How Much Is It Worth To You To Increase Your Car's Gas Mileage To 120 MPG?

WHAT IF YOUR CAR COULD GET FOUR OR FIVE TIMES THE GAS MILEAGE IT GETS NOW?

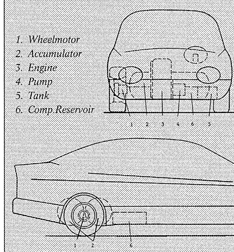
A typical medium size car today averages only about 23 miles per gallon of gas. But suppose it were able to average *five times* that amount.

If you drive just 12,000 miles annually, your savings on fuel would amount to at least *$530 every year* with present fuel costs. If you're like most people, those savings would add up to more than $2,200 during the time you own the car.

So isn't the chance to reap such long-term savings worth the price of a postage stamp?

INTRODUCING THE HYDROSTATIC POWER TRAIN WITH ENERGY STORAGE.

Starting in 1982, Valentin Technologies, Inc. began to develop



Fuel economy	*EC Test cycle (city)*	*143 mpg.*
	Constant 55mph	*108 mpg.*
	70 mph	*80 mpg.*
Acceleration	*0-60 mph*	*5 sec.*
Engine		*50 hp.*
Weight	*Conventional Car*	*3127 lbs.*
	New Concept Car	*2550 lbs.*
	EC Test cycle	*2849 lbs.*
Dimensions	*L.W.H.*	*173 x 68 x 55 in.*

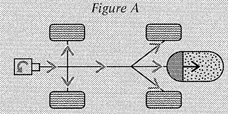
a new powertrain with the potential to revolutionize driving as we know it.

Yet the vehicles it is being developed for will appear no different from those on the road today. No "space-age" materials or noticeable reduction in the size of the car are needed to achieve such incredibly high fuel efficiency.

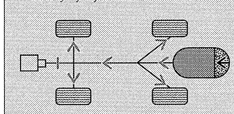
Instead, we are developing a new, lighter powertrain to replace the inefficient engines and transmissions used in current automobiles. We call it the Hydrostatic Powertrain With Energy Storage. This fundamental change in powering automobiles can more than quadruple your cars gas mileage. And it can drastically reduce air pollution.

Both the federal government, and the State of Wisconsin were impressed enough to invest over $200,000 in the development of the main powertrain components.

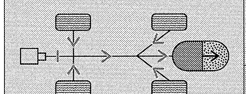
Figure A



The engine drives the car and charges the accumulator with pressurized fluid simultaneously - for just over 1 minute.



The energy from the accumulator drives the car - for 3 to 6 miles. The engine has been turned off by the powertrain computer.



During braking, all the braking energy will be restored into the accumulator.

But if it is to become a reality, we'll need more funding to complete the final stages of development of this new approach to power automobiles. And your help. It's as easy as filling out and mailing the coupon below.

HOW DOES IT WORK?

The biggest wasters of energy in today's cars are the brakes and an engine that has to run at various speeds and powers. Every time you apply your brakes you are discarding loads of potential energy. In fact, braking from 50mph to a stop uses as much energy as driving one mile at 35mph.

$1,000

The hydrostatic powertrain *stores this energy from braking* and uses it again to power the car. The engine *runs only at constant power and speed.*

$100

It consists of a small engine, an accumulator to store energy and a wheelmotor in each wheel. The engine with the hydraulic pump charges the accumulator with pressurized hydraulic fluid. This fluid drives the adjustable wheelmotors. During braking, the wheelmotors become pumps and restore all braking energy back into the accumulator. These functions are controlled by the powertrain computer.

(See Figure "A" Left)

$10

This process leads to drastically improved gas mileage and reduced pollution. Today, a typical mid-size car such as a Ford Taurus or Chevy Lumina averages 20 mpg in city and 27 mpg in highway driving. The new powertrain would improve these to averages of 135 mpg in the city and 90 mpg on the highway.

Please note, the car gets *better gas mileage in the city* due to less air drag (speed) and high rate of regenerative braking. And again, these figures *do not* assume the use of any special "space-age" materials. (The size and weight reductions are only a result of the lighter and smaller powertrain.)

The low fuel consumption and high power of the wheelmotors (700hp) will result in outstanding driving performance.

The average car with a 17-gallon tank will be able to travel 2,000 miles on a single tank of gas. And accelerations of 0 to 60 mph in 5 seconds will be possible, too.

The safety and comfort of the car will also be improved noticeably since the power on each wheel can be controlled fast and easily through the powertrain computer. The functions (ABS, 4-wheel drive, traction control, locked differentials and improved dynamic control) are part of the computer software and are included at no additional charge.

In fact, the projected cost of a car with the hydrostatic powertrain will be competitive with conventional cars with ABS, when produced in similar volumes.

WHERE OTHER POWERTRAINS FALL SHORT.

Present powertrains have reached a high degree of maturity. Research data indicate that improvements of even 40% are very unlikely and would result in a sizable increase in the cost of vehicles.

So what about alternative systems that are being developed? The chart at the right gives you a comparison between those systems and ours.

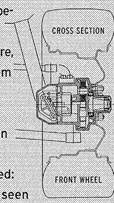
WHERE WE FALL SHORT.

The major stumbling block in making the hydrostatic powertrain a reality is funding.

We applied to the federal government's Advanced Technology Program (ATP) for a grant and were turned down.

135 MPG (City)
90 MPG (Hwy.)
-85% Pollution

Their reasons? They stated that the system should have been described in "greater detail," and the business plan wasn't "comprehensive enough." But they were unable to be specific as to why. Timothy C. Moore, researcher from the Hypercar Center of the Rocky Mountain Institute in Colorado stated: "I have rarely seen such a thorough and detailed project plan and workmanship."



We've approached some car manufacturers. Typically, they do not support outside research and product development. The best we could do was to get a few to agree to see a demonstration of our new powertrain, and to help us test the prototypes when they become available.

To date, we've invested over $500,000 of private funds into this project -- *excluding the cost for full-time labor and interest.* The only way to complete it now is to get additional government funding.

THIS AD IS COSTING US PLENTY. BUT IGNORING IT COULD COST THIS COUNTRY $45,000,000,000.

This ad is our last attempt to get funding for this powertrain. We believe so strongly in our concept and its importance to the country, that we are risking the only remaining savings we have to try to bring it to reality.

The hydrostatic powertrain has the potential to reduce U.S. oil imports by more than 80% - a savings of $45 billion per year.

THE HYDROSTATIC POWERTRAIN VS. THE COMPETITION

NAME	DESCRIPTION	ADVANTAGES	DISADVANTAGES
(A) Electric Battery-Motor Powertrain	Battery powers an electric motor at one axle.	• Some energy savings. (ca. 10%) • Virtually zero toxic emissions at the car.	• Only ultra-light cars. • Marginal driving performance. • Battery disposal is environmental problem. • Pollution at power plant.
(B) Hybrid-Mechanical Powertrain	Conventional, mechanical powertrain. Mech. driven flywheel or hydrostatic system stores energy from braking and the engine.	• Some energy savings. (ca. 25%) • Reduced emissions. • Improved driving performance. • ca. 30% regenerative braking.	• High weight and space requirements. • High cost. • Difficult to control
(C) Hybrid-Electric Mech. Powertrain	Engine/generator unit powers electric motor at one axle. Electric driven flywheel stores energy from braking and the generator.	• High fuel efficiency. • Low emissions • Good driving performance. • ca. 40% regenerative braking.	• More weight & space requirements than (F). • High cost. • Advantageous only for light cars.
(D) Hybrid-Electric Powertrain	Engine/generator unit, powers electric motor at one axle. Ultra capacitor or battery stores energy from braking and generator.	• High fuel efficiency. • Low emissions. • Good driving performance. • ca. 40% regenerative braking.	• More weight & space requirements than (F). • High cost. • Suitable battery not developed yet. • Advantageous only for light cars.
(E) Electric Engine-Motor Powertrain	Electric fuel cell, powers electric motor at one axle. Ultra capacitor or battery stores energy from braking and the cell.	• High fuel efficiency. Greater than (C) & (D). • Virtually zero toxic emissions. • Good driving performance. • ca.40% regenerative braking.	• More weight and space requirements than (C), (D) or (F). • Higher costs than (C), (D) or (F). • Not advantageous for heavier vehicles.
(F) Hydrostatic Powertrain With Energy Storage	Engine/pump unit, powers hydraulic motor in each wheel. An accumulator stores energy from braking and the pump.	• Very-high fuel efficiency. • Very low pollution. • Moderate cost, advantage. for all vehicles. • Very good driving performance. • ca.70% regenerative braking.	• Development not completed, funding from government needed.

CALCULATION OF FUEL CONSUMPTION

EC Test cycle (city):												
Velocity	v		km/h	0-16	16	16-0	0-50	50	50-0	0-56	56	56-0
			m/sec	0-4.44	4.44	4.44-0	0-13.9	13.9	13.9-0	0-15.6	15.6	15.6-0
Time	t		sec	4	8	4	20	24	20	3	54	3
Acceleration	a		m/sec^2	1.12	0	-1.12	0.70	0	-0.70	5.19	0	-5.19
Distance	s		m	9	36	9	139	333	139	24	845	24
Idling	F_0 Force for idling wheelmotors		N	16	20	16	20	20	20	0	20	0
Resistance	Rolling:	$F_{Ro} = .0072 \cdot m \cdot g$	N	93	93	93	93	93	93	93	93	93
To Motion	Air drag:	$F_L = 0.5 \cdot 1.2 \cdot c_W \cdot A \cdot v^2$	N	3	6	3	29	52	29	37	65	37
	Power:	$P_W = (F_0+F_{Ro}+F_L)v$	N	249	528	249	987	2294	987	1014	2777	1014
	Energy:	$W = P_W \cdot t$	J	995	4227	995	19738	55044	19738	3042	149947	3042
Acceleration	Force:	$F_a = m \cdot a$	N	1452	0	-1452	907	0	-907	6727	0	-6727
(Braking)	Energy:	$W = F_a \cdot s$	J	13064	0	-13064	126100	0	-126100	161430	0	-161430
Circuit Losses	Flow resistance, Controls. (3%)		J	422	127	392	4375	1651	3783	4934	4498	4843
Forces On Car		$F_c = F_0 = F_{Ro}+F_L+F_a$	N	1564	119	1340	1049	165	765	6857	178	6597
Wheelmotors	Torque	$Tw = F_c \cdot r/i$	Nm	43	3.5	37	29	4.5	21	86/33	5.0	83/32
	Active motors (F=front, R=rear)		-	R2	R1	R2	R1	R1	R1	2/2	R1	2/2
	Revolution		rpm	1170	1560	1170	3650	4900	3650	2900/4100	5450	2900/4100
	Adjustment		o/%	30/84	4.8/14	25/72	35/100	6.2/18	29/82	35/100	6.8/20	35/100
	Efficiency		%	86	72	83	94.5	86.5	94	95	89	95
	Efficiency of wheelmotor		%	84.7	70.9	81.7	93.1	85.2	92.6	93.5	87.6	93.5
Energies	Per cycle	- = regenerated	J	17100	6140	-9540	161350	66550	-94990	181190	176310	-143560
	Acceleration/Cruise/Regenerated		J	359640	249000	-248090						
	Regen./Accel. - Regen./Total		%		69-41							
	Energy,supplied	= Energy/.95•.965	J		393300							
Fuel	Miles per gallon		mpg		159 to 143mpg (-10% for accessories)							
Consumption	Liter per 100 km		1/100km		1.50							

DATA: FUEL CONSUMPTION CALCULATION. Frontal area: A=2.0 m^2, air drag C_W = 0.22, (closed engine bay, smooth bottom), tire rolling resistance r_0 = 0.0072, Engine: b_e=175 gr/KWh (DI, constant 36 KW at 2,400 rpm only.), Accumulator: 2.4 MJ, 0.965, Pump: 0.95, Planetary gear: 0.985, Drive train: 256 kg., Energy for accessories, (electr., AC): 10% city, 7% Hwy. Advanced car (-300kg, PNGV): City +15%, Hwy. +12% mpg.

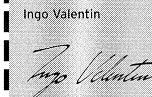
The computation reflects the European EC test cycle (Bosch Automotive Handbook, 3rd Edition, p.324,486)

Don't let this important development disappear in a sea of government red tape. Fill out the coupon below and mail it to us to show your support. If enough people write in, the government won't be able to ignore us.

If you desire more information on this project, send $2.00 to:

VALENTIN TECHNOLOGIES, INC.
P. O. Box 510
Brookfield, WI 53008
Fax: (414) 821-1910

Thank you,
Ingo Valentin



For the price of a stamp, you can show the government that you favor higher fuel efficiency and a cleaner environment. Simply fill in the coupon and mail it to the address below. All replies will be forwarded to the proper federal institution(s).

32¢

Please mail to:

VALENTIN TECHNOLOGIES, INC.
P.O. BOX 510
BROOKFIELD, WI 53008

I believe the Hydrostatic Drive Train With Energy Storage could revolutionize the way we drive. I support the effort to further existing development, and ask our government to provide the additional funding needed to complete this vital project.

Name: ______________________________

Address: ______________________________

City: ____________________ State: __________ Zip: __________

PROJECT HISTORY **1982:** Development of the hydraulic motor begins. **1984:** Patent received in the USA, Germany and 13 other countries. **1988:** Proof-of-concept model successfully tested in Switzerland and at the University of Wisconsin. **1989:** Funds from the Department of Energy and the State of Wisconsin granted. ($220,000, less than requested.) Start of the prototype development. **1991:** Patent applied for additional features. Still pending. **1992:** Manufacturing of first parts for prototype. **1993:** Lack of capital stops manufacture of parts. **1995:** Applied for funding from the Advanced Technology Program (ATP) from the US Department of Commerce. **Total money invested in project thus far:** $750,000 ($370,000 - personal capital; $220,000 - Federal Funds; $160,000 subcontractor, family and friends).