

Karla Butler
DuPont Automotive Marketing Director in North America
“New Initiatives Seeding the Future”

Good afternoon and welcome to our annual Automotive lunch and seminar sponsored by DuPont Automotive and DuPont Performance Elastomers.

My name is Karla Butler – DuPont Automotive Marketing Director in North America – and I’ll be your host today.

First I would like to thank those of you in fuel systems who’ve joined us at our annual event ... and to welcome those of you who work in powertrain systems.

We’ve broadened this event to reflect our content today

- Dawn Rittenhouse, Director of Sustainable Development for the DuPont Company, is here today to talk about Sustainable Growth Through Sustainable Solutions
- And our keynote speaker – Christopher Grundler - Deputy Director of the Office of Transportation & Air Quality at the U.S. Environmental Protection Agency, will talk about the changing US landscape for climate change policy

We are honored to again be able to bring in important policy decision makers to provide direct information that will help us all understand important industry drivers that guide new programs and initiatives.

We invite your questions at the end. Please use the index cards on your table to write your questions ... Carole and Carol (stand) will collect them.

This morning I had a chance to meet with a few folks and listen to the projects and programs that you are working on.

From materials that are compatible with alternative fuels ... to ideas to reduce weight ... to integrate multiple functions ... to power the vehicle ...to deliver innovation at a lower cost ... It’s clear that we’re rethinking how to design and manufacture components and systems ... and it’s clear that Today we are working on the technologies that are seeding the future.

So if you’ll allow me to carry the analogy ,,,, how do you take root in this environment?

For us at DuPont, it’s sustainability – using our innovative, market-driven science orientation to develop products and technologies today that provide a safer, more secure life.

These seeds were planted some 10 years ago ... and Dawn will talk a little more about the business of sustainability in a few minutes ... but first I would like to focus specifically on the automotive industry.

In automotive R&D, sustainability has taken root by developing energy solutions ... from battery storage solutions for hybrid technology ... to photovoltaics to fuel cells and the development of alternative, bio-fuels.

We draw from this rich stream of R&D, from thousands of materials and from more than one hundred products to help develop new ways to reduce carbon dioxide emissions ... improve fuel economy ... and meet the challenges born by using alternative energy sources.

I’m not here to pitch, but I do want to share a few initiatives that can help:

- Reduce weight, enable more output from smaller engines and enable hybrid electrics and advanced propulsions system
- Reduce friction to get more power to the ground

- Develop materials compatible with clean fuels and
- Develop materials from renewable resources

Much of the focus here relates to how the industry is developing powertrain and advanced propulsion systems.

Seen on this continuum, we can align many of these initiatives to see how they can help. Let's look at a few of the near-term solutions.

When it comes to lightweighting, many of you likely know that plastics have a 40 percent lower mass than aluminum. Think about the benefit over the life of a vehicle.

Using plastics instead of aluminum in the first commercial volume thermoplastic manifold, GM saved more than 2.6 million barrels of oil during the engine's 14 year run.

And Ford – using engine components of Zytel nylon instead of aluminum during the lifetime run of Ford F250 trucks - saved upwards of 77 billion BTUs - enough electricity to meet the needs of 44 homes for an entire year. Further, it eliminated 11 million pounds of Carbon Dioxide.

As you can see, DuPont has a long and successful history of improving fuel efficiency by converting metal parts to high performance thermoplastics polymers.

And there's still more we can do to reduce weight and cost.

This year, we worked with Brass and Mercedes to convert from metal to plastics the first commercial-volume oil pan, reducing weight more than 1 kg. The new design also integrates several functions for cost savings. It won an SPE most Innovative Use of Plastics award. Gianluigi Molteni and Pat Granowicz are here today (stand) and can answer any questions or help come up with new cost and weight savings ideas under the hood.

And since many of you know the weight savings and design flexibility story of plastics, you also know it has some limitations when it comes to strength and stiffness.

To help bridge the gap, we have introduced MetaFuse™ hybrid technology.

Last year one of our partners – PowerMetal – commercialized the first nano-metal over plastic solution. Today, we are working with the auto industry to use MetaFuse™ nanometal/polymer hybrids to manufacture extremely lightweight ... stiff ... strong... components with complex shapes.

Let me illustrate its strength – though most of you can't see this, it's an ordinary ping-pong ball to which we applied MetaFuse technology. This ping pong ball, with just one-tenth of a millimeter of nanometal coating applied, can now support over 250lbs.

Imagine the opportunity to make complex shapes (show part) maintaining the strength and stiffness of metal... the design flexibility of plastic ... for an average of 30 percent lower weight than aluminum ... or 50 percent lower weight than steel.

This developmental technology is led by Mike Day and Josh McIlvane (stand).

Mass, space and packaging are critical in today's work to optimize the internal combustion engine, but they take on added "weight" in Hybrid electrics, which typically carry an extra 400 plus pounds.

Our work here also extends to

- Getting weight and cost out of batteries and power modules
- Helping boost power and performance
- Delivering electrical Insulation for motors
- Materials for thermal management systems in batteries and electronics

We've added a couple new electronic friendly plastics to the portfolio that includes fluoropolymer resins as binders for capacitors and lithium ion batteries and film separators for dry capacitors.

I encourage you to meet with Paul Kane (stand) who leads the advanced technology group for us.

In the second initiative I'd like to highlight – getting power to the wheels – it's important to note that several recent studies show that only about 15 percent of energy that enters the tank is actually used to move a vehicle down the road. The remaining 85 percent of energy is lost to engine and driveline inefficiencies and accessories.

To help get more power to the wheel, DuPont created "Science of Friction" to discover new materials and technologies that can reduce friction, especially in driveline systems.

As a result, we just developed a new Vespel product specifically to further reduce friction and improve wear – all critical to improving engine efficiency.

James Francis (stands) is here and can talk about this new product or share ideas about how to get more power to the wheels.

The third initiative I would like to highlight is in fuel systems ...we're collaborating to help develop cleaner fuels ... and we're optimizing the broad portfolio of high performance thermoplastics and elastomers in a way that offers "ready-solutions" for new fuel programs.

New test data for fuels compatibility is available on line at seed the future dot dupont dot com for quick reference ... but I want to quickly note that Viton® fluoroelastomers showed best in class performance in terms of compatibility with biodiesel and ethanol ...and long-term retention of critical properties in current and emerging biofuels.

Both Viton® and Vamac® help meet emission regulations in turbo charger applications.

I'd also like to highlight that Zytel® HTN PPA ... used in Ford's unique "Capless" fuel filler system ... is compatible with biofuels and supports the compliance of Ford's vehicles to all CARB requirements. This application, manufactured by Martinrea, was named finalist in the SPE most innovative use of plastics award.

Rick Bell and Doug King (stand) are here to talk further about which materials are most suited to a particular application.

In the last highlight today – materials from renewable sources – we upped the ante ... deciding to develop only those product families that deliver the same or better performance as the materials they replace.

So far, we've launched 9 of these **high-performance** families, providing design engineers in many industries with a greater palette from which to work.

Some of the new products and ideas for use in application are on the slide behind me. It's also important to note that life cycle studies show green house gas reductions up to 60 percent ... and energy consumption down 30 percent ... when you compare one of the core products – Sorona® – with nylon 6.

These products are being tested for targeted development and commercial programs ranging from carpeting and seat fabrics to high performance molded parts such as vacuum brake tubing.

Marsha Craig and Rick Bell are here to answer questions, but stay tuned for more on this portfolio ... it is – quite literally – seeding our future with new material technology.

I want to thank you for letting me highlight new materials and technologies that can help reduce carbon dioxide emissions, improve fuel economy and meet challenges born by using alternative energy sources.

Let me close the last minute of my talk by recognizing that the most critical aspect of bringing innovation to market is through collaboration – which many of us in this room already do. I'll draw from the renewables portfolio for an example.

Some of you may have seen the press reports or heard about DENSO's new radiator end tank that uses our plant-derived Zytel® 610 nylon.

It marks the first use of this renewably sourced plastic in a mechanical component exposed to the hot, chemically aggressive underhood environment – and Denso was quick to share that the renewables they tested just couldn't stand up to the rigors of that environment.

But what's really great about this story is the collaboration and commitment to bring a new idea to a segment that is considered mature ... by starting together with a blank sheet, we were able to identify the objectives and then work together to get this new, higher performing product made of renewably sourced material to market.

As mentioned in the beginning – remember back that far?? – we want to work together on programs that seed the future.

With that I thank you for your patience ... and would like to invite my colleague – Dawn Rittenhouse – to the podium to share some insights into the business of sustainability. Dawn brings a great perspective to the role as she worked more than 15 years in technical, sales, marketing and product management before taking the responsibility of working with all of our business units to help integrate sustainability strategies.

She also leads our efforts at the World Business Council for Sustainable Development and the United Nations Global Compact and 2 years ago added responsibility for our efforts on climate change.