CARE Conference
Presentation
May 18-19 2016
Wellman Plastics Recycling, LLC.
Operations
Wellman Plastics Recycling Site – Johnsonville, SC
(2 million square feet under roof)
Wellman Plastics Recycling
Employment

- Currently Employ more than 300 Wellman Employees.
- Employ more than 70 Contract Employees
- We use Several Local Contractor Groups For Maintenance and Contractor Services.
Wellman Processes

- **Fiber Plant**
  1. Fiber Production – Main product is Fiber Fill Fiber using recycled PET Bottles and other Fiber Waste Streams.

- **Bldg 12**
  1. Distributes Raw Materials to the Fiber Plant and Engineering Resins.
  2. Patented Process to Separate Nylon from PP.
  3. Carpet Grinding Process
  4. Conduxing Process
  5. Chip Extrusion, California Pellet Mill and Sorting and Granulation
  6. Toll Processing – Extrusion, CPM, Densifying
Wellman Processes

- Engineering Resins

1. Compounds Nylon 6 and 66 into an Engineered Resin.
2. Extrudes PP/Nylon By-Product into a Pellet Form.
3. Extrudes PP/PE By-Product into a Pellet Form.
4. Toll Processing Compounded Products.
5. TPO Production Capability
6. Near Term Long Glass Fiber Capability
Welcome To Wellman Engineering Resins

• We are the world’s largest recycler of carpeting.
• 2 Million sq. ft. facility near Myrtle Beach, South Carolina.
Wellman Engineering Resins

- World’s largest recycler of nylon
- Over 130 grades of PCR and PIR grades
- Over 200 automotive OEM material specification approvals
- ISO/TS 16949, ISO 14001 and ISO/IEC 17025 certified – Lab A2LA Accredited
- Forty year heritage in automotive
- **ECOLON™** is our fastest growing product line with over 200,000,000 lbs. sold since 1996.
Feedstock Flow

**Chemical Process**

Oil → Refinery → Other Refining Processes

**Recycling Process**

Finished Raw Material → Finished Goods → Landfill

Finished Goods → ECOLON™ → Thermal Mechanical Chemical Processing (8 Steps)
PCR Compound Manufacturing Process

1) Carpet is collected and sorted into Nylon 6, Nylon 66, Polypropylene, and PET

2) Through dry grinding/shredding, calcium carbonate and latex are removed

Testing on every batch:
- Ash content
- Contamination
- Moisture & Viscosity

3) Patented wet separation process extracts nylon to then be extruded into an unfilled PCR pellet

Testing on every batch:
- Ash content
- Contamination
- Moisture & Viscosity & Physical Properties

4) Using unfilled PCR nylon pellet feedstock, our EcoLon™ products are compounded on our twin screw extruder

Testing after Compounding:
- Ash content, Density, DSC, Flexural, HDT, Impacts, Moisture, Tensile, Viscosity (RV), PP
Wellman Engineering Resins Vision

As leaders in environmental stewardship and in partnership with our customers, we will create value together by diverting over 90 million pounds of carpet from landfills per year by 2015.
We will continue to follow our recycling heritage and innovate in carpet recycling technologies to meet customer performance expectations with environmentally friendly EcoLon™ products.

EcoLon™ is the only 100% post consumer recycled resin from carpet offering unmatched quality and consistency to our partners.

Relationships with customers create green solutions that add value with EcoLon™ innovation and application development.
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<th>Non-Automotive</th>
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- Powertrain Engine
  - Engine & Cam Covers
  - Air cleaner boxes
  - Air Intake Manifolds
- Engine Cooling
  - Fans & Shrouds
  - Radiator End Tanks
  - Hose connectors
- Climate control
  - HVAC control valves
- Exterior/Structure
  - Front End Modules
  - Body Structure supports
  - Fascia brackets
  - Door modules
- Other
  - Power distribution centers/fuse-boxes
  - Filtration
- Office Furniture
  - Chair components
- Small Engine
  - Engine covers
- Compressors
  - Oil suction mufflers
Just The Facts

• It takes 5 Gallons of Oil to make 3 pounds of virgin Nylon (source: www.Greentechmedia.com)
• Vehicles produced in North America have over 200 components made of nylon6 and nylons 6,6. The average weight of these two materials per car is 45 pounds (source: American Chemical Council)
• This year, over 16 Million cars and light-duty trucks will be produced in North America (source: IHS Automotive)
• This year, about 720 Million pounds of nylon consumed to production these cars and trucks. (source: math)
• Approximately, 25 Million Barrels of Oil used to support 2012 NAFTA automotive NYLON production needs. (source: math)
Current Situation

• Federal regulations have shrunk the number of landfills in the United States from about 8,000 in 1988 to about 1,600 today (source: www.ehow.com)

• This year, 5 Billion pounds of carpeting will go into landfills!
The Future?

- **ALL** Old carpeting will be recycled.
- In the next 15 years, virgin Nylon will no longer be used to make auto parts.
- **25 Million barrels of oil no longer needed annually to make auto parts from nylon in North America!**
- **Which equals enough gas for 220,000 people for one year.**
EcoLon™ Cam Cover
Ford-F150
Cam Covers (Cylinder Head Cover)

***New Engine Cam Covers for 2011***

EcoLon™ MRGF1926-BK1: 2011 Ford F150 and Mustang GT (5.0 liter Coyote Cam Cover)

EcoLon™ MRGF1926-BK1

Features a nice balance of high temperature engineering properties for leak proof sealing and good ascetics to please the pickiest stylists.

- Auto Approved
- 100% PCR based PA66
- Environmentally Green
- High Quality
- Low Cost $$$$ 

EcoLon™ 2200-BK1

Features good stiffness, dimensional stability (at low cost) and can be vibration welded to the cover molded from MRGF1926-BK1.

Vibration welded Baffle Plates
Engine Cooling Fans & Shrouds

**EcoLon™ 2100-BK1**

PA66 with 38% Mineral + Glass Fiber

*Features:*
- Excellent strength and stability at high temperature.
- Low warp in shrouds
- Improved weld line strength for high burst strength in banded fans

**EcoLon™ MRGF1616-BK**

PA6 with 40% Mineral + Glass Fiber

*Features:*
- Improved flow and appearance
- Good toughness at low temperatures
- Wide processing window

- Auto Approved
- 100% PCR based PA
- Environmentally Green
- High Quality
- Low Cost $$$$
Local Community Partners For Carpet Collection in North and South Carolina

- Pitt County – N.C.
- Wayne County – N.C.
- Haywood County – N.C.
- Franklin County – N.C.
- New Hanover County – N.C.
- Horry County – S.C.
- York County – S.C.
- Georgetown County – S.C.