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Dearborn Machine Shop On Cutting Edge Of Laser Tech

By Matt Roush

When you visit Turchan Technologies Group Inc. in Dearborn, it's almost like you're visiting two companies.

Out back is a machine shop that's comfortingly familiar to any Detroit, grinding and cutting and boring holes in steel and aluminum, making parts used in Detroit Three automobiles, airplanes and electronics.

But up front, closer to the Ford Road offices, it's a different story -- an honest-to-goodness skunk works where scientists play with lasers and metallurgy just to see what will happen.

On a recent Friday, for example, a laser system was modifying and treating surface of a stainless steel frying pan.

Why? Well, more or less a quick experiment by Turchan laser scientists, just to see what the heck happens, said a fellow with the unlikely but wonderful name of Pravin Mistry, who now resides in the UK and set up Turchan's operations in Liverpool, England in 2004 to develop and secure global business.

The company has already given other materials the laser treatment and has achieved almost superhuman enhancements -- stuff like dental drill burrs and scissors, metal forming tooling, body armor, stainless steel and other materials used in nuclear power applications. The application list for the process is endless.

Now, Mistry wonders whether his laser treated pots and pans could top Teflon. But that's not the full story. By the time you read this, Turchan scientists will have claimed another world's first in a treatment to imbue high temperature super hydrophobic (slippery and non-wetting) characteristics to various products. Beginning with cookware the process will be useful for applications in diversified markets including nuclear and renewable energy, aerospace and defense.

Like any good family business, Turchan has been through several incarnations. It was started 75 years ago by Manuel Turchan. He originated an advance in machine tooling called a "tracer" -- a simple analog version of computer controls that allowed a machine tool to duplicate difficult contours precisely, part after part.

Turchan then got into building machine tools for the aircraft, aerospace and automotive industries. It installed the first computer controlled machine tool for General Motors in Ypsilanti Willow Run -- to build the Wankel rotary engine, of all things.

Thirty years ago, the company moved into the Ford Road building that was the original home of Masco Corp. It pioneered high-speed machine tools that made everything from Space Shuttle tiles to cruise missile fuselages to airliner parts. It pioneered machining aluminum without toxic coolant fluids, which means scrap chips can be remelted immediately. It developed Thriller, a machine tool that drills, threads and chamfers (which means 'to cut a bevel on') in one pass, allowing more complex parts to be made in one step.

Then the special machine tool market got wiped out by the commodity business that Turchan helped create. So Turchan began machining parts for the automakers.

By the 1990s, Mistry was also aboard at Turchan, through various friendships and networks of company executives. A veteran of 43 years in metallurgy and advanced materials, Mistry developed a way to synthesize diamond coatings on metal objects using only laser beams and carbon dioxide gas. Initially dismissed as impossible by scientists, it's now accepted for cutting tools and other objects. The heat and pressure of pulsed lasers convert carbon molecules in carbon dioxide gas into microscopic

diamonds that give metals both a really interesting-looking finish and really interesting properties. Turchan is testing a wide variety of everyday components to see how they can be improved by the process.

While the auto parts business has stalled, cutting Turchan's employment from a peak of 150 to today's 80, the company has remained heavily involved in advanced materials research and development. It's also stayed relatively diverse in its customer base, working in the defense and electronics industry, including a growing relationship with the conference room equipment manufacturer Polycom. Today Turchan makes everything from metal parts to shipping crates to software to complete upholstered videoconference rooms for Polycom.

And it's looking forward to the resurgence of the auto industry. "We're leaner and poised to take on a lot more," Jahr Turchan, grandson of the founder said. "We're expecting to gain quite a lot in sales here in the next year as things begin to pick up for the automotive industry, and the UK international team led by Pravin Mistry will add to diversify our Advanced materials business portfolio for target applications in energy, biotechnology, defense and consumer markets."

The most recent success from this team includes a contract to design and build a new Turchan materials synthesis system for treatment of advanced technical fibers for UK business clients and a component manufacturing contract incorporating advanced materials for production of new products for electric guitars.

The company leadership has stayed in the family, too. Manuel Turchan's sons Braun, systems manager and Jahr, chief technology officer are now moving the company forward.

More at www.turchan.com.

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