Hydristor - Business week

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In the Southern Tier Region of upstate New York, in what is known as the Susquehanna Valley, there exists a special creative spark among its residents. It comes from the area's tradition and history, and it was once referred to as the Valley of Opportunity. The people who came there - many of them immigrants from Europe - could start with nothing more than an idea or a dream and, through their own hard work, create businesses and works that had a major impact on this country and on history itself.

Businesses that began in the area around Binghamton, NY forever changed America. The Continuous Oil Refining Company became Valvoline, and The "1900" Washer Company grew into Whirlpool. Thomas Watson joined a small tabulating machine company and changed its name to IBM, and Edwin Link developed the flight simulator that helped train pilots - and save lives - in WWII.

As we move into the 21st Century, one of the major concerns we face is increased energy costs. New methods are needed to extract the most efficiency from fuels and the machines they power. And one man in the Southern Tier is on the forefront of that development effort.

Thomas Kasmer, with his infinitely variable hydrostatic transmission - the Hydristor - is poised to revolutionize previous standards of fuel economy and mechanical efficiency.

Press

Information about Thomas Kasmer and the development of the Hydristor can be found in the following online articles (text will open in a separate window):

Fluid Power Web - Variable-volume pump-motor departs from convention
July 2004

Fluid Power Web - Editorial - A Silver Lining to High Gas Prices
June 2004

"CVT - Continuously Variable Transmission" web site - Hydrostatic CVTs
February 2004

Autotech Daily - Inventor Modernizes Dynaflow Transmission (pdf)
October 23, 2003

Automotive Design & Production - 21st Century DynaFlow
October 2003

Lincoln (IL) Daily News - The Future Looks Bright For These Four Inventions
September 25, 2003

automorrow.com - Tom Kasmer and the "Hydristor"
 Also - Conceptual Vehicle Inventor
March 1, 2003

Design News - Variable Hydraulic Pump

September 18, 2000

Design News - 'Hydristor' to vanquish vane pump problems
September 1, 2000

In addition, there are discussions about this technology in the Yahoo! automotive discussion group CVT Continuously Variable Transmissions where Tom Kasmer is a frequent participant. (Yahoo! ID = hydristor)

PATENTS

Patents Thomas Kasmer has received the following patents in the development of the Hydristor:
6022201 - Hydraulic vane pump with flexible band control
6527525 - Hydristor control means
6612117 - Hydristor heat pump

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Kasmer, Thomas E.

Local resident and famed inventor of the Hydristor, passed away on October 27, 2011 from a sudden heart attack. A steadfast and dedicated supporter of green energy for the future, Tom obtained several U.S. Patents for the "Hydristor". His lifelong dream was to provide a more efficient powertrain for cars.

He is survived by his son Chris and his daughter Kim, as well as his grandchildren Camille and Gibson, ages 10 and 8, who all reside in Florida. No public services were held.

Obituary

According to the obituary published in the Press & Sun-Bulletin (Binghamton, NY) from February 23 through February 25, 2012, all estate matters were to be directed to the executrix, Vivian Placek, c/o John W. Young, Young & Young, 22 Riverside Drive, Binghamton, NY 13905.

On April 2, 2012 a letter was sent to the executrix at the above law firm, asking how they wanted to proceed with this web site. Since no response was received by December, a call was placed to the law firm inquiring as to the status. We were informed that the executrix no longer retained that firm as the estate's legal representative. The law firm had no information as to who, if anyone, was now handling the legal affairs for the estate or the Hydristor. The firm also would not provide any contact information for the executrix, other than to say that she was still residing in the Binghamton area.

We have been unable to find any contact information for the executrix. For that reason, the Hydristor web site has been shut down, effective December 31, 2012.

Business Week Magazine

Gas Saver Or Tailpipe Dream?
A new kind of hybrid uses hydraulics instead of batteries to save fuel

Thanks to high fuel prices, hybrid gasoline-electric vehicles such as the Toyota Prius are constantly in the limelight. But far away from that glow, government scientists, auto parts engineers, and garage inventors are toiling on a distinctly less glamorous way to save fuel. It's a hybrid vehicle that pairs a gas engine with a hydraulic transmission. You may associate hydraulics with ancient, oily gear lifting heavy loads on farms and construction sites. But like everything old, this is new again.

Whenever gas prices shoot up, inventors and tech companies come out of the woodwork, trumpeting the next mileage-boosting miracle. And certainly there is room for fresh thinking, since gas savings on hybrids and clean-diesel vehicles can take four years or more to make up for the difference in cost to the buyer. Maybe that's why parts makers such as Eaton Corp. and BorgWarner Inc. and a lonely inventor named Tom Kasmer are suddenly pushing hybrid hydraulic systems for everything from delivery trucks and garbage haulers to small cars and bicycles. The sales pitch: The hydraulic approach is relatively inexpensive. "This could be a better option than the hybrids on the road today," says Kasmer.

Hydraulic hybrids have been ignored because they present big engineering challenges, noise being one. Even so, Eaton and the Environmental Protection Agency teamed up with United Parcel Service to put hydraulic delivery trucks on the road. In tests, the prototypes get upwards of 50% better fuel economy. Kasmer himself has failed to connect with a big carmaker so far, but his hybrid approach, known as a hydristor, has attracted interest from Bobcat Co., a construction equipment maker. "The technology will start with large commercial vehicles," says Sohan Uppal, vice-president for research for Eaton's fluid systems group.

All hydraulic transmission systems have some basic features in common. They begin with a low-pressure tank filled with fluid, most often oil. When the driver hits the brakes, the liquid is pumped into a high-pressure tank. The pent-up fluid naturally wants to escape. But since it can't, pressure builds and energy is stored. Then, when the driver releases the brake and hits the accelerator, the liquid flows back to the low-pressure tank. Along the way, the rushing fluid turns vanes that rotate an axle, and the vehicle takes off. Only later does the gas engine take over.

Gas-electric hybrids also achieve efficiency by capturing energy from braking. But Kasmer claims his hydristor would be cheaper than the computer controllers and batteries in Prius-like hybrids. Working independently of Kasmer, the EPA, Eaton, and BorgWarner reached the same conclusion. BorgWarner put a prototype system in a Chinese-made subcompact car, raising its mileage from 33 mpg to 40 in tests, says Bill Kelly, vice-president for drive train development.

PEDAL POWER
It's in trucks, however, that the technology may really prove its value. Eaton's Uppal says the company has developed a system for garbage haulers that could reap terrific fuel savings because the vehicles could make up to nine stops in a row running on stored hydraulic power alone. EPA project manager John Kargul says that for a variety of trucks, the fuel savings from hydraulics could offset higher sticker prices in less than three years -- a tall order for today's pricier gas-electric hybrid designs.

Truly exotic applications may be at hand. Stymied in Detroit, Kasmer is working with a major bicycle maker that hopes to adapt his design to replace conventional chains and gears. Such a bike might prove easier to build and pedal because the hydristor would make seamless, gear-like adjustments as the rider pumped up and down hills.

Detroit's carmakers say that they have good reasons for keeping their distance. Thomas G. Stephens, group vice-president for power train operations at General Motors Corp. (GM), wrote in an e-mail that plenty of inventors have tinkered with hydraulics or related ideas. Yet he doesn't see how any could come close to doubling fuel economy, as Kasmer has claimed. And no matter how big their benefits, hydraulic systems are prone to leaks.

Then there's the noise issue. "[They] groan like the landing gear on an airplane," admits Kelly of BorgWarner. Considering their shaky financial situation, U.S. automakers aren't likely to spend the research money needed to iron out these kinks. They're even less likely to bet the $1 billion it takes to scale up production of a new transmission, Kelly says.

Kasmer still dreams of getting his hydristors into passenger cars. But he has to work on his presentation. When he spoke to a group of engineers at Munro & Associates Inc., a Troy (Mich.) engineering consulting firm with clients such as DaimlerChrysler (DCX) and Boeing Co., the demo impressed some of the engineers. But when they asked him for technical details, he balked at giving away design secrets. Instead, says Sandy Munro, principal of the firm and one of Kasmer's financial backers, Kasmer lectured listeners about cleaning up the air for tomorrow's children. The techies wanted more info, and when it wasn't forthcoming, a few headed for the door.

Business Wekk Magazine en català

Gas Saver Or Tailpipe Dream?
Un nou tipus d'ús híbrid hidràulic en comptes de bateries per estalviar combustible

Gràcies als alts preus dels combustibles, els vehicles híbrids de gasolina elèctrics, com el Toyota Prius, estan constantment a la vora del foc. Però lluny d'aquest resplendor, els científics del govern, els enginyers de autopartes i els inventors del garatge treballen d'una manera menys glamurosa per estalviar combustible. Es tracta d'un vehicle híbrid que combina un motor de gas amb transmissió hidràulica. Podeu associar hidràulica amb engranatges antics i oliosos elevant càrregues pesades a les explotacions i els llocs de construcció. Però com tot allò antic, això és nou de nou.

Sempre que els preus del gas es disparen, els inventors i les empreses tecnològiques surten de la fusteria, fent trompetes del proper miracle de millora de millores. I sens dubte hi ha lloc per a un pensament renovat, ja que l'estalvi de gasos en híbrids i vehicles de gasoil net pot trigar quatre anys o més a compensar la diferència de cost per al comprador. Potser és per això que els fabricants de peces com Eaton Corp. i BorgWarner Inc. i un inventor solitari anomenat Tom Kasmer, de sobte, estan empenyent sistemes hidràulics híbrids per a tot, des de camions de transport i d'escombraries fins a cotxes petits i bicicletes. El camp de venda: l'enfocament hidràulic és relativament econòmic. "Aquesta podria ser una millor opció que els híbrids en el camí avui", diu Kasmer.

Els híbrids hidràulics s'han ignorat perquè presenten grans reptes d'enginyeria, ja que el soroll és un. Tot i això, Eaton i l'Agència de Protecció del Medi Ambient es van associar amb United Parcel Service per posar camions de reparació hidràulics a la carretera. En proves, els prototips aconsegueixen un 50% més d'economia de combustible. El mateix Kasmer no ha pogut connectar amb un fabricant de cotxes fins ara, però el seu enfocament híbrid, conegut com a hidrurista, ha despertat l'interès de Bobcat Co., un fabricant d'equips de construcció. "La tecnologia començarà amb grans vehicles comercials", diu Sohan Uppal, vicepresident d'investigació per al grup de sistemes fluids d'Eaton.

Tots els sistemes de transmissió hidràulica tenen característiques bàsiques en comú. Comencen amb un dipòsit de baixa pressió ple de líquid, sovint amb oli. Quan el conductor toca els frens, el líquid es bomba en un tanc d'alta pressió. El fluid acumulat naturalment vol escapar. Però, com no es pot, es construeixen pressions i s'emmagatzema energia. Després, quan el controlador allibera el fre i colpeja l'accelerador, el líquid flueix al tanc de baixa pressió. Al llarg del recorregut, el fluid corredor gira volants que giren un eix i el vehicle s'apaga. Només més tard es fa càrrec el motor de gasolina.

Els híbrids gas-elèctrics també aconsegueixen l'eficiència capturant energia des de la frenada. Però Kasmer afirma que el seu hidròxid seria més barat que els controladors de l'ordinador i les bateries en híbrids tipus Prius. Treballant independentment de Kasmer, l'EPA, Eaton i BorgWarner van arribar a la mateixa conclusió. BorgWarner va posar un sistema de prototips en un cotxe subcompacte fabricat a la Xina, elevant el seu quilometratge de 33 mpg a 40 en proves, diu Bill Kelly, vicepresident del desenvolupament del tren de maneig.

PEDAL POWER
És en camions, però, que la tecnologia pot demostrar el seu valor. Eppal diu que la companyia ha desenvolupat un sistema per a transportistes d'escombraries que podrien obtenir un gran estalvi de combustible, ja que els vehicles podrien arribar fins a nou parades seguides a la mateixa potència hidràulica emmagatzemada. El gerent de projecte de l'EPA John Kargul diu que per a una varietat de camions, l'estalvi de combustible de la hidràulica podria compensar els preus de l'adhesiu més alts en menys de tres anys, un alt ordre per als dissenys híbrids de gas-elèctric més cars d'avui.

Existeixen aplicacions exòtiques. Detingut a Detroit, Kasmer treballa amb un fabricant de bicicletes que espera adaptar el seu disseny per reemplaçar cadenes i engranatges convencionals. Aquesta bicicleta podria resultar més fàcil de construir i de pedalar, ja que el hidrurista fabricaria arranjaments sense fissures, com un engranatge, ja que el pilot va pujar i baixar els turons.

Els fabricants de cotxes de Detroit diuen que tenen bones raons per mantenir la distància. Thomas G. Stephens, vicepresident del grup d'operacions de tren de potència de General Motors Corp. (GM), va escriure en un correu electrònic que molts inventors han jugat amb idees hidràuliques o relacionades. Tanmateix, no veu com cap podria acostar-se a duplicar l'economia del combustible, tal com ha afirmat Kasmer. I per molt que siguin els seus beneficis, els sistemes hidràulics són propensos a filtracions.

Després hi ha el problema de soroll. "[Ells] gemegen com l'engranatge d'aterratge en un avió", admet Kelly de BorgWarner. Tenint en compte la seva situació financera inestable, els fabricants d'automòbils nord-americans no són susceptibles de gastar els diners de la recerca necessaris per solucionar aquests enfonsaments. Fins i tot són menys propensos a apostar els mil milions de dòlars que es necessiten per augmentar la producció d'una nova transmissió, diu Kelly.

Kasmer encara somia amb aconseguir que els seus hidròstors es converteixin en cotxes de passatgers. Però ha de treballar en la seva presentació. Quan va parlar amb un grup d'enginyers a Munro & Associates Inc., una consultora d'enginyeria de Troia (Mich.) Amb clients com DaimlerChrysler (DCX) i Boeing Co., la demostració va impressionar a alguns dels enginyers. Però quan li van demanar detalls tècnics, es va abstenir de regalar secrets de disseny. En lloc d'això, diu Sandy Munro, director de l'empresa i un dels finançadors financers de Kasmer, que va donar conferències als oients sobre la neteja de l'aire per als nens de demà. Els tècnics van voler més informació, i quan no es va arribar, alguns van dirigir cap a la porta.