

# 6 QUESTIONS

## Why Sustainability and Remanufacturing Matter

— Dr. Nabil Nasr, associate provost at the Rochester Institute of Technology and director of the Golisano Institute for Sustainability, shares what he knows about remanufacturing.

### Is the remanufacturing industry growing or shrinking, and why?

There are two factors to look at here, first is the volume of reman products and the second is the number of companies and employees. The first is definitely growing and likely to continue to grow. The second is the number of companies and employees. Different sectors seem to have different trends as we have seen major consolidations, mergers, and acquisitions in sectors once the sector reaches some level of maturity and growth. This in turn would show a declining number but in fact growing volumes.

### What are some of the larger industries involved in remanufacturing, and how are they improving?

The top non-military one is aerospace, which is a mature sector with growth due to increasing volume of aircraft in use. The second is automotive, which is also a very mature sector with not many changes currently, but is poised to see significant changes with the growth of electrification in vehicles.

### What is the most interesting item that you've seen remanufactured, and why?

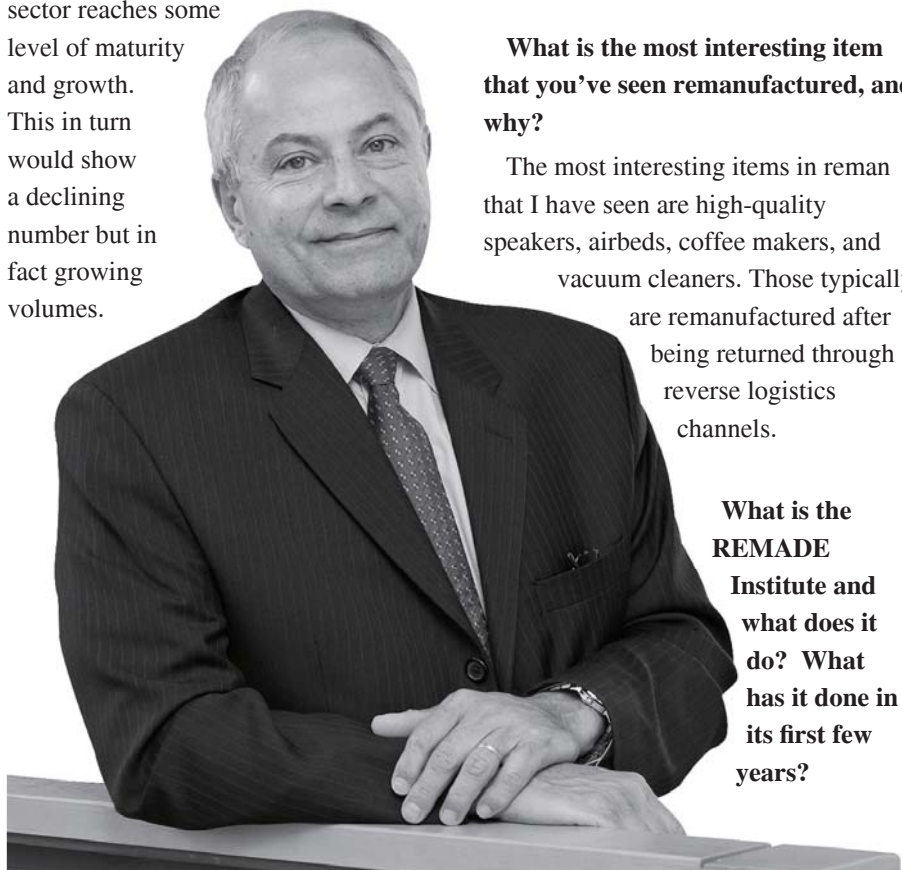
The most interesting items in reman that I have seen are high-quality speakers, airbeds, coffee makers, and vacuum cleaners. Those typically are remanufactured after being returned through reverse logistics channels.

### What is the REMADE Institute and what does it do? What has it done in its first few years?

The REMADE Institute is the only institute in the U.S. that is a public-private partnership committed to developing transformational technologies that can help develop significant competitive advantages for our industry. The institute just released a \$24 million request for proposals to support new technology development in support of industry needs. This will increase the number of projects the institute is running from 30 projects today to doubling this number. The institute is a consortium and the benefits go to its members. Membership is open to any US company. The institute has about 100 members including leading industry companies like Michelin, Caterpillar, John Deere, and others. Major universities such as RIT, MIT, Georgia Tech, and University of Illinois are members in addition to five national labs. So, we created an institute bringing the brightest minds in the field to work together with significant government funding (currently \$140 million for the first five years) to develop transformational technologies to help industry.

### What is going on at the Golisano Institute that might interest printer and printer cartridge remanufacturers?

The biggest expansion at the Golisano Institute for Sustainability is the new reman testbed, which is a significant



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investment in creating an advanced facility with state-of-the-art equipment in all reman processes facilitating development work, validation, pilot process development, and demonstration of the best technologies and equipment in reman. In addition, in partnership with the REMADE Institute, the testbed will offer a bootcamp to train individuals on the latest technologies in reman including executive training at a high level as well as in-depth training for the workforce.

**Are you bullish on the future of remanufacturing? Cartridge remanufacturing? And why?**

I am and I believe that we can do a lot more. However, the challenge is the difficult relationship with the designers and manufacturers. There is so much value that can be realized through reman and there is a lot of pressure on the manufacturers to avoid contributing to the waste problem. In a different sector, Nestle has committed \$2 billion to invest in plastic recycling due to the mounting public pressure on them to reduce plastic waste. So, any manufacturer contributing to the high volume of waste should be taking notice and the cartridge industry reman can benefit from this. ■



Remanufacturing in all industries worldwide is a \$160 billion dollar industry employing more than 450,000 people. Led by the automotive sector, remanufacturing occurs in more than a dozen industries and is openly embraced by the largest international corporations, such as Ford, General Electric and John Deere. European and U.S. remanufacturers lead the way employing 190,000 and 180,000 people respectively. In terms of dollars, the U.S. remanufacturing community generates \$100 billion. Today, reman is only two percent of all manufacturing. Reman is on track to grow at a high rate, generating millions of jobs in the coming decades. The leading academic professional in the field of remanufacturing is widely considered to be Dr. Nabil Nasr.

For more than 25 years, Dr. Nasr has worked in the fields of sustainable manufacturing, remanufacturing, circular economy, clean production, and sustainable product development and is considered an international leader in research and development efforts in these disciplines. He has developed strong ties to industry through efforts to implement and improve sustainable design and remanufacturing processes at hundreds of companies from diverse sectors.

Dr. Nasr is associate provost at the Rochester Institute of Technology and director of the Golisano Institute for Sustainability. In 1997 he founded the Center for Remanufacturing and Resource Recovery, which has become a leading source of applied research and solutions in remanufacturing technologies.

In 2007 he became the founding director of the newly established Golisano Institute for Sustainability. Sustainable production systems and the built environment are the focus of interdisciplinary academic and research programs within Golisano Institute for Sustainability.

Dr. Nasr serves as a member of the International Resource Panel of the United Nations Environment Programme. In addition, he has been an expert delegate with the U.S. Government in several international forums such as the Asia Pacific Economic Cooperation (APEC), United Nations, World Trade Organization, and the OECD.

He recently led the proposal development effort which resulted in the selection of Golisano Institute for Sustainability to lead the national consortium for the REMADE Institute, a national institute under the Manufacturing USA (NNMI) network. This national coalition of 26 universities, 44 companies, seven national labs, 26 industry associations and foundations and three states is working together on new clean energy initiatives, focusing on driving down the cost of technologies essential to reuse, recycle and remanufacture materials such as metals, fibers, polymers and electronic waste.



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