

DRIVE

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Specific Requirements

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R+W
A POPPE + POTTHOFF COMPANY

First Comes the Idea

Dear readers,

things always start with an initial piece of inspiration. That then generates the new solution to a specific requirement. Many products that were once R+W specials are now standards in our portfolio – and in the ranges of other providers in the market too. That is what happened when the first backlash-free press fit metal bellows couplings were developed more than 20 years ago or the Torqlight range of lightweight torque limiters, just to name two examples.

Efficiency and process reliability are what's important when it comes to developing need-based backlash-free torque transmission solutions. We provide design engineers with the solution that exactly matches their installation requirements. That can be actioned by a product innovation, which we have developed especially for this application, based on our many years of experience – from initial advice via conceptual design, calculations and prototype modelling through manufacturing. It is equally conceivable that an existing, proven solution is the right one.

Our couplings technology skills and customer applications awareness form the basis for developing the right, the best solutions. The initial idea provides that inspiration.



Jörg Stang



Jörg Stang, Sales Manager

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Specific Solutions for Specific Requirements

With all the extras! When you purchase an automobile, your decision is based on high standards of comfort, aesthetics and performance. If the automobile you want is not in the showroom, you get it configured. Yet what happens with couplings?

The requirements are different, but the principle is similar. In initial meetings with the design engineers responsible, R+W's technologically well-versed field advisors clarify what features the solution has to have. Design engineers are looking for the most efficient and reliable solution to their installation 'challenge'. Often catalogue products are the right ones for the job and sometimes specific development work is required. Is it to be the automobile in front of you in the showroom or a model with special accessories? With just a few or with all the extras?

Standard or custom?

R+W provides a wide range of standard solutions that in many cases directly help users in various different industries to solve their particular problems. This applies to both precision and heavy-duty couplings. Jörg Stang, Sales Manager at R+W Antriebs-elemente GmbH, emphasises: "If there is an existing solution that exactly matches a customer enquiry, then we recommend it. If we don't have anything that fits the bill, our development team moves into action." >>

This is how demand-based custom solutions are generated, of which many have become standard products in the own range or in the market in general. When R+W develops a new custom solution, the following applies: as efficient as possible and as custom or specific as necessary to keep investment and lifecycle costs at a reasonable level. For not every application must have what is technically feasible. What does each user require in an overall context? Which distinct parameters play a role in recommending the right product to the customer – in terms of functions, spec and material?

Solutions for the food processing industry

Let's take food processing and packaging as an example: additional features are needed besides standard requirements such as torque transmission, misalignment correction or limiting torque to guard against overload.

Special solutions are incorporated alongside couplings from the standard range at various points along a packaging and filling line. The reason for that is the requirements that apply to the couplings used in this instance, where strict cleanliness

and hygiene regulations apply, differ substantially from those that apply to the solutions delivered by R+W, for example, to the metal-processing industry. Given these stringent hygiene regulations, many of the applications that involve the use of torque limiters require a couplings solution where substances can neither leak out nor penetrate in.

R+W therefore provides a complete range of relevant couplings types in stainless steel, which meet, for example, corrosion-resistance or easy-cleaning requirements and therefore conform to high standards of



The full range of food-processing-relevant couplings models is available in stainless steel – even in fully sealed form to fit the same available space.

R+W developed and delivered a torque limiter for a training device on board the International Space Station ISS.

A very specific, heavy-duty custom coupling was developed, based on the BX range and designed for mining use, which goes easy on bearings, avoids costly downtimes and significantly increases process reliability.

cleanliness and hygiene. The torque limiter has to be designed in such a way that it does not allow any substances, e.g. lubricants, to come into contact with the food. Anti-septic packaging, which make even more demands of the machinery and therefore the couplings, is manufactured for certain markets. The option of having the R+W torque limiters fully sealed prevents lubricants escaping and at the same time prevents substances, which could damage the coupling, from penetrating the torque limiter. A key benefit of this design is that the coupling's external dimensions and therefore the required seal-detail space remain compact – in contrast to products where the coupling is sealed by means of an elaborate housing.

An example of this are torque limiters used in the tools used to cut the cardboard that forms the basis of the packaging or couplings for filling machines that handle milk, juice or similar. Overload, caused by jammed cutting tools, can occur at any time during the cardboard cutting process. In such cases mechanical torque limiters cut contact between the motor and the tool within 3 to 5 milliseconds, meaning the blade and motor remain intact.

Enhancing what already exists

Specifically enhanced or modified standard products are often the solution: "If a concept works reliably, then it makes sense to adapt it to a specific application. After all reliability is a key factor. Experience and creativity as well as a feel for innovation are what matter." For example the company actioned a press fit metal bellows coupling for the world's largest machine involved in the CERN

research project and a torque limiter for the International Space Station ISS within a comparatively short development period of just a few weeks. The company also developed and actioned a metal bellows coupling for a wind-power generator test rig, which can handle peak torque of up to 850,000 Nm – significantly more than is feasible using standard products.

R+W developed a very specific, heavy-duty custom coupling, somewhere between a start-up coupling and a transmission based on the BX range, designed for underground use in coal mines. The challenge here was that, given a high degree of misalignment, existing claw couplings generate such high reset forces, thereby resulting in damage to the bearings and consequently costly machine downtimes. To solve this problem R+W developed a special coupling, which given its double-cardan metal bellows design, generates significantly less reset forces than the elastic couplings previously used. This new coupling goes easy on the bearings, avoids costly downtimes and significantly increases process reliability.

Inspired by customer requirements

These examples show how user-need-based product enhancements or innovations are continuously increasing the size of the R+W portfolio – from conceptual design via design engineering through prompt actioning. R+W continuously enhances its couplings in close collaboration with the design engineers from user businesses, to enable it to provide specific solutions to the relevant requirements. R+W's own R&D department and prototype modelling

team are as much part of this platform as are the partnerships with universities and universities of applied sciences.

Jörg Stang summarizes: "The objective remains generating solutions that constitute a sure investment in the efficiency and operational reliability of industrial plant and equipment. Every new product is inspired by a customer requirement, each challenge mastered forms the basis for consultancy based on practical experience." What you require determines ultimately whether you opt for the automobile from the showroom, for the special promotional model or the automobile with all the extras. ■

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The Fourth Revolution

The future of industry lies to some extent in the closer integration or interlinkage of man and machine. The German government's "Industry 4.0" initiative is actively championing this trend.

This trend is in full swing: increasingly interlinked production lines and machines, which actively provide humans with information, are triggering a fourth industrial revolution. Machines are, at least supposedly, acquiring intelligence. Human resources in high-wage environments are increasingly morphing into recipients of information and machine-to-machine interfaces - into experts with skills and experience and into decision-makers. After the Initiative was launched at Hannover Messe (HMI) in 2011, its manifestations were clearly on display at this year's HMI.

The term Industry 4.0 stands for the fourth industrial revolution: following on from the first (the mechanization of processes), the second (the introduction of production lines and electric power) and the third (the use of electronics and IT). Nowadays items,

such as machines and robots, share information and make this information available to humans in the so-called "Internet of Things". The impact of the computer as the sole source of information is diminishing and it is being complemented by intelligent objects. At home this corresponds to the vision of a refrigerator that re-orders milk by itself when stocks are getting low.

Processes are self-optimizing

RFID (Radio frequency identification) demonstrates how objects constitute a valuable information channel. A chip is responsible for relaying different information, e.g. the temperature, GPS position and status of a component. An intelligently interlinked component can, for example, independently report when its wear limit has been reached or when the necessary raw materials need to be reordered. That

reduces downtimes and optimizes inventory. Given the demand for increasing customization of products and flexibilization of manufacturing capacities, networked, highly automated manufacturing ensures the competitiveness of companies operating in high-wage environments.

For R+W that means, as Frank Kronmüller, R+W Authorized Officer and Executive Vice President, emphasizes: "We welcome the Industry 4.0 campaign. Anyhow our R&D and Production dovetail with the basic underlying idea and we are contributing to this revolution by supplying couplings, which play an important role in flexible, efficient and intelligent processes. They come about as a result of close dialogue with customers in accordance with their specific requirements, with or without Industry 4.0." ■



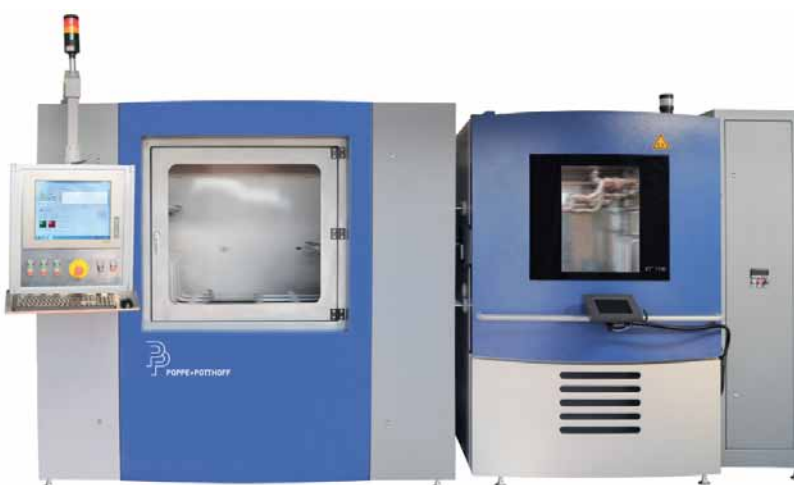
Employees are increasingly morphing into recipients of information and machine-to-machine interfaces.

High-Precision Pressure Pulsation Test System

Poppe + Potthoff facilitates comprehensive testing of medium-transporting components.

Poppe + Potthoff Maschinenbau unveiled its new pressure pulsation test system at the Automotive Testing Expo in June 2014. Fluid-conducting components, such as hoses for coolants and oils and extension hoses for automobiles can be tested in two different load change simulation test chambers - under different climatic conditions and in accordance with the stringent standards of the German vehicle manufacturing industry. Pressure pulsation of the test media, which can also be temperature-controlled, is servo-hydraulically and therefore very precisely controlled. The new system enables pressure pulsation tests with sinus and trapezoid curves in different pressure ranges and with different media, as well as long-term pressure and burst pressure tests to be conducted. Hoses are an automobile's lifeline. For example, they feed coolant to the engine and make sure that when stepping on the pedal, the vehicle brakes safely and securely. The system helps to meet the automobile industry's high standards of medium-transporting component reliability at changing thermal, chemical and mechanical loads. Testing on the new system simulates extreme temperature differences, which are quite rare in reality, even the hardness tests on the Nürburgring racetrack, in

the Siberian tundra or in African deserts. For pressure pulsation, long-term pressure and burst pressure testing purposes the system offers two chambers, where up to ten test specimens each can be tested simultaneously at an ambient temperature of -40°C to $+180^{\circ}\text{C}$ or at indoor temperatures. All testing procedures and data are stored automatically on the system and can be exported to the network for analysis purposes. ■



Pressure pulsation test system

Expanding

Engineering department growing

R+W's department for engineering and development welcomed three new colleagues during the last few months. The overall team is continuing to grow now that Rainer Benz (Head of Engineering), Sascha Markert (Engineering) and Constantin Lückert (Design Engineering) have joined. "We don't just talk about growing, we put our money where our mouth is. When skilled professionals join the team, that is the basis for further growth", is how Frank Kronmüller, R+W Executive Vice President and Authorized Officer, explains these new appointments. ■



Rainer Benz

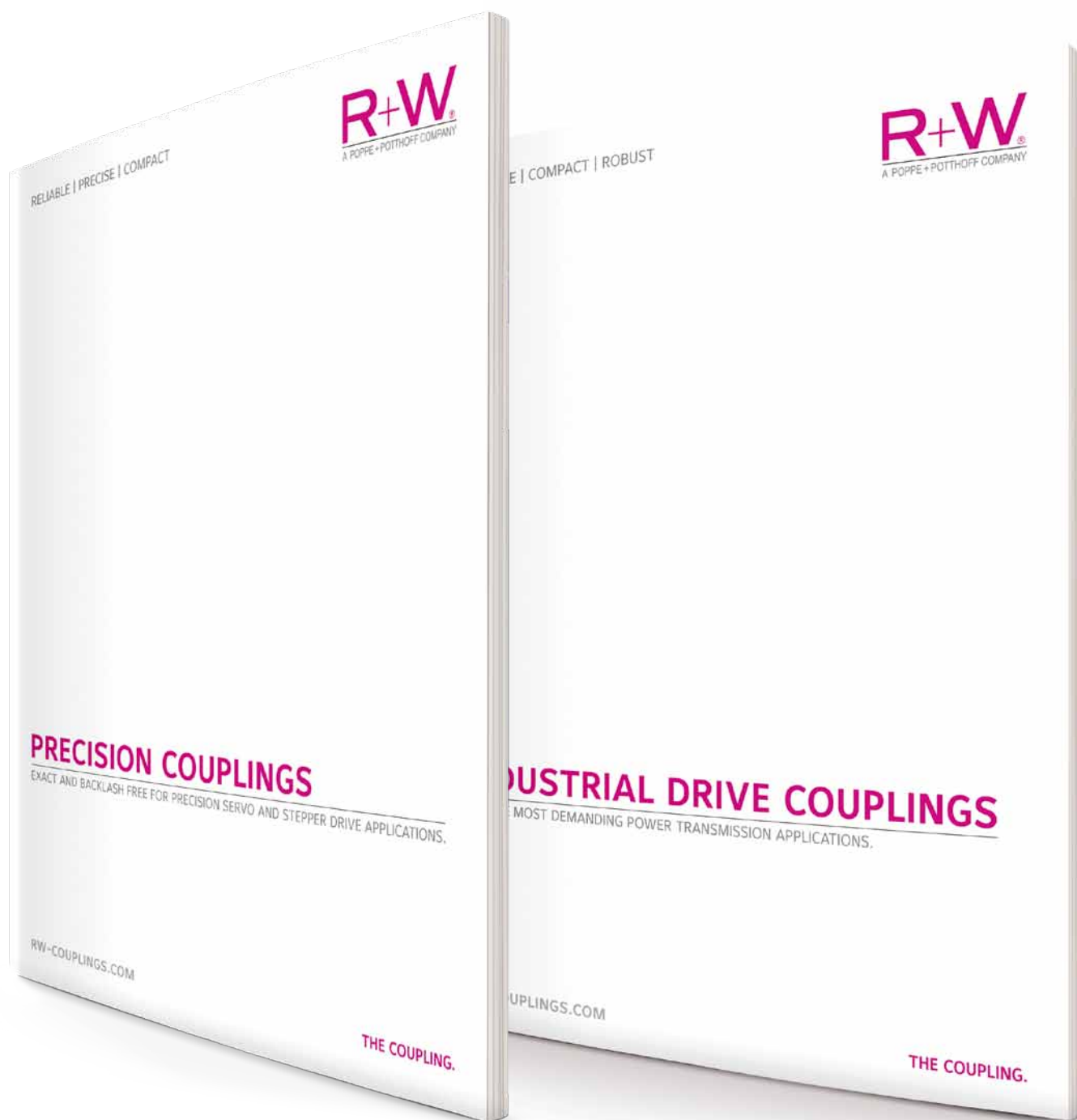


Sascha Markert



Constantin Lückert

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Phone: +49 9372 9864-0

Email: info@rw-kupplungen.de

Publisher and editorial office:
R+W Antriebs Elemente GmbH
Alexander-Wiegand-Straße 8
63911 Klingenberg, Germany
www.rw-kupplungen.de

Editor:
R+W Antriebs Elemente GmbH
Frank Kronmüller / Jörg Stang
kronmueller@rw-kupplungen.de
stang@rw-kupplungen.de

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