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remanufacturing REMANPATH pathways Circular

Welcome to our second newsletter!

Remanpath Circular is the newsletter for ***Remanpath,*** a project that uses education to develop remanufacturing competencies in SMEs. The mission of ***EIT Raw Materials,*** which funds the project, is to develop raw materials into a major strength for Europe. VTT in Finland leads Remanpath (https://www.vtt.fi/sites/remanpathfinder/) with partners from TU Delft, Wuppertal Institute, Grenoble INP, Université Grenoble Alpes, Coventry University and Oakdene Hollins.

In this edition we explore discussions from the recent International Conference on Remanufacturing. Partners share their stories and images from recent remanufacturing events. We also feature our ***Expert View,*** with Q&A answers from James Ayre, Industrial Designer with Microcab Industries Limited.

International Conference on Remanufacturing

Researchers from Grenoble INP attended the International Conference on Remanufacturing (ICoR) held in Amsterdam in June. The conference is supported by the 10th edition of ReMaTec, the world's leading remanufacturing trade show. It was an opportunity to present research and projects from the multidisciplinary G-SCOP laboratory, including Remanpath. During her keynote speech, Professor Peggy Zwolinski presented ideas around the popularity of Circular Economy, reinforcing existing circular industrial scenarios and creating new ones. The challenge is to design agile circular industrial systems capable of supporting those scenarios, while addressing the technical and organisational issues. Research questions concerning the worker in digitalized remanufacturing industry, cobotic in the industrial environment and sustainable circular industrial system were explored using a case from the CIRCULAR project (https://circular.univ-grenoble-alpes.fr/), an IDEX Cross Disciplinary Program CDP 2017.

Dr. Tom Bauer presented his research on design for repurposing and remanufacturing. His findings provide a clear vision for decision-makers and design teams about repurposing strategy and how to integrate it into upstream stages of the design process. To facilitate the design steps, modifications to designers' tools

need to be investigated. Two central case studies focused on lithium-ion batteries were considered: the repurposing of batteries of electric building site machinery into forklift trucks; repurposing of electric vehicles to stationary applications.

About Grenoble INP: Grenoble INP is a federation of six engineering schools and 24 research laboratories. It is one of the leading education groups in France with research expertise in micro and nano technologies, IT and communication, materials, the environment, energy and manufacturing systems. Researchers from GSCOP laboratory are participating in Remanpath.

Spotlight on… *Vehicles*

Remanufacturing Building Products Workshop

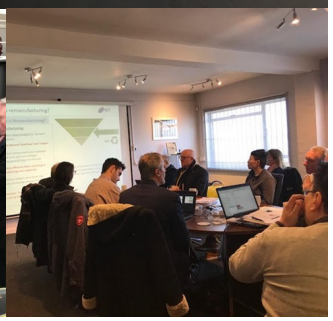
Remanpath partners run practical workshops introducing SMEs to remanufacturing. Here, Coventry University reports on their workshop for SMEs. The workshop took place at RDM Automotive, which supplies products and engineering services to the automotive industry.

Coventry University researchers Dr Helen Roby and Sinead Ouillon ran a workshop in January this year at RDM Automotive in Coventry as part of the Remanpath project. The aim was for SMEs to learn more about remanufacturing and how it might be applied in their businesses.

The workshop attracted a range of SMEs from the automotive sector, including Microcab Industries and the SMMT. During the morning, Rachel Waugh from Oakdene Hollins provided the SMEs with a thought-provoking overview of remanufacturing and explored potential business models. Two fascinating case study presentations were provided by Andrew Brammer from PSS and Ian Briggs from MCT Reman UK. These presentations spurred discussion among participants on the issues surrounding remanufacturing and the challenges raised by how products are designed. One of the big concerns was around designing for disassembly, given that remanufacturers do not have a voice in the design process. For example, the problems of re-engineering software often mean that remanufacturing is impossible.

There was a lively discussion about how remanufactured goods are perceived by the market. While in some cases remanufactured goods are the expected norm - for example in buses, aeroplanes and lorries - they are less well accepted in other industries. This reticence can mean that even when remanufacturing is occurring, it is not always visible. This lack of visibility and poor brand awareness can make attracting people to the industry a challenge, impacting the numbers of skilled workers in the area. However, remanufacturing could be set to become more mainstream as UK Government procurement stipulations move towards requiring CO_2 reductions and remanufactured products. The process of remanufacturing has been around for at least 40 years, but still struggles to become mainstream. However, with heightened awareness about climate change and resource scarcity, work to develop training courses such as that in the Remanpath project could be key in supporting a step change in levels of remanufacturing.

About Coventry University: Coventry University is an ambitious and innovative university with a reputation for excellent research, business engagement, innovation and entrepreneurship. The Centre for Business in Society (CBiS), where Remanpath takes place, is home to 35 specialist researchers. CBiS's research seeks to promote responsibility and change behaviours to achieve better economic and societal outcomes. Sustainability is a core theme for CBiS, which works closely with public and private sector partners.



Spotlight on… *Manufacturing*

Business and remanufacturing workshop

VTT organized a workshop focusing on how to create profitable business with manufacturing and the challenges and benefits that arise.

The remanufacturing workshop organized by VTT in Tampere, Finland provided an overview of remanufacturing targeted at firms that were either starting remanufacturing business or interested in it. Participants from five companies from a range of backgrounds and a business funding organisation attended. The workshop began with presentations from VTT.

Principal Scientist Mona Arnold and Senior Scientist Saija Vatanen presented "the big picture" of remanufacturing focusing on the business perspective. Principal Scientist Maria Antikainen introduced the business model perspective on remanufacturing and brought out many notable perspectives, including the value promise of remanufacturing, the customer's perspective, challenges (e.g. the risk of cannibalising markets) and organising the collection of cores.

Regional Sales Engineer Erik Haara from SEW-EURODRIVE Oy introduced their remanufacturing business. With more than 17 000 employees worldwide SEW-EURODRIVE manufactures gearmotors, gear units, motors, components for decentralized installation, electronically controlled drives, mechanical variable-speed gearmotors, as well as drive solutions that involve a lot of engineering. In addition the company offers a comprehensive range of services such as consultation and training. The business views remanufacturing as an important way of returning a used motor back to use. Erik emphasized that organising remanufacturing as an integral part of manufacturing is key to success.
At the end of the workshop, a company case was analysed and discussed, using a question list originally developed in the DemaNET project by VTT and … subsequently developed for the Remanpath project to support the analysis (for more details on DemaNET and the list: https://www.vtt.fi/inf/julkaisut/muut/2015/OA-Development-of-an-assessment.pdf; and https://www.vtt.fi/inf/pdf/technology/2015/T207.pdf (in Finnish)).

The workshop atmosphere was engaged and positive, with open discussion taking place. Participants acknowledged the strong business focus of the workshop, suggesting a good match between the presentations and participants' interests. Even though participants came from different backgrounds, there were common interests around learning about remanufacturing and incorporating remanufacturing into future activities. Key areas of interest for participants included how to make remanufacturing profitable and how to assess whether it would be a profitable option for a business, alongside interests in technical and design issues.

About VTT: Established in 1942, VTT is a leading research, development and innovation organisation in Europe. It is an impartial expert organisation that develops new technologies and produces research, development, testing and information services for domestic and international clients. By combining expertise and innovation, VTT aims to increase technological and economic competitiveness and social welfare. With expertise in knowledge intensive products and services, smart industry and energy systems, and solutions for natural resources and environment, VTT is part of Finland's innovation system operating under the mandate of the Ministry of Employment and the Economy.

Expert View... Remanufacturing Q&A

James Ayre

Industrial Designer with Microcab Industries Limited, shares his thoughts….

What were your motivations for first getting into remanufacturing?

To look into alternative ways that remanufacturing can influence a vehicle, with design and aesthetic considerations. To celebrate the raw and unfinished form of a remanufacturing polymer and then generate interest in that area of the design.

What has been the biggest challenge?

Understanding properties of new materials and developing relationships with tool makers and production lines willing to work with a new material without damage. And maintaining the highest quality aesthetic.

What have been the benefits to business?

Having the ability to display a new product, representing the company's ethos and beliefs in a very visible fashion, to potential clients and investors. Generating a talking point and interest in different aspects of the company and the design department.

What would you do differently if you were starting remanufacturing now?

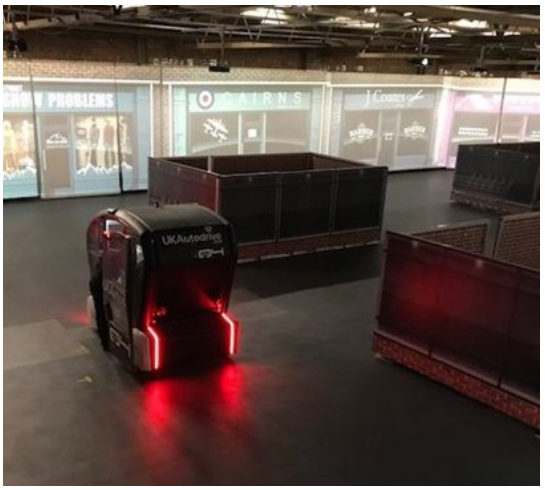
Know the exact outcome and effect that our production process and other factors have on the raw appearance of the final product. Products can have the appearance of lower quality parts, yet maintain perfect mechanical properties. Potentially consider different circular economically viable polymers for the process that give a more consistent outcome.

What single piece of advice do you have for a firm at the start of its remanufacturing journey?

Consider the appropriate business models and supply chains to make the most of manufacturable parts, whilst creating the best product for use within a circular economy model.

What will the future for remanufacturing look like (in your industry or generally)?

Hopefully the future will show that companies will be willing to celebrate remanufacturing parts in the same way that the automotive industry has celebrated high quality wooden components, showing the companies beliefs in the future as a fundamental part of design.



Useful Links & Resources

https://www.vtt.fi/sites/remanpathfinder/ Remanpath project website.
http://www.remancouncil.eu/ European Remanufacturing Council supports firms to promote/develop remanufacturing.
http://www.remanufacturing.fr/ French remanufacturing platform to help firms to develop Remanufacturing activities.
https://www.rescoms.eu/ European project ResCoM methodologies and tools for closed-loop manufacturing systems.
https://www.remanufacturing.eu/ ERN (European Remanufacturing Network) project supports the remanufacturing industry and policy and strategy needs through sector representation.
https://www.remanufacturing.eu/case-study-tool.php ERN cases of firms that have achieved remanufacturing benefits.
http://repro2.g-scop.grenoble-inp.fr/ang/indexa.php Repro² tool assists designers to create products for remanufacture.
http://www.scot-reman.ac.uk/ Scottish Institute for Remanufacture (SIR) works with companies of all sizes to support projects to help increase reuse, repair and remanufacture in their operations, to increase innovation in remanufacturing.

eit RawMaterials Connecting matters
EIT RawMaterials is supported by the EIT, a body of the European Union
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