

REMANUFACTURING UPDATE DECEMBER 2011

RESEARCH & DEVELOPMENT NEWS FROM BAYREUTH



Editorial

Dear Readers,

today for the third time, a new edition of the Remanufacturing R&D News from Bayreuth arrives at your side.

When will you arrive in Bayreuth for the first time or the next time to exchange news about Remanufacturing personally with other experts in the field?

You are always welcome - and, in particular, we plan to organize a dedicated get-together of Remanufacturing decision makers - at the University of Bayreuth in autumn 2012. Watch out for the final date - we'll keep you informed!

Enjoy reading!

Rolf Steinhilper



→ **Rolf Steinhilper**
University Professor
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BAYREUTH UNIVERSITY
UP Chair Manufacturing
and Remanufacturing
Technology

The Dawn of Remanufacturing in Asian Countries

After the speech of Professor Steinhilper at the first APRA International Remanufacturing Forum in Hangzhou in April this year, first business contacts have been made in Asia. Next week, in Shanghai, Professor Steinhilper will give another keynote about "Remanufacturing Innovation: Today and Tomorrow" at the second APRA International Remanufacturing Forum in Shanghai which takes place on December 6 as an introductory event for the Automechanika Show. Many of the key players of the global remanufacturing community are expected to join the forum, both from industry and science.



Shanghai Towers

Rising remanufacturing in Asia

Just like new products enter the remanufacturing market slowly and with years of delay, the remanufacturing industry develops in Asia: since individual traffic is booming in those countries, remanufacturing is now following with big steps and is likely to become the market of tomorrow for remanufacturers.

Considering the huge amount of cars driving on Asian and especially Chinese streets and the still far above double-digit market growth this is not hard to believe. Already in 2010 China outpaced the American car market and is now the biggest sales place for cars of every famous brand.

However, there are still a lot of challenges to be taken for remanufacturing companies in Asian countries, like e.g. laws and trade policies. Many of these challenges will be discussed at the International Remanufacturing Forum by the global community.

Take the opportunity to join this interesting and promising event and be on board of the development from the very beginning!

→ **Sandra Seifert**
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Save the Date

06/12/2012
APRA International Remanufacturing Forum
07 - 10/12/2012
Automechanika Shanghai

MERRY CHRISTMAS

Another year is already drawing to a close. We would like to take this opportunity to thank all our readers and wish everybody a Merry Christmas and all the best for 2012!



reCORE - research for efficient Configurations of Remanufacturing Enterprises

The European research project reCORE aims to find practical, branch specific solutions for handling variety induced complexity in remanufacturing companies. Together with us, researchers from KTH and Chalmers (both Swedish universities) as well as European remanufacturing companies work for the success of this project.

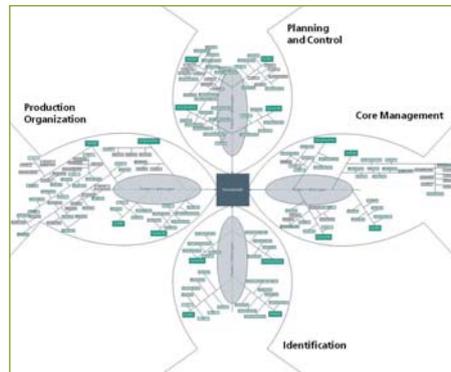
In contrast to OEMs remanufacturing companies can only respond passively to variety: instead of avoiding variety right from the start, they only have the choice between reducing or handling it.

The project concentrates its analyses and approach on four target fields: production organization, planning and control, core management and identification. Content of the first work package were the identification, quantification and statistical evaluation of complexity drivers in remanufacturing. The relevant literature distinguishes four complexity dimensions: variety, size, uncertainty and dynamics. Within these four dimensions different drivers cause complexity like number of products, sales market, machine availability etc.

At first a modified cause-effect analysis was

used to identify complexity drivers and effects in the remanufacturing process. In total 62 drivers and 50 effects were determined. For quantifying these drivers and effects a discrete assessment was made based on expert interviews and process analyses. For each target field in each complexity dimension as well as for each driver the 50 effects were assessed by "1: identified effect applies" and "0: identified effect does not apply". In the end 4.200 assessed coherences existed which formed the basis for further analyses.

The evaluation showed that complexity in remanufacturing companies causes high internal coordination efforts. Another two



Modified cause-effect analysis

important effects of complexity are that the staff work mainly experience based and need broad qualification and skills. Top ranking drivers which cause the effects are core quality, the number of different product groups and also the experience of the employees. The strongest complexity dimension is variety. Next step in the project will be the assessment of interdependencies between the effects for finding those which are actually relevant but not among the top positions.

The described methodology used for quantifying complexity was applied for the very first time. Even in the field of new manufacturing no such method exists. Generally, literature is rare for complexity research.

If you wonder, why we went through such complex analyses: by finding out what causes complexity and assessing the relevance, we will be able to reduce costs of complexity in your remanufacturing companies.

More details: www.recore.org

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Meet one of our Experts - Today: Dr.-Ing. Stefan Freiberger

Under this heading we would like to briefly introduce one member of our research team. Today you become acquainted with Dr.-Ing. Stefan Freiberger - one of two senior engineers at our institute.

Stefan Freiberger

Age: 32

Nationality: German

Career: 2002 Degree in engineering
2007 PhD, today Engineering Director at the Chair Manufacturing and Remanufacturing Technology, University of Bayreuth

What are your activities in remanufacturing research?



My focus is the remanufacturing of mechatronic and electronic systems, together with a team of excellent engineers, and I am glad to be the co-chairman of the APRA Mechatronics and Electronics Division.

How did you come to remanufacturing?

This is easy to answer. When I started working at the university chair of Professor Steinhilper in 2002, he told me to focus on this exciting branch - my reman career started.

What do you do in your free time?

I spend my time with my wife in the nature (walking and cycling), travelling around the world (in national parks) or by flying as a private pilot in the region around Bayreuth.

What gives you pleasure?

To see that things I work on - in private as well as at work - are running better than expected.

What are your wishes for the reman branch?

I hope that the reman business will immediately recongnize, that there will be a fast change from mechanics towards mechatronics, which provides great options for the future.

Imprint

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