

Ford Focus EV Gets Green Plant

From The Cleantech Blog, by [John Addison](#), Publisher of the [Clean Fleet Report](#) and conference speaker.

Ford's new Focus Electric Car and Plug-in Hybrid will be built in one of the auto industry's greenest manufacturing plants. Ford is working with Detroit Edison to install a 500-kilowatt solar photovoltaic panel system at Michigan Assembly. The system will be integrated with a 750-kw energy storage facility that can store two million watt-hours of energy using batteries.

The renewable energy captured by the project's primary solar energy system will help power the production of fuel-efficient small cars, including Ford's all-new Focus and Focus Electric going into production in 2011, and a next-generation hybrid vehicle and a plug-in hybrid vehicle coming in 2012. My test drive of the Ford Focus Electric.

A secondary, smaller solar energy system will be integrated at a later date to power lighting systems at Michigan Assembly. The combined systems are expected to give Michigan Assembly the largest solar power array in Michigan and save an estimated \$160,000 per year in energy costs. The installation of the system begins later this year.

Although the 500kW does not match the megawatts of solar that Toyota uses in California operations, Ford is advancing automaker use of large scale energy storage, reuse of automotive lithium batteries, smart microgrid, and solar charging.

Michigan Assembly will operate on a blend of renewable and conventional electricity managed by Xtreme Power's Dynamic Power Resource on-site energy storage and power management system. Xtreme Power, a venture capital backed firm in Austin, Texas, manufactures integrated power management, smart control, and storage systems from 500 kW to 100 MW. XP technology is unique in its ability to provide immediate power when needed through precision control and complex power capabilities (VARs), and the ability to time shift large amounts of power/energy, all at a relatively low lifecycle cost. This is the industry's first large-scale solid-state power management system. The XP solution comprises four components integrated into a comprehensive system: (1) hyper-efficient energy storage; (2) proprietary power electronics that enable very high power at very high efficiency; (3) smart control system of specialized hardware and software; and (4) factory integration which ties the first three components together under stringent quality control settings.

The renewable energy collected by the solar system will go directly into the energy-efficient microgrid. When the plant is inactive, such as holidays, the collected solar energy will go into the energy storage system for later use, providing power during periods of insufficient or inconsistent sunlight. Michigan Assembly's energy storage system will be able to recharge from the grid during off-peak hours when energy is available at a lower cost. This in turn will provide inexpensive power during peak operating hours when the cost per kilowatt-hour is higher, and reduce peak demand on the grid. Ten Charging Stations using Solar Power

Ford also will install 10 electric vehicle-charging stations at Michigan Assembly to demonstrate advanced battery charging technologies using renewable energy and other smart-grid advances. The stations will be used to recharge electric switcher trucks that transport parts between adjacent facilities. Xtreme Power will provide an active power management system on the charging stations. Ford also will demonstrate the possibility for using electrified vehicle batteries as stationary power storage devices after their useful life as vehicle power sources is over.

“Ford is strongly committed to its sustainability strategy to support positive social change and reduce the environmental impact of its products and facilities,” said Sue Cischke, Ford group vice president, Sustainability, Environment and Safety Engineering. “Michigan Assembly is the latest Ford manufacturing facility to utilize renewable power for production.” Cradle to Cradle

Drive a typical gasoline car in the U.S. and you will emit about 10 tons of CO₂ every year. Drive a Ford Fusion Hybrid, however, and only emit 4.7 tons annually – half of an average car, and only a third of a larger SUV, such as the 2010 Ford Expedition 4WD FFV, with 13.3 tons of CO₂ annually.

Ford plans to offer customers families of cars with a variety of fuel efficient drive systems. “The new Ford Focus is a clear demonstration that our ONE Ford strategy is providing global consumers with great products that harness the best of Ford Motor Company,” said Alan Mulally, Ford’s president and CEO. “The efficiencies generated by our new global C-car platform will enable us to provide Ford Focus customers with an affordable product offering quality, fuel efficiency, safety and technology beyond their expectations.” Ford is planning on a Global C platform for 12 to 14 different vehicles with a volume of 2 million units per year. Such volume, common chassis and many common components, can give Ford improved profit margins and room to price hybrid and electric cars competitively.

Clean Fleet Report predicts that in 2012 an all-new Ford Focus family will be offered with choices that include a gasoline-sipping EcoBoost engine, a Focus Hybrid, a Focus Plug-in Hybrid, and Focus Electric. The hybrid, plug-in hybrid, and battery electric will all use lithium-ion batteries. All will offer better fuel economy than the current 30 mpg and lower emissions than the 2010 Focus with 6.5 tons of CO₂ per year.

You can find the mileage and carbon emissions of most cars with the U.S. EPA and DOE’s valuable fuel economy.gov. The EPA combined miles per gallon rating is based on 45% highway and 55% city driving. The carbon footprint is carbon dioxide equivalent (CO₂e) based on 15,000 miles of driving, using the GREET 1.7 model.

Drive the new Ford Focus Electric with a 70 percent efficient electric drive using grid power, instead of that 15 percent efficient gasoline motor drive system, and emissions will be far below a Toyota Prius. Charge the Focus EV with solar or wind power and your source-to-wheels emissions of CO₂ drops to zero.

But what about all the emissions associated with energy intensive manufacturing and mining of everything from iron to lithium? Historically about 90 percent of a car's emissions over its 15 years of use are from burning fuel, and only 10 percent from the mining and manufacturing. This is why environmental groups, the EPA, and websites like the Clean Fleet Report focus on source-to-wheels emissions, which is also called well-to-wheels due to our history of fuel from oil wells.

Ford, and other automakers, are following the classic practices of reduce, reuse, and recycle. As Ford electrifies hybrids and electric cars, many mechanical parts are replaced with lighter electric parts. Some steel gets replaced with lighter aluminum, plastic, and bioplastic. Hundreds of pounds are removed from a car, which allows it to go farther on less fuel. At end-of-life metals and parts are often recycled. Some lithium batteries will be repurposed in plants, renewable energy backup, and electric utility applications. Over 95 percent of auto battery materials are eventually recycled.

Ford's new lean and green plant will build a new generation of cars, low in carbon footprint and high in industry impact.