

REMANUFACTURING UPDATE JULY 2015

RESEARCH & DEVELOPMENT NEWS FROM BAYREUTH



Editorial

Dear Readers,
how did you like the first-ever "International Remanufacturing Week" in Amsterdam less than three weeks ago? The Netherlands' most famous city proudly hosted all three events: ICoR (International Conference on Remanufacturing), the ReMaTec 2015 Show, and also the World Remanufacturing Summit 2015, which returned to Europe this year after making stage in Asia 2013 and in the USA 2014.

I have met participants enjoying all three events in sequence and partly overlapping each other; but I have also heard some complaints that it meant too much at once to attend them all.

So – whatever your view might be – let me wish you exactly one hundred more successful "Remanufacturing Weeks" with your business while we will publish our next eight R&D Newsletters until the next ReMaTec Show 2017!

Enjoy reading!



Rolf Steinhilper

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BAYREUTH UNIVERSITY
UP **Chair Manufacturing and Remanufacturing Technology**

How You Can Improve Your Remanufacturing Processes

Our April newsletter informed you about the European Remanufacturing Network (ERN) which aims to encourage and boost remanufacturing throughout Europe. In this context a market study has been launched to map out the current remanufacturing activities within Europe. The study has met with a very good response so far. Nevertheless, the more data we get the more reliable the results will be. So if you haven't completed the survey until now, use this opportunity and spend less than 15 minutes for a lasting support to our industry (link in orange box)!



Fig. 1: Process assessment

The next step within the ERN is to identify both best practices in remanufacturing business models, processes, and design as well as challenges in these fields. Therefore, you are offered a special win-win proposition: our experts would like to visit your company to analyze and assess your remanufacturing processes to fine-tune the data needed for the ERN, whereas you get an idea on how you perform compared to the industry's benchmark and how you can improve.

All of that is free of charge for you. You have to pay no royalties or any other charges since the ERN is funded by the EU.

The following steps will give you an idea on how the on-site assessment works for you:

- Inventory of your processes, machinery and technical equipment
- Analyses of layout and processes
- Detection of optimization potentials
- Suggestion of measures for improvement
- Calculation of your benchmark ranking

All in all we would spend two days at your company which would normally cost EUR 5,200 for professional consulting. There are no forms to complete and of course no confidential data will be published.

So decide quickly and get in touch with us to get fully informed and be among those who get the highly valuable assessment free of charge.

You are not a remanufacturer so far but you are very interested in stepping into that industry? The ERN is still the right platform for you. Don't hesitate to contact us!



www.remanufacturing.eu
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Click here to enter the study.

Available in seven languages:

English, German, Spanish, French, Russian, Italian, Polish, Portuguese.



Quelle: Stäubli

Remanufacturing of Industrial Robot Handheld Terminals (Better Than New II)

You might have read about "robotif", a specialist in remanufacturing of robots (see newsletter from January 2015). Recently we had the opportunity to cooperate with robotif again. This time the task was the development of a remanufacturing process for broken handheld terminals of robot systems. In addition, robotif aimed at upgrading the remanufactured handheld terminal. Therefore, components that caused failure repetitively in the past were replaced by improved components with a higher reliability. In the following, the developed remanufacturing process is described as well as the implemented improvements for the handheld terminal:

1. Entrance diagnosis of the system

Through the entrance diagnosis of broken handheld terminals, we analyzed the occurring failures and identified two components mainly responsible:

- The plastic housing
- The membrane keypad

2. Disassembly of the system

A non-destructive disassembly is a main requirement for reusing components. To disassemble the membrane keypad we



Fig. 1: Disassembly of the membrane keypad used heat to soften the glue and separate the membrane from the printed circuit board (PCB).

3. Thorough cleaning

Cleaning electronics is always challenging. For the non-destructive removal of the remaining glue from the PCB, we applied a combination of ultrasound cleaning and the careful use of acetone.

4. Testing and diagnosis

By testing each component both individually and linked to subsystems, every possible failure can be detected. Broken components get replaced (e.g. LEDs).

5. Reconditioning and improvement of parts and subsystems

To improve the remanufactured handheld terminal we designed a new ergonomically shaped housing made of aluminum and determined the most economic way

of manufacturing it. The handheld terminal is now more handy and also water- and break-proof. In addition, a new membrane keypad is used which provides a higher resistance against mechanical stress. Furthermore, a couple of other components were developed to protect the electronic components inside the housing, e.g. a 3D-printed cover for the display and a support sheet for the membrane keypad's PCB. The improved handheld terminal passed the strongest EMC test successfully.



Fig. 2: Original (l) and improved (r) handheld

6. Reassembly and final test

After reassembling the remanufactured handheld terminal and a final test of all functions you can say once again: As good as new? No, better than new!

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Meet one of our Experts – Today: Dipl.-Ing. (FH) Fabian Joas, M.Eng.

Today we would like to introduce Dipl.-Ing. (FH) Fabian Joas, M.Eng. to you. Fabian is one of our experts in product development, lifecycle engineering and obsolescence management.

Fabian Joas

Age: 27

Nationality: German



Career: 2006 – 2013 Diploma and Master degree in Mechatronics and Precision Engineering at the Universities of Applied Sciences Augsburg and Munich. Since **2014** research assistant at Professor Steinhilper's Chair Manufacturing and Remanufacturing Technology.

What are your activities in remanufacturing research?

My research focuses on the after-series availability of electronic assemblies and on remanufacturing as one possible approach. I also deal with improving the remanufacturing process of servomotors.

How did you come to remanufacturing?

I had first contact during a traineeship at a leading producer of testing systems which also supplies reman companies. After I had finished my studies I have joined Prof. Steinhilper's research team.

What do you do in your free time?

I like hiking as well as spending time with family and friends.

What gives you pleasure?

Solving technical problems and transferring scientific results into industrial applications.

What are your wishes for the reman branch?

I hope the reman branch keeps growing and spreads into new markets.

Imprint

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