June 2011 www.cis-ieee.org

THE REPORTER

Journal of the Central-Indiana Section • IEEE

FIRST Robotics Teams Claim Coveted $500 Sponsorships In Annual Essay Contest

Three Indiana FRC Teams have claimed $500 Sponsorships in Central Indiana Section's Annual Essay Contest. This year's contest was expanded to include all of Indiana's FIRST FRC Teams. Six entries were received from as far south as Greenwood and as far north as Hammond.

The FIRST Robotics Competition (FRC) challenges high school students to build a competitive robot during a six-week build season using a standard "kit of parts" and a common set of rules. The teams and robots then compete in games designed by Dean Kamen, Dr. Woodie Flowers, and a committee of engineers and other professionals. (http://www.usfirst.org). FIRST Robotics Competition (FRC) is a unique varsity sport of the mind designed to inspire high-school-aged young people to explore careers in science, technology, mathematics and, engineering.

This year's essay contest challenged teams to identify the type of engineer involved in the design of a technology from their robot. Students were encouraged to focus on the design of the technology, rather than the use of the technology.

The Winners

Team 292, Western High School, PantherTech. A repeat winner in our contest, Panthertech was a finalist at the Boilermaker Regional, where they also won the Creativity Award. Panthertech competed in the FIRST Championship in St. Louis.

Team 234, Perry Meridian High School, Cyber Blue. A second year entrant and first time winner, Cyber Blue won the Boilermaker Regional, where they also won the Engineering Inspiration Award. Cyber Blue was a finalist at the Wisconsin Regional and the Smoky Mountain Regional. They also competed in the FIRST Championship in St. Louis.

Team 71 School City of Hammond, Team Hammond. A first time entrant. Team Hammond won the Smoky Mountain Regional, where they also won the Industrial Design Award. Team Hammond was a Division Finalist at the FIRST Championships in St. Louis.

Winning essays can be found elsewhere in this issue of The Reporter.

Congratulations to our winners and thank you for a very successful contest. See all of you for the 2012 contest.

IEEE Members wishing to know more about FIRST Robotics or who would like to participate in Essay Contest administration or judging should contact Brad Snodgrass at mailto:bsnodgrass@ieee.org.

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PES-IAS 2011 May News

by Earl Hill, Chair PES/IAS

The CIS-IEEE Power & Energy / Industrial Applications Societies have had a busy year in 2011. These meetings included a session on underground electric distribution cable and how to address its aging, and a session on High Voltage Direct Current (HVDC) transmission. Our first short course was held in March 2011, on Power Quality, followed by our student awards banquet.

Power Quality Short Course:

This course was held over four weeks, and involved the following seminars:

- Dr. Mark Halpin, Auburn University – Introduction to Power Quality*
  **Industrial Applications Society Distinguished Lecturer*
- Mr. Larry Conrad, Conrad Technical Services – Steady State Voltages / Voltage Flicker
- Mr. Larry Conrad, Conrad Technical Services – Voltage Disturbances /
  Mr. Earl Hill, Loma Consulting - Reliability Indices
- Mr. Michael Jenner, Alpha Engineering - Harmonic Control - Case Studies

The course was well received and the presenters were excellent (except for myself, of course), and the PES/IAS would like to thank them. Twenty-eight members attended. Once again, the PES-IAS was able to recruit a Distinguished Lecturer for our program. Dr. Halpin was very interesting and entertaining, and shows the value of the IEEE Distinguished Lecturer Program. We plan to have more speakers from this program in the future.

The PES/IAS will provide the course agenda, course presentations, and biographies of the presenters to attendees to facilitate the acquisition of professional development hours. Each attendee received a certificate for hours of attendance. In the near future (possibly by the time this is published), each attendee will receive a link and password for the course materials.

Student Awards Banquet:

On April 19th, the CIS-IEEE and the CIS-ASME (American Society of Mechanical Engineers) held their joint Student Award Banquet at Ivy Tech. This was a new venue for the meeting. Eight CIS-IEEE members attended. Dr. Tim Skvarenina, Purdue University, presented awards – in the form of standard Electrical Engineering texts – to the following students:

- Yue Xu (Joyce), IUPUI ECET Program
- Robert Withrow, Rose-Hulman

Yue Xu (Joyce), IUPUI ECET Program

Robert Withrow, Rose-Hulman

The speaker was Mr. Bob Zigon, Senior Staff Development Engineer at Beckman-Coulter. Although not an electrical engineer, Mr. Zigon was very enthusiastic and well spoken. His talk was *"Using Desktop Supercomputing to Accelerate Flow Cytometry Data Analysis". Mr. Zigon has developed an approach to characterize white blood cells in essentially real time. The system can analyze up 10 million cells for 10 characteristics, and provides a graphical review method. In essence, the software serves as an extremely effective means to data mine the white cell data.*

Advances in Transformer Diagnostics:

In May the session was presented by Mr. Charles Sweetser, of Omicron. The discussion included a summary of transformer testing and diagnostic techniques, plus insight into new technologies Omicron is helping to pioneer. These are:

- Sweep Frequency Response Analysis – a tool for monitoring the condition of the mechanical condition of the transformer (versus the electric)
- Dynamic Response Analysis – a tool for evaluating the amount of water in the paper insulation of the transformer. In the past, this was estimated (with moderate success) from the water content of the transformer oil. This technique enables the utility to measure the water directly, and is certain to improve transformer health over time.

Omicon also presented a two day session on transformer diagnostics in conjunction with Indianapolis Power and Light. This meeting was well attended, and free for all who participated. In the future, the PES-IAS will continue to look for opportunities like this to involve our membership.

Future meetings include the following (all at Indianapolis Power & Light, at 6:00 pm):

Overhead System Condition Assessment and Maintenance: Techniques and Benefits
Mr. John Lauletta, Exacter
September 13, 2011

Engineering and Ethics
November 8, 2011

This meeting will be held in conjunction with Rose Hulman. This is certain to be well attended. Once the final arrangements are set up, registration will be open (initially, only to IEEE members… if the course does not fill up by September 15th, we'll open it to all). Registration will be limited to 50. This course will supply ethics-related PDHs for the PE license required by the state of Indiana. We are looking to make this a PACE event – more details on that in the future.

A fall short course (scheduled for October) is under development, and will be announced over the summer.

VOLUNTEERS NEEDED

CIS-IEEE welcomes any and all members who wish to serve the membership by becoming section executive committee members. If you are interested in participating, please contact Earl Hill at eshill@loma-consulting.com or 317-726-1236 for more information.

Open positions include:

- Chair, Communications Society
- Chair, Fund Raising
- Chair, Constitution and Bylaws

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CIS-IEEE's Annual Picnic and Baseball Game

Join us for our annual social outing to meet your fellow IEEE members and enjoy a beautiful day at Victory Field. The VIP Party Terrace is a wonderful place to see the game and still mingle and talk with your colleagues and families. If you didn't come last year, you will want to make special plans to come this year!! We have reduced the price to encourage everyone to come - $20 for members and guests, $10 per child, and $10 for students. A special offer for our GOLD members – the first ten to register will pay only $10! There will be a catered lunch available from 1:30 pm on and throughout the game including beer for the adults. The game starts 2 pm.

The Terrace is covered so it will be breezy and delightful regardless of sun or rain. We look forward to seeing you all there.

Registration is now open on the CIS-IEEE website.

and Senior Member Rodeo

During the baseball game eligible members may take advantage of making application for upgrade to Senior Member level. Some of the benefits of Senior Membership include:

Recognition: The professional recognition of your peers for technical and professional excellence.

Senior Member Plaque: Since January 1999, all newly elevated senior members have received an engraved Senior Member plaque to be proudly displayed for colleagues, clients and employers to see. The plaque, an attractive fine wood with bronze engraving, is sent within six to eight weeks after elevation.

US$25 Coupon: IEEE will recognize all newly elevated senior members with a coupon worth up to US$25. This coupon can be used to join one new IEEE society. The coupon expires on 31 December of the year in which it is received.

Letter of Commendation: A letter of commendation will be sent to your employer on the achievement of senior member grade (upon the request of the newly elected senior member).

Announcements: Announcement of elevation can be made in section/society. and/or local newsletters, newspapers and notices.

Leadership Eligibility: Senior members are eligible to hold executive IEEE volunteer positions.

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The grade of Senior Member is the highest for which application may be made and shall require experience reflecting professional maturity. For admission or transfer to the grade of Senior Member, a candidate shall be an engineer, scientist, educator, technical executive, or originator in IEEE-designated fields for a total of 10 years **and** have demonstrated 5 years of significant performance.

It is suggested that members who may be interested, go to the IEEE website and review the detailed requirements and bring appropriate documentation with them to the game. http://www.ieee.org/membership_services/membership/senior/index.html

The newest Senior Members in CIS-IEEE are Davide Bolchine, Yonghong Chen, Rigoberto Rodriguez, and Thomas Talavage

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2012 CIS-IEEE CENTENNIAL CELEBRATION

Has it already been 100 years? Time sure goes fast when you're on the cutting edge of technology, doesn't it? CIS-IEEE is planning a year-long celebration of its centennial. All members are welcome to suggest activities, commemorations, provide historical documents, plan events, provide historical memories, etc. Any of you who are so interested please contact any of the officers of CIS. We are especially interested in Senior/Life members whose history with CIS would provide a unique resource.

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PRESS RELEASE

Learn how to comply with the many

EMC regulatory requirements

EMC by Your Design

An EMC Practical Applications Seminar and Workshop

Now offered in 3-day format

Tues. Oct. 18 – Thurs. Oct. 20, 2011

Hilton Hotel, Northbrook, IL

847-537-6400

www.dlsemc.com/1001

Newly updated curriculum developed by Donald L. Sweeney and his associates include an understanding of the many EMC regulatory requirements including FCC, CE, US Military, RTCA-DO-160 and those of many foreign countries. Classes start with the fundamentals of electromagnetic compatibility and then focus on the methodology of how to minimize EMC problems, starting with the design process through final testing and approval, all of which are brought to life through hands-on practical application to real life products.

Students will learn how an electronic circuit becomes a radio transmitter, how the physics of even the simplest devices such as capacitors, inductors and shielding can help or hinder compliance and how to control the design to minimize emissions. They will be led step-by-step through sample calculations, be introduced to take-home proprietary software and led through trouble shooting a product that does not meet the requirements. Additionally, attendees will be offered an exclusive, hands-on personal consultation with the instructor or technical staff to apply what has been learned to their specific product.

Press Release submitted by
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How Do You Communicate??

Want to know what is happening in Central Indiana Section? Don't know where to look? Already inundated with E-Notices? Need to ask a question? Want to find an expert? Get a meeting idea?

Here are some of many communication channels available in Central Indiana Section

Find the Central Indiana Engineering Consultants' Network and the Central Indiana Section Communications Society, as well as several other IEEE related organizations on LinkedIn.

Student Branch members are encouraged to join "CIS-IEEE Student Branches" group on Facebook. Several opportunities for students and student branches have been posted there. The Facebook group also provides and opportunity for CIS student members to interact or to make contact with student members outside of Central Indiana. There is no substitute for a good network, but be aware that some hiring managers are also checking these sites.

Communications Society members can find "COMSOC – Central Indiana Section" on Facebook.

CIS Home Pages

Start with the main site. (www.cis-ieee.org) Check out the calendar of events, or link to the many IEEE groups in Central Indiana Section, including all of the Student Branches.

E-Notices

Not getting E-Notices? E-Notices are not only a resource for keeping in touch with the activities throughout CIS, but you will also receive information on topics of interest throughout IEEE

Login to myIEEE from the IEEE Home Page (www.ieee.org) and sign-up!
with the main site. (www.cis-ieee.org) Check out the calendar of events,

Central Indiana Section Announces K-12 Educational Outreach Mailing List

Want to keep abreast of all the educational activities in Central Indiana? Need help with or an idea for a project? Want to share ideas with educators, administrators, and engineers? You need to join the CIS K-12 Outreach Mailing List.

You need not be an IEEE member to join the list. In fact, we would like to have as many educators and administrators as possible on the list.

The only requirement is an interest in improving technological literacy in Central Indiana.

To Join, send an email message to LISTSERV@LISTSERV.IEEE.ORG with the following in the **body** of the message SUBSCRIBE CIS-K12-OUTREACH <full name>. (Example: SUBSCRIBE CIS-K12-OUTREACH Brad Snodgrass) Your email needs to originate from the email address at which you wish to receive messages.

For more information, you can contact Brad Snodgrass at bsnodgrass@ieee.org.

See you there.

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Announcement: EIT Conference – Indianapolis 2012

The Central Indiana Section of the IEEE is pleased to announce that the 2012 IEEE International Conference on Electro/Information will be held in Indianapolis in May 2012.

In the past, the conference has focused on basic/applied research results in the fields of electrical and computer engineering as they relate to IT and its applications. The purpose of the conference is to provide a forum for researchers and industrial investigators to share principles, practices, concepts, and experiences and exchange ideas and discuss developments. The interplay between academy and industry results in a better understanding of the impact of this growing field. There will be exhibits where the latest technology tools and products will be showcased. This is also an opportunity for professional development, workshops and tutorials.

This conference in a major IEEE event and the CIS-IEEE is proud to have an opportunity to host it. Planning has already begun, and the CIS is looking for volunteers in a number of areas to support the conference. If you are interested, kindly consult our website, or contact Mr. Phil Walters, Phil.Walter@IEEE.org, CIS-IEEE Chair, for more details.

IEEE CENTRAL INDIANA SECTION

CIS-IEEE Continues Teacher Grants for 2011

Teachers Reimbursed for up to $100 of Classroom Expenses

The Central Indiana Section of the IEEE (pronounced Eye-triple-E) is encouraging area teachers to utilize the large selection of free lesson plans available at TryEngineering.org. Lessons focus on Science, Technology, Engineering, and Math and are designed for classroom presentation for under $100.

Eligibility

- School must be located within the CIS-IEEE geographical area
- A lesson from www.tryengineering.org must be chosen
- The lesson must be presented by the classroom teacher. (Not by an IEEE Volunteer)

Teachers may determine geographic eligibility by reviewing Article I, Section 2 of the CIS Bylaws at:
http://www.cis-ieee.org/bylaws.asp

Applying for a Grant

Central Indiana Section (CIS) will reimburse costs for presentation of an eligible lesson up to the $100 limit. Teachers should first get a pre-approval for the reimbursement by supplying the information requested below. Pre-approved lessons will be given an address for submittal of related lesson expenses, up to the $100 limit.

To apply, send an email with the following information to Brad Snodgrass at bsnodgrass@ieee.org

- Name and address of the School
- Teacher sponsoring the lesson
- Grade level(s) targeted for the lesson
- Name of person who will be presenting the lesson
- Date lesson will be presented
- Name of the lesson that will be presented.

Questions

Send questions or requests to Brad Snodgrass at bsnodgrass@ieee.org. Brad coordinates Pre-University Activities for the Central Indiana Section of IEEE.

About the IEEE

The IEEE is the world's leading professional association for the advancement of technology. With more than 350,000 members worldwide, IEEE is the largest technical society in the world. The IEEE is a leading authority on a broad range of topics including aerospace systems, computers, telecommunications, robotics, nanotechnology, biomedical engineering, electric power, consumer electronics, and many others.

Central Indiana Section (CIS) of the IEEE is the local organization supporting the nearly 2000 IEEE members in central Indiana.

About the Teacher In-Service Program

The Teacher In-Service Program (TISP) features IEEE Section volunteers developing and presenting technologically oriented subject matter to local K-12 educators in an in-service or professional development setting. TISP allows IEEE volunteers to share their technical expertise and to demonstrate the application of engineering concepts to support the teaching and learning of science, mathematics and technology disciplines.

To schedule a TISP Presentation for your school, contact Brad Snodgrass at bsnodgrass@ieee.org.

IEEE Resources for Students and Teachers

http://www.cis-ieee.org/
http://www.ieee.org/web/aboutus/home/index.html
http://www.ieee.org/web/education/home/index.html
http://www.ieee.org/web/education/preuniversity/tispt/index.html

Students Across Indiana Benefit from Central Indiana Section Grants

The following letter was received from the 4th Grade Class of Mrs. Strnat, a REACH Teacher at Cumberland Road Elementary School in the Hamilton Southeastern School District in Fishers.

Re: Design a Dome and Temperature Tactics

Dear CIS-IEEE,

Thank you for the supplies and your support for helping us build domes and temperature gauges.

We learned:

Domes
*We thought outside the box
*When you work as a team, you can share ideas to make your design better
*If you work with your team, you'll get a better result than you expected
*Different materials have different strengths
*Different structures, different weight capacities
*A strong frame matters more than the shell
*Just because it's hollow, doesn't mean it won't hold weight
*Some domes that look weak, aren't at all
*You had to focus on the structure, not the prettiness
*Lots of materials are easily crushed (tin foil, index cards, pipe cleaners, foam if isn't structured correctly)
*Strong materials are Popsicle sticks, dowels, foam, straws, the bubble wrap, tape, duct tape, screening
Temperature Tactics
*Different styles, different results
*Some temperature gauges can be used to help sight problems
*With metal, you can see when it's freezing outside
*To make sure measure intervals correct, you would compare it to another thermometer
*You can tell the temperature by how much is frozen
*Some people favor Celsius over Fahrenheit, and some prefer Fahrenheit
*materials expand or contract to certain temperatures
*Weight has an impact
*Straw broke so we needed a stronger material; we would try different materials.

Proudly,

Mrs. Strnat's 4th Grade Class

Mrs. Strnat's class received those supplies through a grant from the Central Indiana Section. Teacher Grants reimburse teachers for up to $100 of supplies to use with the presentation of a lesson from www.TryEngineering.org. Mrs. Strnat has presented four lessons over the last three years with CIS-IEEE providing the funds.

Mrs Strnat never misses an opportunity to integrate TryEngineering lessons into the curriculum. She reports, "My students were learning about coordinate planes in math today so I complemented the lesson with IEEE's Eek a Mouse activity. Those lessons are keeping my students mighty excited about education. Thanks for your support."

To learn more about TISP and Teacher Grants, contact Brad Snodgrass at bsnodgrass@ieee.org.

Central Indiana Section established its TISP in 2006 and has presented programs for Pike and Warren Township schools in Indianapolis, and for the Brownsburg Challenger Center. Central Indiana Section has been widely recognized for TISP efforts and actively supports IEEE sections throughout the country, and the world, to establish their own TISPs.

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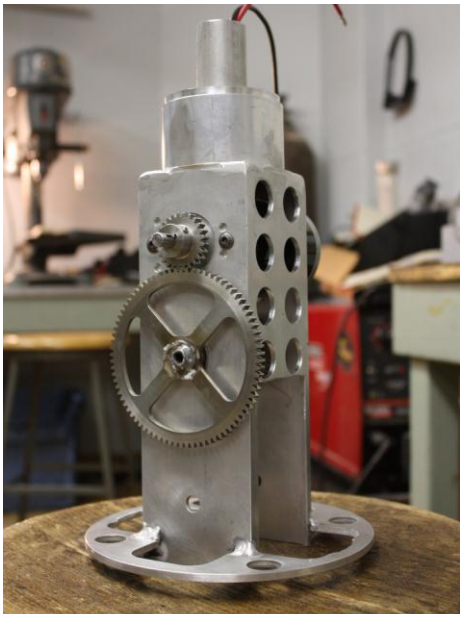
The winning essays in the FIRST Robotics contest start on the next page.

Hayden Piffer Team Hammond

Drive, drive, drive…

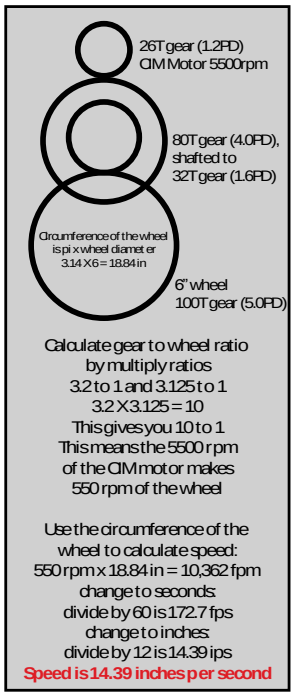
On Team 71, it all starts with the drive system

The Drive System



Our robot utilizes the Beatty Drive System. The type of engineering used to design our one of a kind drive system is mechanical. Engineers at Bemcor, our lead sponsor, have been testing and experimenting with this design for the last six years. At the beginning of each year, our goal for the robot is to be as fast and maneuverable as possible. Speed does not always guarantee success at the competitions. We toward engineering to achieve a blend of speed and maneuverability. Our mechanically engineered drive system achieves both goals. Our Beatty Drive System is the technology that keeps us ahead of our competitors.

The Beatty Drive System has a lot of different components that make it perform properly. The housing for the gears, motors, wheels, and pinions, called the drive can, is constructed out of aluminum plates. One of these plates connects the drive can to the robots frame. The motors that we use in the drive cans are 5500Rpm Cim motors. At the end of the Cim's shaft is a pinion. The pinion, 26 teeth (26T), is mounted to the shaft by a 2mm key stock and a setscrew. The pinions are then meshed to a gear that has 80T (4.0PD). The 80T gear has a shaft going from the middle of the gear threw to the inside of the can to a pinion that is either a 32T (1.8PD) or a 36T (1.6PD). The 80T gear, the shaft, and the pinion are all welded and turn freely inside the can. The pinion inside the drive can is meshed to the gear on the wheel, which is 100T (5.0PD 6"). The wheel can also be adjusted to fit a wider tread on it. That gear is connected to the wheel (6") by #10 machine screws and nuts. The speed of the robot can be calculated by using all of the information here. To increase the speed, all that is needed is to change the pinion on the Cim motor and adjust the motor position in the drive can. (See graphic on left)



In order for our drive system to work successfully, the drive cans, which house our wheels, must move simultaneously (a Single-Axis Crab Drive.) Therefore, we interlock the four drive cans together using window tape. Two sets of tapes connect two drive cans: one on the front of the robot and one on the rear. The two drive rear drive cans are connected by a third set of tape. The tapes, when connected to the drive cans, make a U-shape. The areas between the two front drive cans are absent of tape in order to accommodate the scoring arm. The drive cans are attached to the robot by using plastic washers and a lock collars. At the end of the drive can's cylinder is where a Potentiometer, or Pot, is placed. The Pot controls the rotation of the drive cans by reading the resistance. The Pot reads 0-100k Ω so 50kΩ would center the drive cans. The drive cans are rotated with the use of two window motors. The joysticks, when moved in a direction, move the wheels and a send a signal to the Crio, which tells the Pot how much resistance to read. That, working with the two window motors, will turn the wheels in the desired direction.

Cyber Blue's Manipulator Technology

To create a successful robot, one must focus on the design of certain systems. One such system that our team decided to focus on this year was our pivotal manipulator. Every component of a robot must be thoughtfully made. Since our team decided that the manipulator was the most important system on the robot, we spent a greater amount of time designing it. Our manipulator was designed with the engineering process using similar steps that a mechanical engineer would use.

First, our team had to begin the process like a true mechanical engineer would. After a design matrix was made, it was clear that the arm would be the most important system on our robot. Part of our research includes looking at past designs from other teams. Included designs that were considered are as follows: team 254's forklift design from 2007, team 233's pivotal arm idea from 2007, team 25's and team 148's grippers from 2007, and a 4 bar linkage concept from 148's 2007 robot. After research, we concluded that a pivotal arm was the best decision because we already had experience with a similar system on our robot from the 2007 FRC game. It was a more robust design that triumphed over the alternative designs such as a forklift or 4 bar linkage.

The next step was conceptualization. We made many sketches and 3d models to construct the geometry to make the idea come to life. After much design and redesign, we settled on a rotational arm that has a pneumatic controlled wrist. Our design was coming along. Mechanical engineers use the same process to start out. Once the kinks were worked out of the concept, we had to do a feasibility assessment. We asked ourselves if our design would be practical or not. So we used physics to calculate the amount of force that the arm would exert on the motors that would move it. We included information such as torque loads and the output of the motors. After the calculations came out positive, we furthered our research and were able to calculate the time it takes for our arm to pivot to certain positions for the game. This is very useful. The concept allowed us to confidently move forward to the next step.

After the concept was established, we continued our process to create a preliminary design and then a detailed design. After this was complete, we began to make a physical prototype. The tooling and production techniques were sorted out and perfected during this phase. Eventually, we moved into the final production. This was the easiest step because everything had already been worked out using the design process just as a mechanical engineer would.

In conclusion, our technology encompasses the design process used by actual engineers, specifically mechanical engineers. We wouldn't be nearly as successful if we didn't follow a professional design plan every season.

The CIMple Box Single Stage Gearbox
Panthertech: *FIRST* team 292

The CIMple Box Single Stage Gearbox, manufactured and distributed by AndyMark Is the official gearbox of 2011 *FIRST* Kit of Parts. The design of the CIMple Box seemed simple enough, but we decided to get right to the source to find out what was the inspiration for creating such a gearbox. Luckily, being a Howard county team, it was easy enough to arrange an interview with the designers, mechanical engineers Andy Baker and Mark Koors.

We asked about how they came up with the idea to create a single stage gearbox. Andy said that they had always liked their original Toughbox, which is a 2-stage reduction gearbox. Last year the Toughbox Mini got rid of a lot of pieces from the Toughbox and they liked the plastic housing. Because of their success with the Mini, they saw an opportunity for a gearbox with less reduction and only one stage.

There was one trick; the encoder on the Toughbox Mini couldn't fit on the CIMple box without spreading the motors apart. He beat this setback by using a larger gear in the middle to allow for it to be spread apart enough for the CIMple box to be a success. Because of their innovative designing and problem solving skills from years of experience with the FIRST program, they were able to lower costs for FIRST teams all around the world with the creation of the CIMple box.

The CIMple box uses spur gears (20 dp, 14.5 degree pressure angle) made from 4140 steel. The Gearbox's High-Strength Housing material is Nylon 6/6 with long fiberglass fill. AI weighs 1.4 pounds it is the lightest, most economical, and most efficient gearbox *FIRST* has ever used.

Resources:

1.) Interview with Mark Coors and Andy Baker

2.) http://www.andymark.com/

2011 Meeting Calendar			
Date	**Host**	**Subject**	**Location**
Thursday, July 21, 6:00 pm	CIS	**Executive Committee Meeting**	Internet/Phone Bridge
Sunday, August 7, 1:00 pm	CIS	**Annual Picnic/Baseball Game**	Victory Field, Indy
August 19 - 22, 2011	IEEE	**IEEE Sections Congress**	San Francisco
Tuesday, September 13	PES/IAS/CIS	**CIS-IEEE September PES-IAS Meeting - Overhead System Condition Assessment and Maintenance: Techniques and Benefits**	Indianapolis Power & Light Engineering Building, Indianapolis
Thursday, September 15, 6:00 pm	CIS	**Executive Committee Meeting**	IUPUI, ET 201S Internet/Phone Bridge
Tuesday, November 8	PES/IAS/CIS	**Engineering and Ethics**	Indianapolis Power & Light Engineering Building, Indianapolis
... Check the Section web page for details and current information. 🗐🗐🗐.			

ADVERTISER EVENT

Tuesday, October 18 – Thursday, October 20	DLS **www.dlsemc.com/1001**	EMC by Your Design Seminar	Hilton Hotel, Northbrook, IL

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Editorial Policies

Each issue of The Reporter typically references three months - the month in which it is published and the following two months. The Reporter is typically published in March, June, September, and December.

Material to be included should be submitted mid-month prior to the month it is to be published. For example, material intended for the September issue should be submitted to the Editor by August 15. The Editor will send a reminder to all IEEE Central Indiana Section entities by the 15th of the month to submit their updates.

Copy should be submitted electronically. Photographs are desirable. Advertisements are welcome. Contact the editor for layout sizes and rates.

Central Indiana Engineering Web Links

ACEC	American Council of Engineering Companies, Indiana	acecindiana.org
ASCE	American Society of Civil Engineers	sections.asce.org/indiana
ASME	American Society of Mechanical Engineers	http://sections.asme.org/central_indiana/
ASM-INDY	American Society for Metals - Indianapolis	asm-indy.org
CIECN	Central Indiana Engineering Consultants' Network	Indy-Engineer.net
CINLUG	Central Indiana Linux Users Group	cinlug.org
IBEN	Indiana Biomedical Entrepreneur Network	indianabionetwork.org
ICES	Indiana Council of Engineering Societies	in-ces.org
IHIF	Indiana Health Industry Forum	ihif.org
INCOSE	International Council on Systems Engineering	www.incose.org
INDSPE	Indiana Society of Professional Engineers	indspe.org
INDYASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers	indyashrae.org
NSBE-IAE	National Society of Black Engineers - Indianapolis Alumni Extension	nsbe-iae.org
PIMCIC	Project Management Institute - Central Indiana Chapter	pmicic.org
SAE	Society of Automotive Engineers, Indianapolis	http://www.saesections.org/indiana/
Scientech	Scientech Club in Indianapolis	scientechclub.org
SIM	Indianapolis Chapter of Society for Information Management (SIM)	SimNet.org
SWE-CI	Society of Women Engineers - Central Indiana Section	swe-ci.com
Techpoint	A diverse collection of technology-based Indiana industries.	Techpoint.org

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Distribution: The Reporter is made available electronically to the approximately 1800 IEEE members within the Central Indiana Section including student members and faculty of Purdue, IUPUI, Rose-Hulman Institute of Technology and ITT Technical Institute.