A Message From the Chicago Section Chairman

This is the final edition of the Chicago Section News for this meeting year and marks the end of my term as chairman. I certainly want to take this opportunity to thank all of the board members and section members who have helped make the Section go. The continuing operation of the Section very much depends on the work of the Section Board and willing members. This year was even more demanding than usual since we closed the Section office in August and each of us tried to pick up a share of the work that had previously been done by our Executive Secretary, Rey Barkstrom. Special thanks to Chuck Cervenka who very ably and willingly took over as editor of the Section magazine.

I believe we did have interesting meetings this year and want to thank the program chairman and the activities vice chairmen who put each of the meetings together. As the new Board plans the meetings for next year, be sure to get your suggestions to them. The golf outing and ladies night were also well done, as usual, and for that thanks to the entertainment committee.

One other new and, I believe, worthwhile feature of this year was two sessions of strategic planning with the help of SAE International. It is obvious from our Section meeting attendance that all of our members have a number of “good” things vying for their time and only have time for what they see as “best”. We want SAE to be one of those “best” and fill the needs of as many of the Section members as possible. This is the goal of the planning sessions: To determine what Chicago Section can do to serve you and promote mobility engineering in our area.

I look forward to seeing many of you at the May meeting. It should be another “best” one. We will also be voting on the Board members for 1993-94, so please come out and support them.

Jim King
Chairman, Chicago Section
Well, the truck just pulled away from the loading dock. You, as Vice President of Engineering, just signed the shipper. Your company's new and advanced driveline control system which you and your engineering staff have spent the last fourteen months developing is being delivered to your customer's performance specifications, considered the toughest in the industry, on time and at the quoted cost. Considering all the man-hours and money spent on this project, not to mention the dynamometer testing time reallocated from other projects, the control systems really are better than anything out on the market. Indeed, your company controller just last week obtained management approval for nearly $1.5 million to update your company's production facilities to meet the volumes your company's marketing department projected at the last Board of Directors meeting.

What could be better? You have the best product out on the market, good customers that pay on time, a growing company, the best engineering team you could hope for, and marketing and sales projections that should recover the initial investment within at least two years. Not bad for a day in the office.

What you didn't realize, however, is that your foreign competitors will have your control system in-house within the month. Their engineers will have the product in pieces on the lab table within days. After they duplicate the circuitry, understand the function of each component, measure dimensions and determine the material of each component, they will download that IC chip you so painstakingly developed and have a copy made within a week. After they figure out that your company is able to make the product with tooling applicable to previous designs, they'll make the decision to invest in their tooling, knowing that your marketing people already determined a market for this product.

Your competitors didn't spend money on original engineering development. They didn't spend money on expensive marketing studies. Moreover, they were able to develop other products on their dynamometers that they didn't have to use to develop this product. Within two months, a press release from this competitor falls on your desk, announcing the introduction of a product exactly like yours, at only 80% of the cost! How could they do this?

Under the current laws in the United States, there is nothing you can do to stop them—that is, unless you quickly apply for a United States patent covering your control system. In most foreign countries, you have already given up your rights to this technology. Most foreign countries have a requirement of absolute novelty—any public disclosure prior to filing a patent in at least one country which is a member of an international treaty will void patent rights to that invention forever overseas. Businesses give up important technology to the world every day without realizing that aspects of

(continued on next page)
this technology may be protectable under the patent laws of the United States and foreign countries, and that patents can often spell the difference between recouping an investment or taking it on the chin, like our Vice President of Engineering just did in this case.

O.K., so the company's foreign rights have been lost. What can you still do? In the United States, an inventor has a twelve-month "grace period" within which to file a patent after any public disclosure (including SAE Technical Papers), sales, or offers for sale. Since only two months have gone by, a patent application could safely be filed within the remaining ten months. Assuming that the new technology is patentable, a patent could issue in about 18 months (possibly even sooner). Although the competitor will have been in the market for this time, once the patent issues your company can go into court and have the importation and sale of the competitor's copied products stopped. Moreover, your company may be able to recover damages from the competitor from the date the patent issues.

Better yet, the company should have applied for a patent, at least in the United States, as soon as the technology was proven internally, long before the truck pulled away from the loading dock. This could have shut down the competitor within months of their product introduction and saved the overseas patent rights. Indeed, if this patent application had been filed before the truck pulled away, the company would have had an additional twelve months within which to file in foreign countries. Depending on the success of the product and the overseas markets, the company could have taken a "wait and see" attitude toward an overseas patent. And there's another wrinkle to this all--the United States, virtually unique in the world due to the twelve-month "grace period" which as mentioned above could save this invention, is being increasingly pressured to go to an absolute novelty standard. If it does (and there is wide speculation that it will by the end of the decade), the departing truck will have taken away more than just a shipment of goods.

Technology, in today's global economy, plays a crucial role in the bottom line of any manufacturing company. An investment made cannot always be recovered by being the lowest cost product on the market, especially when your competitors have your product in hand as proof positive that your ideas actually work and have marketable value. Don't sign that shipper until you think about what your competitor may do with your new product when (not if) they get hold of it.

Steven L. Underwood, Esq., is a practicing registered patent attorney with Keck, Mahin & Cate. He will be writing from time to time for the SAE Chicago Section News on intellectual property law as it relates to our mobile society. He has been a member of SAE since 1983.
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THE NEW NAVISTAR T 444E, DIRECT-INJECTION TURBOCHARGED V-8 DIESEL

by MARTY HOWER and DALE OEHLEKING

A new 7.3 liter direct-injection turbocharged V-8 diesel engine, T 444E, has been designed by Navistar for use in truck applications. It incorporates many advanced technology features including Hydraulically actuated, Electronically controlled, and Boostable exhaust backpressure device to provide fast warm-ups in cold weather. The direct-injection LED system and hydraulically actuated exhaust backpressure device combine to make it possible to meet stringent emission goals while simultaneously improving fuel economy and performance.

HEUI-THE NEW GENERATION FUEL SYSTEM

by FRED CAMPLIN

Caterpillar Inc. has developed a new diesel engine fuel system, powered by hydraulics and controlled electronically, which requires no mechanical actuating or control mechanisms. Inherent advantages of the HEUI fuel system include electronically controlled injection timing, and full electronic control of injection parameters. The HEUI design and software development for the T 444E engine since its inception in 1987. He has also worked on development and testing of the 6J engine. He received a BSME from the University of Illinois at Champaign in 1980, an MBA from the University of Chicago in the State of Illinois.

MARTY HOWER is a Senior Development Engineer for Navistar International Transportation Corp., Engine Engineering, in Milwaukee, Wisconsin. He received a BSME from the University of Illinois at Champaign in 1980, an MBA from the University of Chicago in 1981.

DALE OEHLEKING is a Senior Development Engineer for Navistar International Transportation Corp., Engine Engineering, in Milwaukee, Wisconsin. He received a BSME from the University of Illinois at Champaign in 1978.

FRED CAMPLIN is a Supervising Engineer of the Commercial and Pump/Line/Nozzle Fuel System Section in the Engine Engineering Department of Caterpillar Inc. He has been involved in the development of the HEUI Fuel System since 1988. He joined Caterpillar in 1963 as a research engineer and advanced through various engineering positions. Since 1978, he has been a Supervising Engineer of seven fuel systems, and his current assignment. He has twelve years experience in fuel systems. Fred holds a BSME of Engineering Administration from Bradley University, and is a Registered Professional Engineer in Illinois.

RICHARD JASS is a Senior Development Engineer for Navistar International Transportation Corp., Engine Engineering, in Milwaukee, Wisconsin. He is a Senior Development Engineer for Caterpillar Inc., Engine Engineering, in Milwaukee, Wisconsin. He has over fourteen years experience in fuel systems development. He holds a BSME and MSME from the University of Illinois at Champaign.
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Coffee Talk Speaker Mary Kay Kluge's interesting talk had everyone's attention.

Speaker Christopher Nehrbass explains advantages of robot programs generated from computer simulations.
March 9, 1993, Chicago Section Meeting at Itasca Country Club Meeting Tech Chairman Linda Gogola presenting Speaker Christopher Nehrbass a memento for an enlightening talk on robotic offline programming.

Chairman Linda Gogola is happily presenting the evening’s Coffee Talk Speaker, Mary Kay Kluge, with a memento for a very informative talk on investment strategies to implement now to take advantage of the tax laws in 1993.
Navistar manufactures and markets International brand medium and heavy trucks, school bus chassis and mid-range diesel engines in North America and selected export markets. Navistar has led the North American combined medium and heavy truck market for 12 consecutive years and is the world’s largest supplier of diesel engines in the 125 - 275 horsepower range. The Company’s products, parts and services are sold through a dealer network spanning approximately 950 outlets in the U.S. and Canada. The company provides financing for its customers, dealers and distributors principally through Navistar Financial Corporation, a wholly-owned subsidiary.

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EXIDE--The Name that Started an Industry:

"Powerful, innovative, long-lasting. Like the company that makes them."

These words set the stage for the 1990s at Exide Corp., the world's oldest and largest battery manufacturer. Exide's strong financial resources--coupled with intensified research and development efforts--build a solid base for the company’s future.

Equally strong is the commitment to help retailers grow their battery and related businesses with new products and new product lines.

For example, Exide recently introduced The Exide 1000™, said to be America's most powerful dual terminal passenger car battery, with 1000 cold cranking amps and 125 minutes of reserve capacity.

The Exide 1000™ is specifically designed to meet the increased demands of today's vehicles with their higher starting and accessory power needs. Also new from Exide is a complete line of advanced technology battery chargers, battery accessories, and wheel weights designed to help aftermarket retailers capture profitable incremental sales.

Exide's new charger line offers user-friendly features like rugged, thermoplastic cases that won't rust, peel or corrode; simple, non-intimidating operation; shock-proof double-insulation, plus polarity protection.

In addition to a full line of consumer chargers, Exide offers smart-looking product design, attractive packaging, and strong promotional support as part of the complete selling package.

Exide also sees tremendous opportunities with battery accessories and wheel weights which represent other fast-growing segments of the automotive aftermarket.

New products. New product lines. The future is indeed bright at Exide.
For an engine to stand up to the tough grind of STOP GO IDLE it has to be tough. International diesels constantly strive to set the standards for medium diesel engines — and that’s made us the NUMBER ONE producer of truck diesels in North America. Operators trust International diesels because they deliver when others just talk.

- The 7.3. Low initial cost, proven fuel economy, compact design, and power to 185 HP make it the perfect entry level diesel replacement for gasoline engines.

- The DTA 360. A powerful and economical diesel featuring proven premium wet-sleeve design for applications up to 190 HP.

- The DTA 466. Universally recognized as the finest engine in its class, the premium wet-sleeved DTA 466 is rebuildable in-chassis and available from 195 to 270 HP. The DTA 466 gives the ultimate return in higher mileage applications.

If you’re looking for the medium duty diesel engines built to handle the tougher stop go idle applications ... you’ve just found them — INTERNATIONAL DIESEL ENGINES.
Piston Technology for the 90s--A State-of-the-Art Company:
Over the years the word "pistons" and the name Zollner have become virtually synonymous. Since 1912, Zollner Corporation has produced aluminum alloy pistons for almost every major maker of gasoline and diesel engines, and as we enter the 90s Zollner continues to redefine the leading edge of piston technology.

The characteristics of Zollner aluminum alloy pistons—high precision, low friction, light weight, and wear resistance—are all direct responses to engine manufacturers' demands pertaining to power requirements, fuel economy and emission standards. That Zollner is able to optimize all these characteristics in highly reliable and cost-effective designs, and still provide just-in-time delivery of finished product in the high-volume quantities that their truck and auto maker clients rely upon, accounts for Zollner Corporation's continued leadership in the industry.

Zollner maintains very close relationships with every client, and this is especially evident in the design phase. For example, Zollner provides direct links between its own sophisticated CAD system and the engineering computer systems of its clients to achieve the most structurally sound and performance-oriented piston design that will mesh with the overall design of the engine in the most cost-effective way. A three-dimensional finite element model with precise performance boundary conditions allows both parties to arrive at the most optimum design simultaneously and interactively.

In addition to the automobile industry which comprises Zollner's largest customer base, they also produce pistons for naturally aspirated and turbocharged diesel engines (as well as gasoline engines) for the trucking and marine industries, 2-cycle outboard engines, stationary engines, compressor engines, and race car applications.
The Mobile Division in Wooster, Ohio, with 225,000 square feet of space dedicated to the manufacture of gear pumps, motors, and mobile valves, is headquarters for all mobile engineering, sales and marketing activities in North America. Also, to serve the mobile market, Wooster operates a satellite plant in Greenville, South Carolina, with 43,000 square feet of space for manufacture of axial piston pumps and motors.

The Rexroth Mobile Division serves its customers with a network of stocking distributors and factory sales personnel throughout the United States. Our distributor network consists of over 600 factory trained sales engineers, which are technically supported by the product and system engineering specialists in Wooster.

In addition to supplying our customers with high technology components and systems, the Rexroth Corporation also supports customer training programs with public education institutions in the United States. Our Hydraulic Training Program serves the educational needs of both maintenance technicians and engineers with state-of-the-art curriculums in fluid power and electronics.

Rexroth takes pride in our ability to respond quickly and efficiently to the changing needs of customers. Our success is based on a team of quality people who can recognize changes in the market, analyze the new requirements, and respond quickly with the most modern technology.
Since its founding in 1892, Viscosity Oil has built a tradition of trust and long-term partnerships with our customers, our suppliers, and our employees. Our primary tradition of providing solutions for our customers through technically sound products has never wavered. Our focus on customers and quality has stood the test of time.

Viscosity Oil supplies products used in heavy duty off-road equipment, shock absorbers and struts, and specialty applications.

The keys to Viscosity's success have been:

(1) Sales and marketing expertise
(2) Product development and quality assurance
(3) A strategically located network of blenders and packagers.

Close customer contact is maintained by account managers who are knowledgeable problem-solvers and who function in an organization designed to be quick, flexible, and responsive. Product development and quality assurance are carried out by a lab staffed with highly qualified chemists and technicians, and equipped with the latest analytical devices. The network of blenders and packagers allows maximum flexibility and minimum overhead while assuring complete control over both quality and service.

Viscosity Oil stands ready to help solve your lubrication problems through our products, technical consultation, or analytical services.
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