

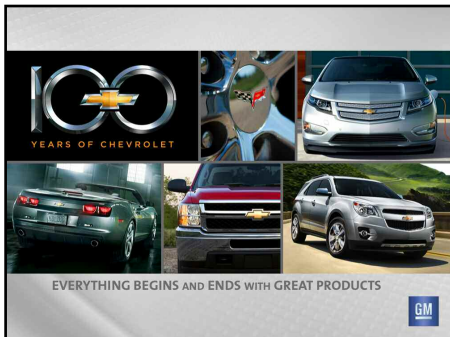
**World-Class Manufacturing”
 Remarks by Ken Knight, Executive Director
 GM Global Manufacturing Engineering
 CAR Management Briefing Seminars
 Traverse City, Michigan
 August 1, 2011**



KDK-MBS-Title

Thank you. Good morning, everyone. Great to be here on “Day One” to help kick off this year’s conference.

I’m the first of four GM speakers here this year... and as the first, I have the privilege of introducing one of our company’s major themes this year



KDK-MBS03

– our Chevrolet brand turns 100 years old this November. And, our speakers will be talking about it all week long.

And let me tell you – for being 100, Chevrolet still has a lot of spring in its step!



KDK-MBS04

In fact, Chevrolet racked up its best ever six-month performance – selling more than 2.3 million vehicles around the globe through June 2011.

Chevy sales were up 14 percent around the world, and 16 percent in the U.S. That gets me excited! In fact, I’m as excited about our business today as I was when I graduated from Georgia Tech two decades ago.



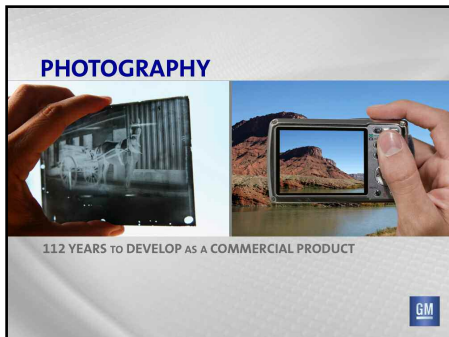
KDK-MBS05

Of course, it's a challenging business. It's an evolving business. Because we live in a world that is constantly and increasingly changing.

Economist Joseph Schumpeter called this process "Creative Destruction" – which can either be good or bad, depending on which end of the expression you happen to be living through.

I've lived through both sides in recent years. And believe me, you want to avoid the destruction end of that thing if you can!

But change itself is not really news these days, is it? It's the pace of change that is making headlines – and that pace continues to accelerate.



KDK-MBS06

Did you know it took 112 years from the time photography was discovered to the time it was developed as a commercial product?

The telephone took 56 years... radio 35 years... television 12 years.

And, only five years for transistors to go from the research lab to the marketplace.



KDK-MBS07

Today, we're producing vehicles our industry's pioneers could not have even imagined – and we're doing it with increasingly shorter development cycles.

Consider the Chevy Volt – the most technologically advanced vehicle GM has ever built.



KDK-MBS08

The Volt is based on battery technology that literally did not exist when we announced our intention to build it in 2007. A lot of people said it couldn't be done. And yet we went from concept to production in less than four years.



KDK-MBS09

History shows us – and GM's recent experience is a stark reminder – that one of the few constants in this world is change and evolution. And unless you embrace and navigate through change, instead of making history you'll be history yourself.

The answer to keeping up with change in manufacturing and engineering – or even better, staying ahead of it – lies in innovation.

In my role with GM as Executive Director Global Manufacturing Engineering, I get to travel the world often. In fact, I have visited about 30 of our manufacturing facilities while travelling to Korea, Australia, Thailand, Brazil, Canada, China, across the United States, and back to Korea again – and that was just during a four-month period earlier this year!

Travel and time away from home like that can be exhausting, but it's also vital to linking our manufacturing strategy to actual real-world execution.



KDK-MBS10

The strategies and solutions from me and my team must be mission-focused with the clear objective of enabling captivating designs, world-class manufacturing, and market-leading sales of the world's best vehicles.

Yes, that's our vision at GM: "Design, Build, and Sell the World's Best Vehicles."

Of course, the world's best vehicles require world-class manufacturing... the title of this session... and in Manufacturing Engineering, we constantly ask ourselves what we need to do to ensure world-class manufacturing at GM.



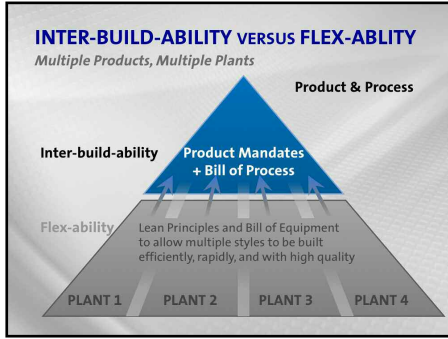
KDK-MBS11

And the things we come up with usually fall into one of four areas:

- Flexibility and Interbuildability
- Speed
- Cost
- and Technology Leadership

For today's presentation, I'll focus on the first of these two areas: Flexibility and Interbuildability, and Speed. And I'll be happy to discuss Cost and Technology during the Q&A, if there's an interest.

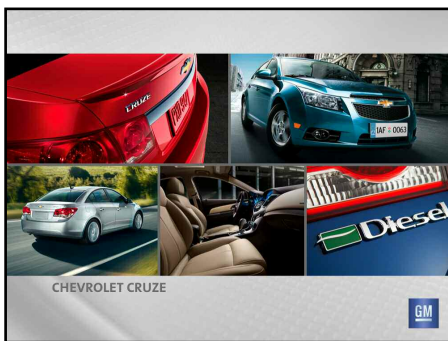
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KDK-MBS12

So, flexibility and interbuildability... which are all about getting the right products in the right markets at the right time. Okay, what's the difference between them?

Interbuildability is the lean and strategic output of product design, engineering, and manufacturing that allows us to develop or manufacture product unbounded by geographic location.



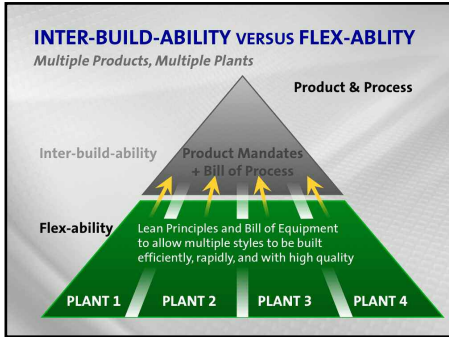
KDK-MBS13

A great example is the Chevy Cruze, which was introduced first in China in early 2009, then in Europe, then the U.S. last fall.

The Cruze is truly a global car that is fully adaptable to local and regional markets. Before we're finished, it will be built in every region of the world where it is sold... which is pretty much everywhere.

But interbuildability is not simply answering the question: "Can you build product 'X' at location 'Y'?" Because you know, we can do almost anything with enough time and money. But, neither time nor money are assets to be wasted today, so interbuildability yields excellence by insuring our vehicle development process embraces – and exploits – the best of our manufacturing intelligence.

My team and I own the manufacturing requirements that link our Products to Manufacturing. These requirements have proven to be the real enablers to great designs, high quality, high efficiency, low conversion times, and low cost. Product programs have to honor these requirements or they don't "Pass Go." You see, either interbuildability is a corporate strategy, or it is not. You have to be all-in.



KDK-MBS14

Flexibility, on the other hand, is the ability to adapt to new, different, or changing requirements.

You know, it used to be that assembly plants in our business built vehicles off just one platform at a time. Lots of vehicles, one platform. It was a luxury afforded to some as a result of high demand for select models.

Of course, today's industry is much different – much more diverse and less predictable in many respects and the single-platform approach is no longer practical for most. Today, manufacturers need to be much more flexible... and they need flexible plants that can build vehicles off significantly different platforms... on the same line... at the same time.



KDK-MBS15

For me, the time horizon for flexibility is much shorter than the one for interbuildability. Flexibility is a current state of being. You can see signs of flexibility in equipment, material usage, people optimization, etc. more visibly and down at the local level. Why is this?

Well, as I said earlier, the pace of change in our world continues to increase. In our business, that means models can get hot and sometimes cool off quickly, vehicle options can gain or lose attractiveness suddenly, and market trends can shift unexpectedly. Think about the rapid shift to smaller cars in this country as a result of higher gas prices earlier this year.

Flexibility enables the “sense and respond” skill we need to adapt to these swings in consumer preference. And as long as we maintain manufacturing excellence, flexibility allows us to operate for maximum profitability.

By opening and closing what we like to call “flex valves,” we can better deliver to the market what it wants, when it wants it. It’s like a professional football team that has great players, but each player only plays one position. They’re not very flexible. Once the game starts, that team will be at a disadvantage because the team that can make the best adjustments and use its resources most completely usually wins the contest.



KDK-MBS20

Perhaps the best example of a GM plant that promotes flexibility and interbuildability right now is our new assembly plant in Orion Township, Michigan. We’re building three models at Orion that will go on sale in the U.S. this fall –the all-new Chevy Sonic sedan and 5-door hatchback, and the all-new Buick Verano small car.

Interbuildability? You bet. The Sonic was developed and introduced in South Korea in March and is already on sale in nearly 30 countries around the world. And Verano is our best-selling Buick in China, where it is called the Buick Excelle. Incidentally, Buick sales in China rose 23 percent last year to a record 550,000 vehicles.

And flexibility? Absolutely.



KDK-MBS20a

In the last 18 months, we've invested more than \$500 million in Orion on new equipment and worker training in order to build the Sonic and Verano. And as we converted the facility, we took every opportunity to engineer flexibility and lean manufacturing concepts into the facility. Many of the changes leverage lessons learned at our most efficient small-car factories in Germany and Korea.

Sonic is the only subcompact car built in the U.S. by any manufacturer... and we started regular production today. And while Sonic and Verano are developed on two separate architectures, they'll be assembled on the same line.



KDK-MBS21

And Orion isn't alone in this regard. At Detroit-Hamtramck, we'll be able to build the Chevy Volt and the new Chevy Malibu on the same line. At our Oshawa Flex Plant in Canada, we're building the front-wheel-drive Buick Regal and the rear-wheel-drive Chevy Camaro on the same line.

So, flexibility and interbuildability. Two facets of world-class manufacturing that are all about getting the right products in the right markets at the right time. At GM, we're working on both... and they're actually playing a big role in enabling the other topic I want to talk about: speed.

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KDK-MBS22

Everyone wants to be faster, right?

I'm reminded of the plant manager who asks his lead engineer to explain his hiring process.

"Well," the engineer says, "We fill a bathtub with water and offer the applicant a teaspoon, a teacup, and a bucket. Then we ask him or her to empty the tub."

"I get it," the manager says. "A logical thinker will use the bucket because it's faster."

"No," says the engineer. "A logical thinker will pull the drain plug."

The real question is...how many of you are drain-plug pullers?!?!

The lesson? Sometimes, you gotta think outside the box... sometimes, you gotta think inside the tub. There's no rulebook when it comes to innovation, and as I said earlier, the answer to keeping up with change is innovation. Sometimes the simple solution is the best solution.

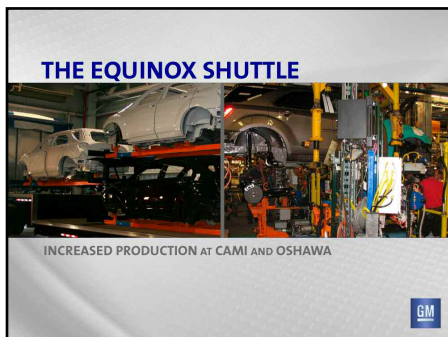


KDK-MBS23

A good example from GM's recent experience involves production of the Chevy Equinox and GMC Terrain.

Equinox and Terrain were introduced in 2009 and quickly became hot sellers for us. And why not: 32 miles-per-gallon highway, impressive safety ratings, great designs, premium standard content, OnStar, etc. In fact, the crossovers were selling so well, we couldn't assemble them fast enough to meet demand. What to do?

In a situation like this, we used to build a new body shop, change production lines, and ramp up vehicle production as soon as we could. By the time we were ready, we'd have missed the opportunity to build and sell a hot product when it was at its hottest. That was a huge opportunity lost... and that's not good enough anymore.



KDK-MBS24

Instead, what we did was develop a plan that has since become known as "The Equinox Shuttle."

We took advantage of excess capacity at the new CAMI body shop in Ingersoll, Ontario to build more Equinox bodies. We then transported these bodies to Oshawa for paint and final assembly on the line which also produces the Chevrolet Impala. This allowed us to rapidly ramp up production of the Equinox, as well as the Terrain at CAMI, a plant which continues to operate on three shifts and maximum capacity.

So, in a fraction of the time required for typical capacity increases, we were able to implement a fast, flexible, innovative, and cost-effective approach that has allowed us to meet demand for two hot products. That's what we're shooting for when we're talking about world-class.



KDK-MBS25

Another example of speed is one that is very much enabled by flexibility and interbuildability – and that’s our global product development process.

There was a time when almost every vehicle we sold in the U.S. was designed, engineered and launched in the U.S. The same was generally true for Europe. The same was not true in most other markets around the world.

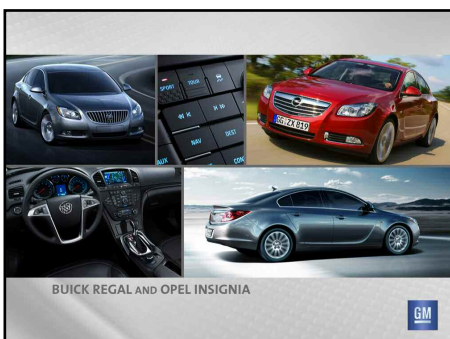


KDK-MBS25a

Today, we’re increasingly going to market outside the U.S. and Europe first, before bringing products “back” to our traditional home markets. In other words, our products are no longer traveling a one-way street from developed to developing markets.

Today, we’re designing, building, and launching great products all around the world, then introducing them to additional markets when and where it makes most sense. This allows us to accelerate our product development process and bring outstanding, time-tested products to new markets faster than we otherwise could.

Great examples include the Chevy Cruze and Sonic, which I mentioned earlier.



KDK-MBS26

Another is the Buick Regal, which we’ve been selling in the U.S. since last year. Regal is based on the very successful Opel Insignia, which was Car of the Year in Europe in 2009.



KDK-MBS27

Another example is the Buick LaCrosse, which was developed jointly with our partner SAIC in China, which is where the vehicle first launched.



KDK-MBS29

And I can't forget the all-new 2013 Chevy Malibu, which will be sold in nearly 100 countries and on six continents beginning next year.

In fact, sales will begin six months earlier than initially planned in the U.S., with the all-new Eco model. We sensed and responded!

Malibu Eco will be the first Chevrolet to feature our eAssist technology. It will be the most fuel-efficient midsize sedan in Chevrolet's 100-year history, with an estimated 38 mpg highway.

It will launch early next year in the U.S., and that's because it features the eAssist technology that will already be at work in the Buick LaCrosse and Regal sedans.

That's interbuildability... and that's fast!

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KDK-MBS30

The two other areas of world-class manufacturing I mentioned earlier are Cost and Technology Leadership, but before I briefly move to those let me first talk about Quality.

Quality is probably the most self-evident of our corporate attributes. It is, quite frankly, the "cost of admission" to today's hyper-competitive industry. Without it, you don't even have a seat at the table.

Cost is equally important, and we actually have a great story to tell about cost at GM these days. Our Orion plant, which I used as an example earlier, is an equally strong example of low-cost manufacturing with competitive cost-per-vehicle performance right from the start of launch.

Technology Leadership is key as well, especially as we link manufacturing processes and strategies with the development of advanced propulsion systems, fuel economy initiatives, and manufacturing productivity. Technology leadership will help frame the factory of the future for us.

For me, the bigger point in all this is that manufacturing at GM is a strategic, progressive function that plays a key role in our company's success all around the world. At GM, everything starts and ends with great products... and great products start with us.

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