented to provide easy access to the battery and transaxle. Along with these main innovations, “CydeWinder” also has adjustable wheelie bars, dual shift levers, and fatigue reducing controls all in an advanced form.



2010 X-Team in Review

“I believe this has become our most consistent pulling tractor”



“We would like to thank the MAPA association for the experience we gained and for their hospitality over the summer”

“Wild Cyde”, the 2009 designed tractor, performed very successfully at competition in 2009. It is the X-Team’s job to try to improve upon this score to provide the best possible product. Throughout competition and test pulling, the decision was made for hydraulic system improvements to ensure consistent pressure buildup at the clutch. The addition of a 2 way solenoid and manual needle valve allowed us to limit flow to the steering during pulls and build up pressure at the clutch. The wheelie bars originally on “Wild Cyde” were too low causing them to ride on the ground. An adjustable system was implemented to ensure safety and consistent pulling. After problems getting the mechanical brakes to perform the required tests at competition, we opted to implement a hydraulic system from a Polaris Ranger. On top of these changes, additions were made to improve safety and operator comfort. “I believe this has become our most consistent pulling tractor” says X-Team member Peter Horne. Peter put this tractor to the test this summer and “Wild Cyde” continued to be very reliable. The team participated in exhibition pulls with the MAPA association in Collins, Truro, Ft. Dodge, Coon Rapids, Radcliffe, Indianola, Atlantic, Dallas Center, and Nevada, Iowa. We would like to thank the MAPA association for the experience we gained and for their hospitality over the summer.



“It was disappointing because one more pull would have moved us from 4th to 1st place”



2010 Competition

This year's competition was held from June 3rd thru the 6th. Coming off of a 4th place finish in 2009, we were looking to pickup our first championship. A series of time constraints pushed "CydeWinder" to the edge causing problems at competition. "We were pushed to the limit trying to get "CydeWinder" finished by competition because we didn't have our frame until the middle of May" said A-Team member Ben Downing. Between this and weight issues, "CydeWinder" was not able to run until near the end of competition. After exhaust issues slowed us down at competition, the tractor did make an appearance on the pulling track but did not quite make it to the sled. A series of problems, both preventable and non-preventable, caused a disappointing 21st place finish in Peoria for the A-Team. "CydeWinder" did experience success in design judging with a 2nd place finish in the Written Report, 5th place finish in Test and Development and 10th-11th place in all other criteria.

Our X-Team saw success in Peoria with a 4th place overall finish. A blown clutch kept them from being able to achieve a second pull. A second place finish was seen in the written design and a 4th place in the oral presentation. "I got to the sled for the second pull and she just didn't want to go. The clutch discs just didn't have enough in them to pull one more time. It was disappointing because one more pull would have moved us from 4th to 1st place" said driver Kent Thoreson.

We would like to thank everyone who made competition possible especially the Strobel and Downing families for providing and cooking food, Morgan Fredrickson and Jen Smith for taking pictures and our sponsors Dr. Matt Darr and Dr. Stuart Birrell for helping us along the way.



*“They put in
countless hours of
work on every
tractor we own”*



2010 Year in Review

Although competition may not have gone as we may have liked in 2010, it was a very educational season. With the agricultural community moving toward electronically controlled instrumentation in nearly every application, we do our best to follow by utilizing electronics when deemed as advantageous.

We'd like to thank our seniors and wish them best as they move onto they're careers.

Andy Strobel—Working for Vermeer Manufacturing in Pella, IA

Travis Koster—Working for Vermeer Manufacturing in Pella, IA

Brian Balvin—Working for Diedrichs & Associates
in Cedar Falls, IA

Brett Hamilton—Part Owner of Geo Grill

Alex Recker— Working for Recker Farms

Without these guys we could not have learned nearly the things we have. Throughout their education they put in countless hours of work on every tractor we own and built a foundation that we will continue to work on.

We look forward to a successful 2011. Our team for the upcoming year is as follows:

A-Team Design

Karl Moritz— Senior in Agricultural System Technology—Design Leader & Vice President

Peter Horne—Junior in Agricultural Engineering—President

John Hall—Junior in Agricultural Engineering—Treasurer

Ben Downing—Senior in Agricultural Engineering

Eric Fredrickson—Junior in Agricultural Engineering

Joe Randolph—Junior in Agricultural Business

Kent Thoreson—Junior in Agricultural Engineering

X-Team Design

Aaron Nissen—Sophomore in Agricultural Engineering—Team Leader

Kevin Anderson— Junior in Agricultural Studies

Matt Titus—Junior in Mechanical Engineering

Andrew Peterson—Sophomore in Agricultural Engineering

Brian McEvoy—Sophomore in Agricultural Engineering

Sponsor Recognition



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QUALITY MANUFACTURING CORPORATION

2009 - 2010 Cyclone Club Sponsors



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2009-2010 Gold Club Sponsors



DR. & MRS. RAMESH KANWAR



CYCLONE POWER PULLERS

2009-2010 Silver Club Sponsors

CLINT RECKER PATRICK ECKSTEIN

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Support the Cyclone Power Pullers!

Our team is actively seeking new sponsors for the 2010—2011 school year. We will be sending out letters requesting sponsorship in the upcoming weeks. If it were not for those who support our team, we would not be able to continue participating in the annual ASABE 1/4 Scale Tractor Student Design Competition. Because of this, we recognize our supporters using the following criteria:

Full Pull Club Sponsor: Donations valued at greater than or equal to \$5000 will be recognized on the team display board in addition to those recognitions given to Cyclone Club Supporters.

Cyclone Club Sponsor: Donations valued at less than \$5000 but greater than \$1000 will be recognized on the team trailer in addition to those recognitions given to Gold Club Supporters.

Gold Club Sponsor: Donations valued at less than \$1000 but greater than or equal to \$500 will be recognized on the team t-shirt in addition to those recognitions given to Silver Club Supporters.

Silver Club Sponsor: Donations valued at less than \$500 but greater than or equal to \$100 will be recognized on the team website, in the team newsletters, and on the 2011 tractor.

Bronze Club Sponsor: Donations valued at less than \$100 will be recognized on our team website.

For more information:

cyclonepowerpullers@gmail.com or www.stuorg.iastate.edu/powerpullers

Team Mailing Address:

Cyclone Power Pullers

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Ames, IA 50011

Thank you for your support



Kick the tires, light the fires, let's go pulling.

CYCLONE POWER PULLERS