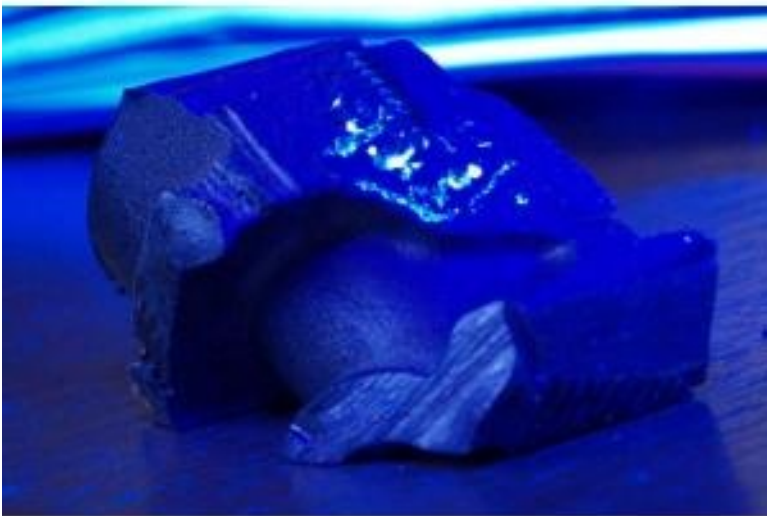


# Drive for lighter vehicles makes it vital to combat porosity with Vacuum Impregnation

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Ann Arbor, MI ([RPRN](#)) 02/11/14 — With Ford launching the world's first high-volume vehicle with an all-Aluminum body, the F-150 pickup, it is clear that automakers' drive towards using lightweight materials is accelerating to a new level.

While the metal has been used in automotive design for decades, it is increasingly replacing steel as manufacturers look for ways to strip weight out of their new designs in order to improve fuel economy and cut carbon emissions.

The proportion of aluminum used in cars and other vehicles has been steadily rising as automakers seek to meet the US Government drive to radically reduce vehicle emissions and nearly double fuel economy from its present consumption by 2025.

Another factor is the near tripling of gas prices across the United States since 1997 which makes it more economically viable to invest in expensive aluminum parts. When fuel was between \$1.20 and \$1.50 the money saved by using a lighter vehicle with better fuel economy did not outweigh the extra upfront costs of using aluminum instead of steel. The picture is entirely different now that fuel prices are topping \$3.70 in some parts of the country.

"The automotive industry is already the largest market for aluminum castings, with cast products currently making up more than half of the aluminum used in cars," said Stephen Hynes, Marketing Director of Ultraseal International.

"This trend is most evident in the manufacture of powertrain components with many parts now made out of aluminum, notably engine blocks, transmissions, cylinder blocks and cylinder heads.

"However with increasing demands from design engineers for castings with thinner walls and less mass, along with designs which increase the number of cast-in rather than bolt-on features, there is an increasing risk of porosity affecting the pressure-tightness of critical parts."

Casting porosity has long been a bane of diecasters worldwide: a natural phenomenon that occurs for a variety of reasons in the casting process, it can lead to the failure of pressure-tight parts and is difficult to eliminate in the casting process.

Mr Hynes

explained: "Porosity comprises microscopic holes in a cast metal part which, if they lead from one surface of a casting to another can create leak paths, an obviously undesirable feature in parts which have to operate reliably under pressure.

"That is why many automotive OEMs and suppliers are now turning to vacuum impregnation with porosity sealants as a reliable and permanent solution to the problem of casting porosity.

"They want to avoid any long-term warranty issues or - even worse - a product recall. Routine vacuum impregnation with a reliable porosity sealant such as Rexeal 100™ will put their minds at rest - and is a cost-effective solution."



Apart from the engine parts mentioned above, other parts which benefit from vacuum impregnation are cam carriers, cam covers, clutch cases, fuel pumps, fuel rails, inlet and fuel system components, oil pans, oil sumps, thermostat housings, timing chain covers, torque converter case/ bell housings and water pumps.

Modern vacuum impregnation equipment can be easily incorporated into a production line and sealants such as Ultraseal International's global benchmark recycling sealant offer a performance that is ideally suited to parts that have to undergo thermal cycling. Rexeal 100™, which is approved to US Military specification MIL-I-17563C (Class 1 and 3), can operate at temperatures of up to 428° F (220° C) and offers exceptional first-time sealing rates.

Ultraseal International has been at the forefront of the design and manufacture of both vacuum impregnation equipment and porosity sealants for decades. It was first to market with modern methacrylate-based sealants, first to market with recycling sealants and has made many breakthroughs in equipment design.

The company has a truly global reach and a blue-chip list of customers. Its headquarters are in Coventry, UK, it has a subsidiary, Ultraseal America Inc., based in Ann Arbor, MI, and operations in China and India, as well as an office in Japan and a network of 22 agents/distributors around the world.

To find out more visit Ultraseal's website [here](#)

ENDS

**Media Contact Name:** Fiona Scott

**Media E-mail:** [fiona@centurypr.co.uk](mailto:fiona@centurypr.co.uk)

**Media Phone:** +44 (0) 24 7622 8881

**Company Contact Name:** Stephen Hynes

**Company E-mail:** [StephenHynes@ultraseal.co.uk](mailto:StephenHynes@ultraseal.co.uk)

**Company Phone:** +44 (0) 24 7625 8444

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