A superalloy from the space shuttle is now used in the auto industry.

Superalloy on Fusion Same As From Space Shuttle Pump

DEARBORN – Enthusiasts will say the new Ford Fusion equipped with the 2.0-liter EcoBoost turbo engine is a rocketship.

Fusion engineers will tell you parts of its engine depend on technology from one.

To prolong turbo life and combat thermal fatigue, powertrain engineers for the new Ford Fusion went to the upper limits of commercially available turbo materials when deciding on the turbine wheel for the turbocharger fitted to 2.0-liter EcoBoost variants.

Ford powertrain engineers worked wih a team at supplier Borg Warner.

The same material has been tried and tested in outer space, as a version of it was used on the Space Shuttle main engine's high-pressure fuel turbo pump and the blades of its high-pressure oxidizer turbo pump.

The upper temperature limit for the turbine wheel used on the 2.0-liter EcoBoost engine in the Ford Edge and Explorer is 970 degrees Celsius (1,778 degrees Fahrenheit).

But in the sporty 2.0-liter EcoBoost for Fusion and Focus ST, the addition of tungsten and cobalt gives the alloy an upper temperature limit of 1,050 degrees Celsius (1,922 degrees Fahrenheit).

The benefit of using such high-temperature alloy is that Fusion 2.0-liter drivers can enjoy enthusiastic and spirited driving for the life of the car without degrading turbo reliability or its mechanical integrity.

Fusion owners can highlight the fact that the BorgWarner K03 turbocharger features both water and oil cooling.

When the engine is running, it is primarily oil-cooled, but after the engine is turned off, the water cooling system creates a thermal water siphon to help draw heat away from the turbocharger.

As a bonus, they might explain their Fusion 2.0-liter turbo's performance is further strengthened by an integrated exhaust manifold design that combines the cylinder head and exhaust manifold into one casting.

This allows the creation of smaller internal passageways (reduced plenum volumes) that direct more exhaust gas energy into the turbo more quickly than a separate head and manifold assembly.

The Fusion turbo, the engineers can claim, is designed to run safely at speeds up to 190,000 rpm, and is the same turbo the automaker uses in the new, high-performance Ford Focus ST.

Volt Owners to Learn Car vs. Home Energy

AUSTIN, Texas – OnStar is testing an app capable of telling Chevrolet Volt owners how much it costs to charge their battery – and compare the Volt's energy use with the total energy consumed in their home by day, month or year.

The new app, called EcoHub, will initially be tested with and available to residents of the Pecan Street demonstration project, a smart grid living community in Austin.

"For the first time, we're able to put one of our Smart Grid solutions into the hands of actual consumers, thanks in part to our partnership with Pecan Street," said Paul Pebbles, global manager, Electric Vehicle and Smart Grid Services. "Down the line, we hope this app can be a beneficial tool for all drivers of electric vehicles."

The EcoHub app works by pulling overall home energy usage data, provided by an energy data source, such as a utility or smart meter company.

The app also collects Volt charging information from OnStar subscribers and Volt owners who opt in for EcoHub. The energy use data is then aggregated to show vehicle owners exactly how much energy is being used on a daily, monthly or yearly basis, while showing what percentage of that energy went to charging the Volt.

Based on electricity rates, the data is broken down to show the cost of both total energy usage and Volt charging energy use.

The 2013 Volt can travel an average of 38 miles on one full electric charge before its onboard gas-powered electric generator seamlessly switches on.

"We've found that Volt owners love to keep track of and compare their personal driving stats, like electric miles driven for example," said Cristi Landy, Chevrolet Volt marketing director.

"The EcoHub app is another great example of using the vehicle's embedded technology to provide Volt owners with useful information."

In addition, the EcoHub app will include a "Ticker" screen that shows drivers the national values for Total Miles Driven, Total EV Miles Driven and Gallons of Fuel Saved.

"The 'Ticker' screen is a nice addition because it allows drivers to see that they are part of a national effort to reduce fuel use by contributing to the growing number of electric miles driven." said Pebbles.

While the app will be tested with and only be available to Volt drivers in Pecan Street project at first, OnStar hopes to make the app available for all Volt owners in the near future.

OnStar's Smart Grid research is made possible by the U.S. Department of Energy.

GM Moving N.Y. Work to Pontiac

DETROIT (AP) – General Motors Co. plans to close its hydrogen fuel-cell research operation near Rochester, N.Y., and move it to Michigan.

The company said last week that most of the 220 salaried workers in Honeoye (Hun-ee-OY) Falls, N.Y., will be offered the chance to move to GM's engine and transmission research unit in Pontiac.

Spokeswoman Kimberly Carpenter said the move will pull together all of its experts on ways to move vehicles.

The company will save some money by not renewing a building lease in New York. The move will take place early next year, she said.

GM will continue to focus on electric vehicles and fuel cell development, Carpenter said.

The automaker has been testing fuel-cell vehicles that run on hydrogen with no harmful emissions.