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Survival Keys for Tough Economic Times

- Strong, almost dictatorial, leadership focused on resolving key basic problems.
- Cash, cash, cash - regularly forecast cash flows, shrink receivables, stretch payables. Assume two rules:
 1. The situation is worse than it seems.
 2. The situation will deteriorate.
- Restructure assets including sales and leasebacks.
- Restructure debt and nurture lender relationships.
- Renegotiate with suppliers and continually seek cost reduction opportunities.
- Utilize corporate-wide information effectively with respect to all financial, operational and customer information.
- Remember: current product development is for vehicles 2-5 years out in a hopefully improved economy. Continue to selectively invest now so as to ensure success on future vehicles. Reduce costs by seeking government and university assistance when possible.

Adapted from: "Taking Charge" by John O. Whitney

Innovative Suppliers will Lead the Recovery

The last quarter of 2008 saw the sale of vehicles in the US fall catastrophically. Year-to-year same month sales for November through January fell about thirty-six percent, per month. The only positive sign, at least in the short term, is that this reduction has remained constant (see graph below). However, the impact on suppliers has been greater since the OEMs have drastically cut production below these sales declines. For the last few months it is almost meaningless to even consider the levels of production. These levels can just be summed up as "extremely low and unsustainable". Not enough to cover operating overhead and loan payments. It is no surprise that Chapter 11 is becoming an almost daily event.

Worldwide job losses from this recession could reach 50 million according to the UN's International Labor Organization. The US auto-industry in Michigan has been one of the unfortunate leaders in this loss.

Who will get out of this abyss first? We believe that the following will be important factors to consider:

- The US government has been replaced in the midst of this catastrophe. As things recover we do not expect business to return to what it was. The vehicle mix will change and consumer desires, overall, will change. The administration's strong environmental stance will play a greater role in future vehicle development.
- A number of industry observers feel that things are now "bottoming out". Auto

loan credit is starting to be made more easily available at companies such as GMAC Financial Services which is expected to provide a sales boost.

- With the appointment of a Presidential panel to oversee the automotive industry that includes financial and labor experts together with EPA representatives, the new administration is seeking change from past products.

The trillion-dollar question is when will the recovery finally take place? When it does occur, the innovative OEMs and naturally their respective suppliers will lead the pack. Some in the industry are already pointing towards Ford being one of the recovery leaders as evident by the success of its new F-Series trucks and its new Fusion that has superior fuel economy compared with others in its class. Suppliers not at the forefront of the recovery will be badly wounded with the extreme laggards probably left in Chapter 7 liquidation or picked up for a bargain by other suppliers.

Toyota has experienced its first losses in decades. It has cut back on R&D spending but still looks towards a change in paradigm in consumer driving habits. The coming decade will witness exciting new developments out of Japan in both vehicle powertrains and designs.

In summary, companies that have managed to trim operational waste while at the same time having a product development strategy utilizing innovative designs and cost effective material and process selection, will find that they emerge stronger than the rest from this economic meltdown.

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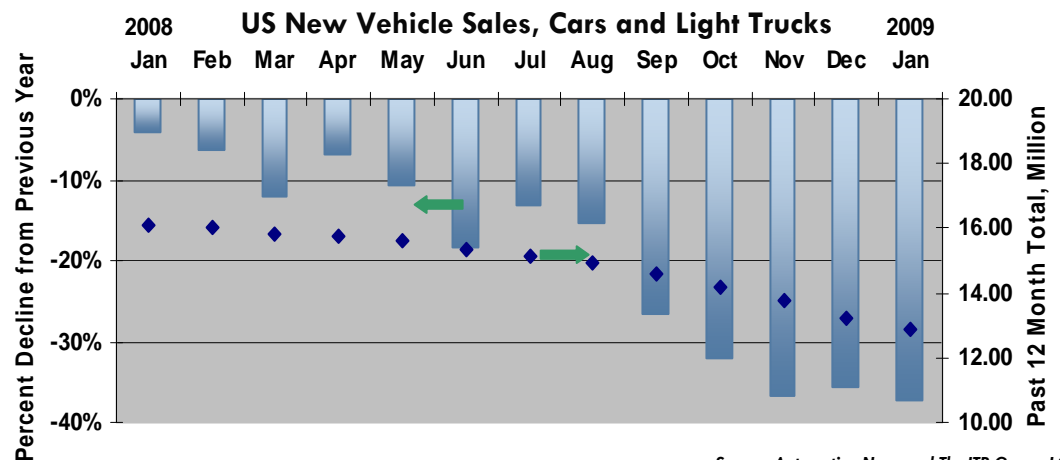
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Source: Automotive News and The ITB Group, Ltd.

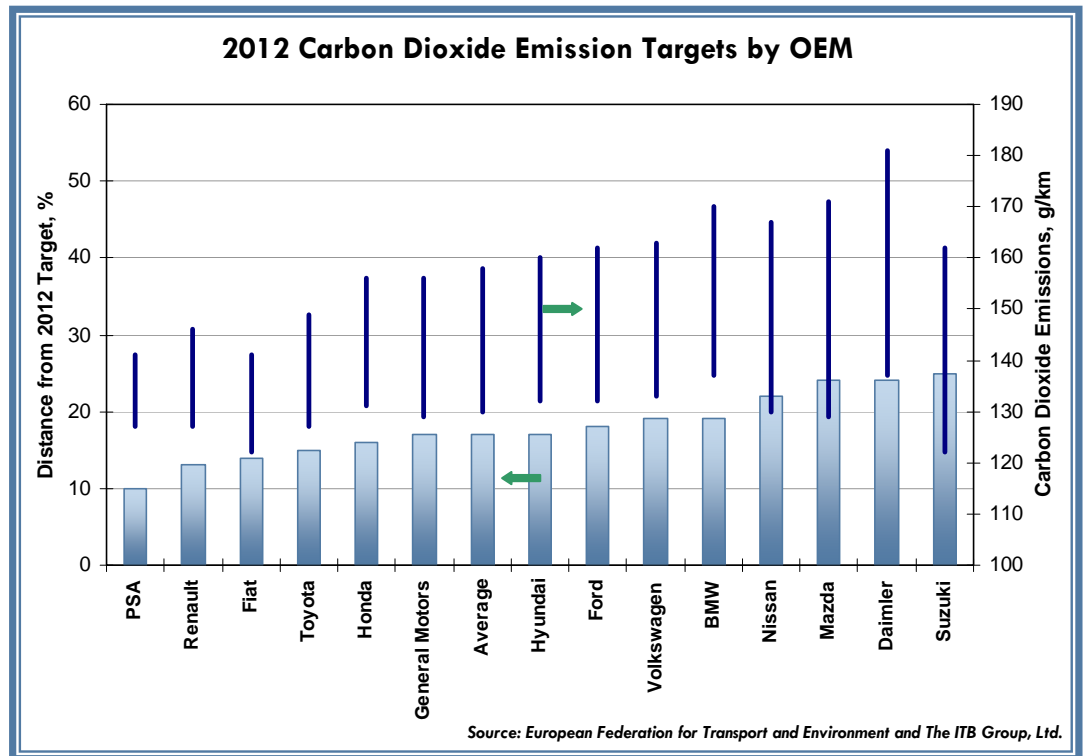
Vehicle Mass Reduction - No Longer an Engineer's Dream Vetoed by Purchasing

MIT's Laboratory for Energy and the Environment have found that there have been many studies describing a vehicle's fuel consumption improvements resulting from mass reduction efforts. Resulting improvements in fuel consumption vary widely, from 4.5 to 8 percent for every 10 percent reduction in vehicle weight. With the efforts towards reducing greenhouse gases, it is not surprising that automotive OEMs around the world have major mass reduction efforts underway. The exhibit provides an understanding as to what extent each OEM has to reduce its carbon dioxide emissions in Europe so as to meet its 2012 targets and enable the European target of 130 g/km to be realized.

A number of European countries have independently adopted different taxation schemes on carbon dioxide emissions. Now, the carbon dioxide emissions of a vehicle have a direct impact on the potential taxes a consumer must pay. As a result, reducing a vehicle's weight can have a direct impact on a consumer's vehicle selection.

We have identified a number of areas that may be targeted for weight reduction. Some examples include:

Body-In-White (BIW) – As the largest single source of mass on the vehicle, OEMs are seeking changes to the BIW for helping realize mass reduction targets. It's our observation that the OEMs are analyzing in-depth the specific functional



requirements for each area of the BIW. Design and material selection is then made according to the requirements. A single BIW may have a number of different steel grades, aluminum and magnesium.

Exterior Panels – These have been targeted for substitution by plastic for many years. Major limiting factors to the use of plastic include increased cost and dimensional stability problems. It seems that for twenty years now whenever a new fender program moves towards plastic materials another program reverts back to steel. Perhaps new materials

such as nanomaterials with clean sheet designs may enable a breakthrough.

Powertrain - Components around both the engine or within the transmission have been targeted by plastics for many years. Recent developments by the plastic suppliers in developing materials with improved heat resistance and dimensional stability have led to renewed efforts in this area.

Closures – Automotive closures such as tailgates may provide opportunities for reducing a vehicle's weight by up to 5 kg. Steel has remained the domi-

nant material due to its lower cost and tolerances compared with thermoplastic and thermoset materials. However, in recent developments the use of low weight cast materials for the inner components are being evaluated. We expect such examples out in the marketplace in the near future.

The ITB Group is currently completing a major multiclient report that identifies Opportunities in Vehicle Mass Reduction. Interest has been high, especially amongst the European OEMs, in this new report offering. For further information please contact Ms. Mitra O'Malley, Managing Director at The ITB Group, momalley1@itbgroup.com.

Doors and Cockpit Developments

Against the backdrop of a global financial crisis and an intensification of efforts to slow climate change, leading OEMs need to continue providing innovative automotive interiors. Over the last ten years, The ITB Group has completed a number of technical business reports that have separately focused on cockpit and door modules. The success of these reports resulted from uncovering key technical developments and placing them in the context of the business world. This year, ITB's cockpit and door module reports will be combined so as to provide a comprehensive look at the evolution of these two modules together with an analysis of the technologies used in the production of the key subcomponents.

For further information on this new multiclient report Automotive Cockpit and Door Modules please contact Ms. Mitra O'Malley, Managing Director at The ITB Group, momalley1@itbgroup.com.

Near Zero Emission Vehicle Reduction - No Longer a Tradeoff with Fuel Economy and Performance

Environmental concerns have led to new government regulations that limit vehicle emissions not only for traditional exhaust pollutants (hydrocarbons, nitrogen oxides, carbon monoxide and particulates), but also for significant changes to a vehicle's fuel economy. Suppliers and OEMs have responded to these requirements with a great number of innovations that include: cooled high and low pressure systems for exhaust gas recirculation and boost system improvements both of which improve an engine's combustion characteristics. In addition, electric vehicles of which plug-in hybrids offer the most promise in the near term, are being developed. These innovations emerged as the world fell into a financial crisis and US voters elected a greener President. In January 2009, The ITB Group completed a report that analyzes the business and technical changes related to the further reduction of vehicle emissions in the current economic and legislative environment.

Highlights of this report include:

- Business Dynamics – New powertrain and exhaust system control technologies have led to the emergence of new suppliers in the exhaust system market. For example, the use of urea-based systems onboard the vehicle for nitrogen oxide

reduction has resulted in fuel tank suppliers producing storage and control systems for such systems. Leading exhaust system suppliers have had to make major investments in developing technologies for suitable exhaust aftertreatment systems. Hybrid and pure-electric powertrains are leading to the emergence of new OEMs.

- Government Regulations – Climate change concerns have led to legislative efforts for reducing carbon dioxide but the specific requirements of this legislation, in many cases, has not been confirmed. Regulations for traditional exhaust pollutants over the next ten years are clear, especially in Europe with the completion of the Euro 6 requirements.
- Exhaust Systems – Packaging of exhaust aftertreatment systems becomes increasingly difficult as these systems are often close-coupled to the engine and yet, need to maintain or improve, their durability, pressure loss characteristics and acoustics. Open questions remain concerning the optimum exhaust gas recirculation (EGR) layouts – low versus high pressure or hybrid approaches. The reduction of nitrogen oxides requires a consideration of EGR layouts and NOx storage traps versus selective catalytic reduction systems.

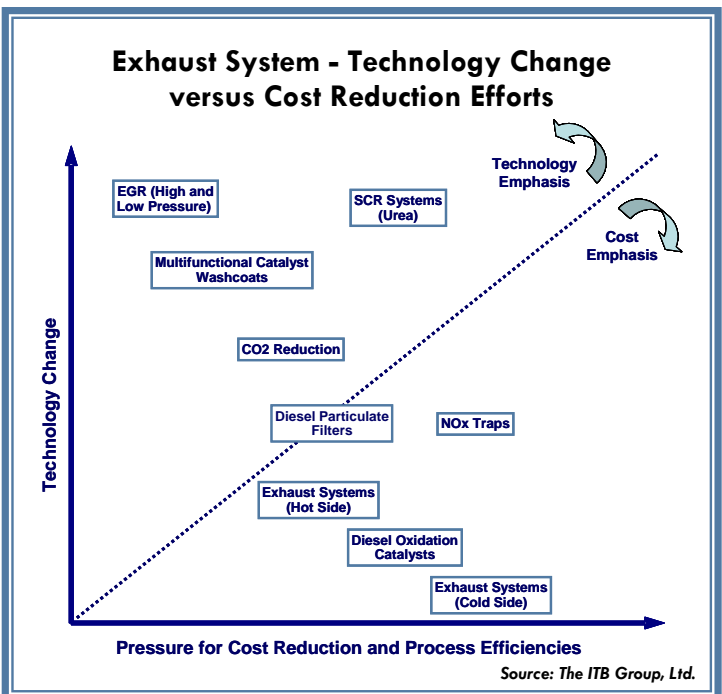
Improvements by the OEMs

over the last twenty years have been remarkable. For its diesel engines between 1983 and 2007, BMW increased the torque and power by 170% and 147% respectively while reducing fuel consumption (20%) and emissions (99%). There is an urgent need to simplify exhaust aftertreatment systems especially for new clean diesel engines. The exhibit below illustrates the tradeoffs between the technical changes in exhaust systems and cost reduction efforts.

Despite these tough times ITB has witnessed exciting new

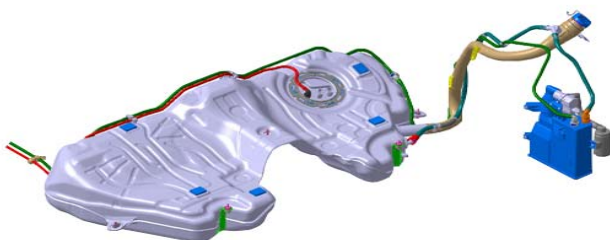
powertrain developments at a number of OEMs and their suppliers. As a result, the next ten to twenty years will show further improvements in both engine out emissions and cost reduction. At the same time we will witness the emergence of alternative powertrains including plug-in hybrids and battery electric vehicles.

The ITB Group has completed a multiclient report *Near Zero Emission Vehicles - Challenges and Opportunities*. For further information please contact Dr. Joel Kopinsky, Managing Director at The ITB Group, jkopinsky@itbgroup.com.



Fuel System Developments

Plastic Fuel Tank on the New BMW 7-Series



Source: BMW

We continue to witness the introduction of new technologies for vehicle fuel systems. For example, the new BMW 7 Series marks the first application of Inergy's TWIN SHEET BLOW MOLDING process on a commercialized vehicle. Moves to plug-in hybrids are prompting the OEMs to change their vehicle's vapor management strategies. The tremendous drop in oil prices from over \$140/barrel in mid-2008 to around \$35 in early 2009 has played havoc with long-term strategic planning initiatives. ITB's annual fuel system report will evaluate these factors and represents The ITB Group's eighth update report on the technical developments and business dynamics in the automotive fuel systems' industry.

For further information on the new multiclient report *Automotive Fuel Systems 2009* please contact Dr. Joel Kopinsky, Managing Director at The ITB Group, jkopinsky@itbgroup.com.

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This is a nightmare, which will pass away with the morning. For the resources of nature and men's devices are just as fertile and productive as they were. The rate of our progress towards solving the material problems of life is not less rapid. We are as capable as before of affording for everyone a high standard of life - high, I mean, compared with, say, twenty years ago - and will soon learn to afford a standard higher still. We were not previously deceived. But to-day we have involved ourselves in a colossal muddle, having blundered in the control of a delicate machine, the working of which we do not understand. The result is that our possibilities of wealth may run to waste for a time - perhaps for a long time.

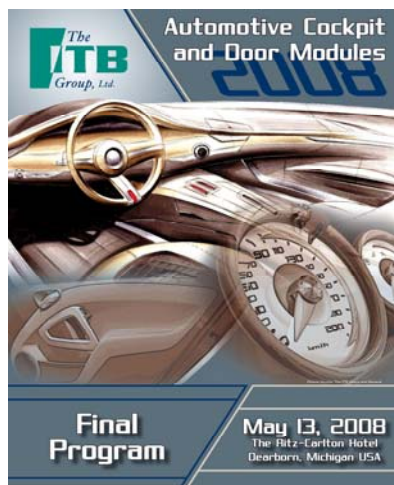
John Maynard Keynes, 1930

Conference News

On Thursday March 5, 2009, ITB will be holding its 10th annual fuel systems conference in Dearborn, Michigan. This event has turned into a *must attend* event for many of the world's fuel system engineers and managers. At this year's event, Dr. Paul Wouters, Vice President, Research, at Inergy Automotive Systems will be presenting for the 10th consecutive year. Congratulations and thanks to Dr. Wouters.

ITB's third annual fuel systems conference will be held in Shanghai China during the Shanghai Auto show. The event this year will be combined with ITB's first Plastics in Powertrain Applications conference that will include air induction systems, cooling systems and oil modules amongst other items.

In September, ITB will hold its 9th conference focused on automotive interior components. This year the topics will include both door and cockpit modules with a focus on the trends towards integrated electronic components such as center-stacks.



The key to success of all ITB's conferences lies in the opportunity for networking with key OEM decision makers. As such, ITB events with their one day format allow attendees to network and present their latest developments in a cost effective and time efficient manner.

For any further questions relating to ITB's conferences please contact Mr. Bryan Eldredge, Program Manager, beldredge@itbgroup.com

ITB's 2009 Conferences

Automotive Fuel Systems

Thursday, March 5, 2009
Ford Conference Center, Dearborn, Michigan USA

Automotive Fuel Systems & Plastics in Powertrain Applications

Thursday & Friday, April 23, 24, 2009
Sofitel Jin Jiang Oriental Pudong Shanghai Hotel
Shanghai, China

Automotive Cockpit & Door Conference/Workshop

Thursday, September 24, 2009
Sheraton Detroit Novi Hotel, Novi, Michigan USA

Near Zero Emission Vehicle Technologies

Thursday, October 22, 2009
Sheraton Detroit Novi Hotel, Novi, Michigan USA

Automotive Structures and Exterior Components

Thursday, November 5, 2009
Sheraton Detroit Novi Hotel, Novi, Michigan USA