

# REMANUFACTURING UPDATE OCTOBER 2014

## RESEARCH & DEVELOPMENT NEWS FROM BAYREUTH



### Editorial

Dear Readers,

did you miss receiving our quarterly newsletter regularly on September 1st? Or did you even fear we went out of business?

Well, we have simply adjusted the publication dates to the beginning of each yearly quarter.

So this edition already concludes 2014. Merry Christmas and Happy New Year!

*Rolf Steinhilper*



→ **Rolf Steinhilper**  
University Professor  
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### Save the Date

**1 - 3 Nov 2014, Las Vegas (NV, USA):**

Big R / ReMaTecUSA 2014  
www.rematec.com/usa

**4 - 5 Dec 2014, Shanghai (CN):**

Remanufacturing China Expo 2014

**14 - 15 June 2015, Amsterdam (NL):**

ReMaTec 2015

www.rematec.com/exhibition

Please check the event websites for details.

### A Remanufacturing Concept for LED-Headlamps

Based on a study of McKinsey, the market share of light-emitting diodes (LED) in the automobile sector will reach 36% in 2020. In cars LEDs are used in tail lamps and daytime running lamps as well as in the main light functions of a headlamp. The first full-LED headlamp was equipped as standard by AUDI in the R8 in 2008. Meanwhile, LEDs are used in many car types of lower vehicle classes with higher distribution.

Although, LED headlights bring lots of benefits there is one significant disadvantage: in case an LED is getting faulty, a simple change of single LEDs is not possible because LEDs are embedded in the headlamp in non removable modules. Even though LEDs normally have a high durability there are several reasons for premature failure, such as over-heating, bond wire displacement (due to vibration), short circuit, and chip aging.

The costly conventional service process for headlamps with a faulty LED requires that the customer consults a garage where the whole headlamp is replaced. A new developed, cost efficient service process, established by the Fraunhofer Project Group Process Innovation, the Chair Manufacturing and Remanufacturing Technology and the Chamber of Crafts ("Handwerkskammer Oberfranken"), allows the change of faulty LEDs in specialized service centers without replacing the whole headlamp.

The new service process is based on reman

concepts. In the first step the faulty LEDs are localized. Then the headlamp has to be disassembled. Therefore, the headlight lens (made of polycarbonate) has to be removed from the headlight case nondestructively. This can be done with the specially developed "headlamp opener" which is working with partial vacuum and local heating. Afterwards the headlamp components can be cleaned, the LEDs can be inspected and sorted, and faulty LEDs can be replaced. Finally, the headlamp lens is reassembled to the headlamp case by using a special



**A new service process for faulty LEDs in LED headlamps using the 'headlamp opener'.**

gasket material. The figure above shows the "headlamp opener" and parts of the described service process.

For more information on the new service process and further results of the public funded research project "Kfz-Service-Engineering 2020" visit [www.kfz-service-engineering-2020.de](http://www.kfz-service-engineering-2020.de) (in German only) or get in touch with our experts.

→ **Alexander Nagel**  
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## Training Seminars in Technical Cleanliness for Remanufacturing

You want to become a leading Remanufacturer or learn how to implement technical cleanliness in your company?

Modern automotive products are very susceptible to particulate contaminations. In fuel feed systems particulate contaminations can

lead to a blocking of valves, nozzles or filters. In the fields of electronic systems they can cause short-circuits between conduction paths. Therefore, technical cleanliness is nowadays state of the art in OE-processes. Without paying attention to technical cleanliness remanufacturing companies soon will not be able to remanufacture and sell full functional modern automotive products and give a warranty. In this context new challenges for remanufacturing of modern automotive products with regard to defining, creating, analyzing and conserving technical cleanliness have arisen.

By combining the know-how from many projects in the field of OE-technical cleanli-



ness and remanufacturing, the Chair Manufacturing and Remanufacturing Technology has gained a worldwide unique knowledge base regarding technical cleanliness in remanufacturing.

Experts from the Chair Manufacturing and Remanufacturing Technology want

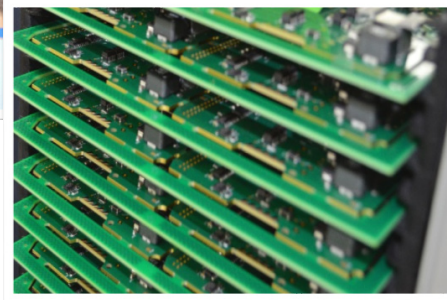


to transfer their knowledge and teach you how to prepare your company for the future. In a 1 - 2 day seminar you will learn how to

integrate technical cleanliness to your shop floor layout as well as your logistic and remanufacturing processes. Furthermore, you will get trained how to define, analyze, create and conserve technical cleanliness. The seminar can be offered in two different packages.

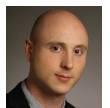
Package one has a duration of two days. On the first day you will learn the basic knowledge which puts you in the position to prepare your company for the future. On the second day you will get hands-on experience at our laboratory where you accomplish the seminar by using the latest equipment in the field of technical cleanliness. Package two is meant for holding the seminar at your company site and includes only the first seminar day.

If we have sparked your interest in our



seminars don't hesitate to contact our experts and ask for more details.

→ **Stefan Thäter**  
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## Meet one of our Experts - Today: Dipl.-Wirtsch.-Ing. Andreas Kruse

Today we would like to introduce Dipl.-Wirtsch.-Ing. Andreas Kruse to you. Andreas is our expert in production and logistics optimization as well as production system development.

### Andreas Kruse

**Age:** 29

**Nationality:** German



**Career:** 2010 degree in mechanical engineering and management, since 2010 research assistant at Prof. Steinhilper's Chair Manufacturing and Remanufacturing Technology, since 2014 head of competence center manufacturing and logistics

### **What are your activities in remanufacturing research?**

My research focuses on factory planning and optimization as well as complexity management.

### **How did you come to remanufacturing?**

Since I have joined Prof Steinhilper's Chair Manufacturing and Remanufacturing Technology in 2010 I worked in several planning and optimization projects for remanufacturing companies across Germany. These projects strengthened my interest to conduct more research on remanufacturing and to bring these results into application.

### **What do you do in your free time?**

In my free time I like to go hiking or to enjoy delicious meals together with friends.

### **What gives you pleasure?**

Travelling the world and getting things done.

### **What are your wishes for the remanufacturing branch?**

The cooperation between international academia and remanufacturing industry should be further improved in order to exploit the potential and the benefits of remanufacturing in a global manner.

### Imprint

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