

# DRIVE

THE JOURNAL FOR COUPLING TECHNOLOGY

Issue 01 | 2014

Mainstays of a Stable  
Infrastructure

PAGE 6 "It is in our Hands."

PAGE 7 Especially Safe Diesel  
Fuel Injection Technology

**R+W**  
A POPPE + POTTHOFF COMPANY

## Not Only on Paper

Dear Readers,

On paper, they are only two catalogs: one for precision couplings and one for high torque couplings. It is no accident that we are issuing these two different publications. Rather, it is a statement about a strategic decision that we at R+W have made.

Trends in the markets in which we operate inspired us to take this step. I myself spend large portions of the year visiting clients around the world. It is obvious that, as specific as requirements are, the products that we provide are just as varied. Correspondingly, special expertise and consultancy are required to deliver optimum solutions. This is furthermore made clear by our staff number, which we are continuing to grow – in the back office and in field sales, in design engineering and in quality assurance.

So you can see that what is at first glance only paper is indeed the expression of a trend, both our own and that of the marketplace. The focus in this edition is on the heavy-duty segment. Read on page 3 what our torque limiters for the heavy duty industry in the broadest sense have to do with the construction of bridges and houses.



Jörg Stang

In this issue:

### 02 Contents & Editorial

### 03–05 Products & Innovations

Mainstays of a Stable Infrastructure

### 06–07 R+W News

“It is in our Hands.”

Especially Safe Diesel Fuel  
Injection Technology



Caption: Jörg Stang, Head of Sales

# Mainstays of a Stable Infrastructure

Production of building cement is a complex process that puts enormous demands on the machines that manufacture it. There is demand for reliable torque limiters at many points along the process chain.

What do you think of when you hear the words “bridge construction”? Engineers, steel, excavators, cranes and concrete – things that you see at first glance. There is of course a lot more to it than just that. If you take a closer look just at concrete as an example, it quickly becomes clear how many factors contribute to a successful building project. Concrete is a composite material, produced predominately from aggregates, water and cement. The latter is an essential raw material. Cement is a hydraulically functioning binding agent that consists mainly of calcium carbonate. Finely ground and mixed with water, it congeals, hardens and maintains this condition.

We divide cement into five main groups that are again subdivided into

an additional 27 standardized grades, depending on composition. Different grades are used to meet specific job requirements. Sometimes the workability of the building material is of primary importance; at others its ability to retain water is the key factor. Certain aggregates and mixing ratios produce the desired physical characteristics.

## From raw stone to effective binding agent

It begins with the extraction of the raw material and ends with bagging and packaging. Along this processing chain, at the end of which is the finished cement, R+W couplings contribute to safer processes, especially those involving heavy-duty applications. This becomes clear during a

sample observation of a production line. “We have worked hard over the years to get our products established along the entire cement production process chain. In doing so, we consider each individual drive element separately and factor in industry-specific requirements. Regular collaboration with customers and the work of our development engineers form the basis of our expertise in the procedures and processes used in an industry,” is how Jörg Stang, Sales Manager at R+W Antriebselemente GmbH, explains the company's relation to cement processing.

The first step is to break the limestone in a semi-mobile crusher to a minimum grain size of at most 25 mm. As part of this process, other >>



Bridge construction: cement is a crucial factor.



very hard rocks are incorporated into the breaking process alongside the comparatively soft limestone. Accordingly, the expensive crusher tools have to be protected against peak torque. To this end the TORQSET ST1/60 torque limiter is installed using a flange mounting between a starting coupling and a cardan line shaft that leads to the gearbox. At a defined torque shock of 28,000 Nm, it disconnects the power flow within a few milliseconds and protects the entire gearbox from damage. This saves the plant operator costly repairs and downtimes. In the next

step, the pre-homogenized starting material is dry-ground inside a ball mill. Driven by a high-voltage motor with an output of 800 kW at 500 rpm, balls made of chromium steel process the ground material by means of impacts. An R+W BZ1/450 model gear coupling connects the motor and gearbox. Jörg Stang stresses: "This compact and extremely robust coupling transfers the rated torque of almost 35,000 Nm and compensates possible misalignments between the shafts. The high-precision interlock of coupling hub and flange component transfers the torque with

minimal backlash and torsionally stiff and compensates for misalignment." Since the coupling is designed for a peak torque of 90,000 Nm, it offers sufficient safeguards for temporarily higher torque values e.g., while starting up the mill.

### Coping reliably with peak torques

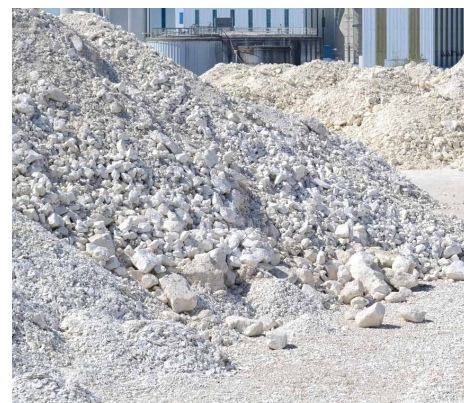
In order to further refine the resulting raw meal, it is filled over crushing units into silos. For these drives, R+W supplied SERVOMAX® EKH/4500 type couplings – once again with the goal of ensuring long-term plant availability. Clinker production follows, during



The first step is to break the limestone in a semi-mobile crusher to a minimum grain size of at most 25 mm. (**TORQSET ST1/60** torque limiter).



In the next step, the pre-homogenized starting material is dry-ground inside a ball mill. (**BZ1/450** gear coupling).



In order to further refine the resulting raw meal, it is filled over crushing units into silos. (**SERVOMAX® EKH/4500** range of couplings).



which the meal is so altered by means of a burning process that the cement can harden hydraulically in later applications. So that the cement is chemically reactive, secondary elements like blast furnace slag, fly ash, or calcium sulfate are added in the cement mill. In this ball mill, the connection between the motor and gearbox shafts, like with dry-grinding, is provided by a gear coupling, in this case a BZ1/800. The rated torque is however still higher at 65,000 Nm; at peak torques the coupling will transfer up to 168,000 Nm. In addition to high torques, bridging the comparatively large distance of

1,120 mm between the drive shaft and the output shaft is a requirement of this specific installation situation. This is accomplished by a spacer sleeve fastened by means of a flange, which extends the 358 mm long BZ1/800 to the required length. For the final processing steps, the bagging and packing machines, R+W supplies torsionally rigid and vibration-damping couplings.

#### Heavy-duty couplings for different industries

"Although it is not immediately apparent in everyday life, R+W technology

also features in bridges, houses, dams and soccer stadiums," explains Jörg Stang. "Cement processing is only one example that makes clear the different points at which R+W products are used. Besides this industry, segments such as test bench, printing, bagging and packing technologies as well as the steel processing industry benefit from heavy-duty couplings and our industry expertise." ■



So that the cement is chemically reactive, secondary elements like blast furnace slag, fly ash, or calcium sulfate are added in the cement mill. (BZ1/800 gear coupling).

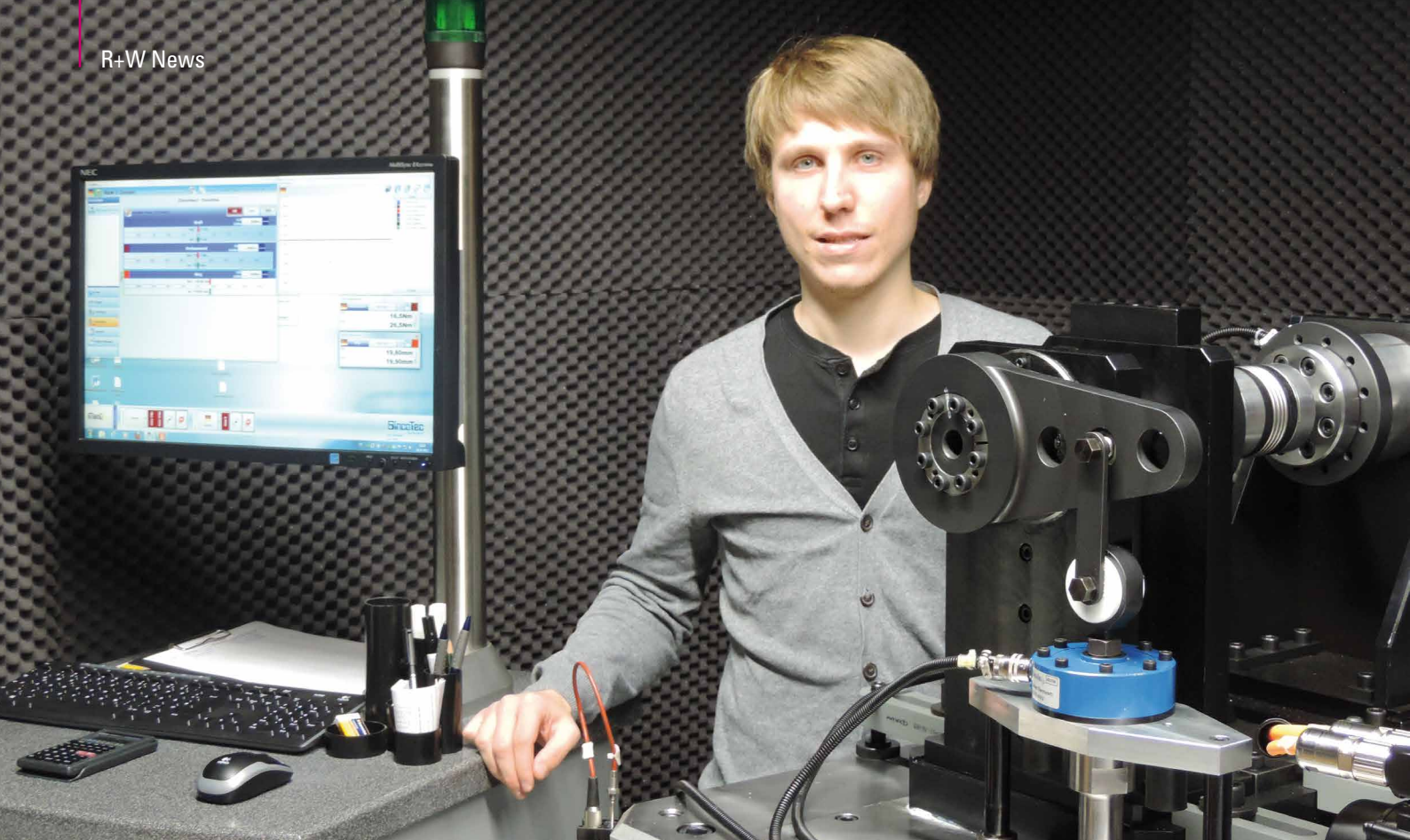


For the final processing steps, the bagging and packing machines, R+W supplies torsionally rigid and vibration-damping couplings.



Type ZA coupling range for use in the steel industry.





Philipp Bergmann is responsible at R+W for the test benches.

## "It is in our Hands."

The in-house test bench contributes significantly to product safety. R+W applications engineer Philipp Bergmann explains the advantages of short distances for test series and their importance for development work.

A German dictionary defines a test bench as "a facility outfitted with measuring devices for testing machines, equipment and components for certain characteristics, in particular, efficiency, operational safety and performance under prolonged stress." So much for the neutral description of such a facility. "A test bench by itself still does not guarantee safe products or effective development work," Philipp Bergmann cautions. "What is crucial is what questions you ask and how you deal with the answers, i.e. the results. We have extensive testing capacities for different applications to obtain the desired data systematically and as quickly as possible." On this basis, quality and functionality can be evaluated, documented, and, if necessary, improved.

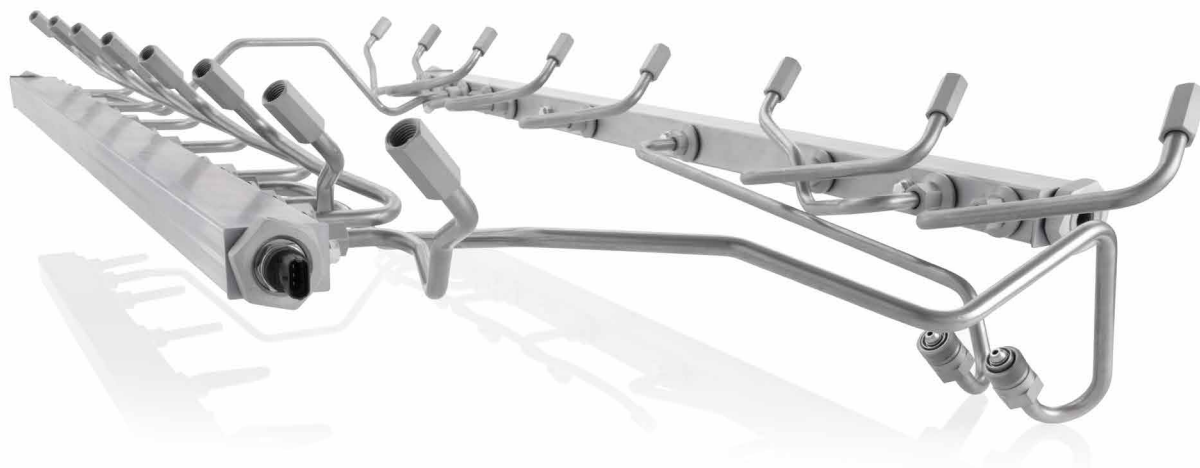
### Test benches for different applications

Overall R+W operates four kinds of test benches: a vibration test bench, one for line shafts, one for special applications and a high torque test bench. The vibration test bench is aimed at testing lifetime fatigue strength.

R+W can realistically simulate very specific load settings here according to the customer's needs. Variables such as torque, deformation, force and temperature are analyzed. In the case of the test bench specifically for drive shafts, it is a question of testing the critical bending speed under real-life conditions and very exact simulation of application scenarios. The test bench simulates especially high torque values for robust, maintenance-free, heavy-duty couplings. Furthermore, the engineering team that Philipp Bergmann is a part of, have designed a test bench for special applications on behalf of customers. R+W tests couplings here for very specific and challenging operating conditions. Philipp Bergmann summarizes the advantages of the testing capacities: "It doesn't matter which individual requirement we investigate, what is crucial is that is in our hands. We get reliable results in the shortest time possible with the aid of our in-house test benches. We would not be happy relying on others for the safety of our products." ■

# Especially Safe Diesel Fuel Injection Technology

News from the group: Poppe+Potthoff develops double-walled common rail systems for diesel engines – for use on the high seas.



When conditions are especially challenging and special protection from leakage is provided or legally required, double-walled common rail systems for diesel engines can be employed – on the high seas, for example, in marine engines or power generators on oil rigs. Burkhard Harhoff, Head of Engineering with Poppe+Potthoff explains the background to this innovation:

“Poppe+Potthoff has developed concepts especially for this market, to provide existing products with external protection – at reasonable cost and with the lowest possible added weight.”

Commissioned to do so by a large engine manufacturer, we built the initial prototype system for a V16 engine. A

rectangular casing tube protects the rail, and the piping features an entirely double-walled finish. At headquarters in Werther additional development orders are currently being worked on. Poppe+Potthoff estimates that it will ship the first series of double-walled rail systems, including installed sensors and high-pressure connections, beginning in 2015. ■

## Team Expanded

### New colleagues in several departments

“In order to enhance R+W's expertise further, we are always looking for ways to progress as a company. This includes not just technical innovations, but also the brains to drive the company forward,” is how Frank Kronmüller, Executive Vice President with R+W, explains the latest personnel expansion. A new head of quality assurance, Christian Waltert has been hired. There have been additional back-office and field sales recruitments, such as Sören Storbeck, as well as in design engineering. ■



Christian Waltert, Head of Quality Assurance



Sören Storbeck, Sales Germany





# Wishing you all the best

for the New Year!

# 2014

Stay informed and sign up for our email info service:

[www.rw-kupplungen.de/kontakt/newsletter](http://www.rw-kupplungen.de/kontakt/newsletter)

Or follow us on Twitter:  @RWKupplungen

**Publisher and editorial office:**  
R+W Antriebselemente GmbH  
Alexander-Wiegand-Straße 8  
63911 Klingenberg, Germany  
[www.rw-kupplungen.de](http://www.rw-kupplungen.de)

**Editor:**  
R+W Antriebselemente GmbH  
Frank Kronmüller / Jörg Stang  
[kronmueller@rw-kupplungen.de](mailto:kronmueller@rw-kupplungen.de)  
[stang@rw-kupplungen.de](mailto:stang@rw-kupplungen.de)

**R+W**  
A POPPE + POTTHOFF COMPANY