

# check it!

The newsletter of Materialprüfungsamt NRW

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## Making good things better

■ ■ ■ In a survey the customers of MPA NRW acknowledged i.a. its high professional competence.

The main result of the customer survey carried out in early 2016 was: The customers appreciate the professional competence, independence and objectivity of the company.

### Highly satisfied clients

Very good	54 %
Good	41 %
Satisfactory	3 %
Adequate	1.5 %
Inadequate	0 %
No answer	0.5 %

"Please rate our performance quality" – this was the question to the customers.

The customer loyalty to MPA NRW remains to be high, a pleased Martina Fahnenmann comments on the results of the customer survey. Her conclusion: "We are on the right track with

our service offer!" The head of the marketing department gained important insights from the survey "which we will implement in our future work." Thus, the evaluation of the survey results revealed that many customers would like to have a more intensive contact with the experts of MPA NRW departments, for instance with telephone conversations, customer visits or also at the forums of MPA NRW. In this context the forums are a suitable platform where the customers receive important first-hand information e.g. on the state of the European harmonisation.

"For this survey we chose client groups from the departments for Construction Safety, Radiation Protection, Hardness/Calibration and Safety Glass. Additionally, clients of the certification body for QM-systems were surveyed. A separate survey for

the department of Personal Dosimetry is planned for early 2017.

The evaluation of the survey results revealed a predominantly positive response to the work of MPA NRW. But also the critical comments of the customers will be taken seriously. Thus, the accessibility of the contact partners as well as the processing times will be further improved.

These customer surveys are important for MPA NRW, explains Martina Fahnenmann. "With these surveys we receive the feedback of our customers about how good our quality and service levels are." Altogether the company is happy about the high customer satisfaction and will use the survey for further improvement.



## Close to the customer

■ ■ ■ At its Fire Protection Forum on 13 and 14 April 2016 MPA NRW informed its customers about current developments in the sphere of fire protection.



Fire Protection Forum 2016 in Erwitte

Renowned fire protection experts had been invited to Erwitte by MPA NRW. Specialist lectures were held i.a. on the market surveillance of construction products, on new concepts with regard to the Construction Products Regulation, on experiences with their implementation from the point of view of the insulating materials

industry as well as on news concerning natural smoke and heat exhaust ventilators from Erwitte, Germany and Europe.

On the second day research results for the improvement of the fire protection safety of external thermal insulation composite systems were one of the main discussion points. Finally, the experts of the fire testing centre Erwitte informed about their testing offers and about several new testing procedures which were afterwards impressively demonstrated to the participants in tests conducted in the fire testing centre on the premises.

## Exchange with experts

■ ■ ■ At its forum "Hardness 2016" MPA NRW informed its customers of the current development in the sphere of hardness test standardisation.

On 24 February the customers of MPA NRW could inform themselves by attending specialist lectures on tensile test parameters relating to hardness tests, the determination of the measurement uncertainty or hardness tests on welding joints. "The forum offered the participants an extensive exchange on the current development in the sphere of hardness tests. During the discussion with the lecturers they could intensify the information even more", says Karlheinz Fennig, head of department for "Test and Calibration of Testing Machines and Hardness Standard".

During the forum exhibitors also presented the possible applications of mobile hardness testers.

A new event has already been planned for 2017: On 21 February 2017 the Forum Hardness will take place with following topics:

- News from the sphere of standardisation (ISO and ASTM)
- Measurement uncertainty / capability of measuring systems
- Hardness tests on thin layers
- Conversion (of hardness values)



State secretary Dr. Guenther Horzetzky (second from left to right) talking to company manager Jens-Peter Steuck, head of section Dieter Goedecker and head of department Hendrick Rademacher (from left to right).

### High-ranking visitor in Erwitte

On 14 January 2016 MPA NRW ceremoniously commissioned its new testing hall. This new building in Erwitte has now made it possible to conduct all initial type tests on original samples according to DIN EN 12101-2 in the fire testing centre. On 10 August 2016 Dr. Guenther Horzetzky, state secretary in the ministry of economic affairs North Rhine-Westphalia visited the fire testing centre Erwitte and could witness several tests in the new testing hall and inform himself of the expanded testing offer for the customers.

### Tests for the shipbuilding sector and on cables

As from 2017 there will be two new testing offers in the fire testing centre Erwitte. On 1 August 2016 the new standard DIN EN 50577 was released for the "fire resistance test on unprotected cables and lines (P-classification)". After the successful accreditation audit by the DAKKS in October our certificate will now be issued.

At the same time MPA NRW also successfully passed the examination for tests on horizontal and vertical divisions according to IMO 2010 FTP Code part 3. These tests on furnaces of various sizes are conducted on products which are used in the shipbuilding industry. The test samples fit into the testing furnaces in Erwitte including their installation frames.



**Durability test  
according to  
EN 1191**

## Escaping in the case of emergency

■■■ In the test department Accessories for doors and gates escape doors are tested in performance cycles of up to 500,000: they have to function safely also after many years.

Panic doors and escape doors have a vital function: they have to constantly ensure that people can leave the building in the event of an emergency. Therefore the requirements set to these doors and their accessories are very demanding. They have to function safely for many years. This means they have to be

self-closing and must open with a lesser opening force than stipulated by the standard – by a door latch or a horizontal bar. In the case of panic the fleeing persons are directed to the escape doors by the illuminated green exit signs. “According to the standard, the latch system must be such that the door can be operated quickly and intuitively and also in a situation where people are pressing from behind”, explains Hermann Jansen, head of testing laboratory Accessories for Doors and Gates.

**Durability test of  
an emergency exit  
closure with door  
handle according to  
EN 179:2008**

In October 2016, after 33 years at MPA NRW, the graduate engineer handed over the reins for the operating

business to his successor, Andrea Horsthemke. The bachelor of process engineering has been working in the test department of MPA NRW since April 2014 and is ideally prepared for all tasks, be it participation in standardisation committees, exchange with the customers or surveillance and evaluation of the tests in the big test hall.

Here the functions of escape doors and their accessories as stipulated by the standard are tested in a durability test. “For this purpose the test sample is mounted in a testing facility as stipulated by the standard”, explains Andrea Horsthemke. “The test can consist of 100,000 to 500,000 performance cycles depending on the standard or the client order.” A performance cycle consists of opening and closing the test door. Currently there are about 40 different durability test facilities available in the test hall.







The scope of tests at MPA NRW is divided into two sections. The first section tests doors and gates, and the other section tests their accessories. Thus, mostly fire and smoke control doors are tested as a complete system, whereas type examinations of hinges, door latch sets, door closers, revolving door drives and closing systems (primarily escape door and panic door locks) are conducted in the accessory sector.

The testing sector Accessories works according to the principle "All ser-

vices from one hand": after sending the test samples and stating his requirements the customer is no longer involved in the process. In the testing laboratory the samples go through all necessary test phases. Additionally, smoke tightness tests, wind load and rain-tightness tests can be conducted on door systems at the Dortmund location. The fire testing centre in Erwitte offers adequate facilities for conducting fire resistance tests. Accordingly, MPA NRW as an accredited body according to DIN EN 16034 can offer the customer all services from one hand right up to the certification.

#### Durability test according to DIN 4102-18



"Due to our know-how and the test equipment in the testing hall we can also carry out tests on innovative developments", Andrea Horsthemke describes the strong points of MPA NRW. "The existing test modules also ensure a fast adaptation, should the requirements of testing standards change." She faces the future with optimism: "On the long run doors and fittings will not change very much, but the way they are operated is changing fast: mechatronic door systems are being used more and more often. Controlling them via a smartphone application is no longer a pie in the sky."

**Handing over the reins.** In October 2016 Hermann Jansen handed over the reins for the operating business of the department Doors, Gates and Accessories to Andrea Horsthemke (B. Eng.). The graduate engineer Jansen will remain to be head of the testing body as a member of the department management team.



## ■■■ | All tight!

### Testing doors and gates

The EU standard 13241 commands that doors and gates must be tested with regard to air permeability of joints, water permeability and wind load resistance. The big test stand in the test hall is seven metres wide and five metres high. When required the test stand can be adapted to the sizes of the test samples. Due to this all gate types can be mounted.

Furthermore, smoke control doors of all opening kinds are tested with regard to smoke tightness and operability according to national DIN resp. European EN standards.

The test certificates are used for

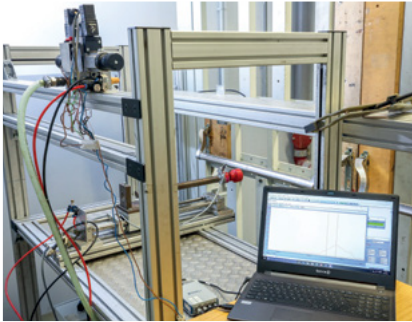
- smoke control doors for national use according to the Building Rules List with a general appraisal certificate
- combined fire and smoke control doors for

the approval procedure of the German Institute for constructional engineering (DIBt)

- test certificates according to EN standards to be presented in other EU member states for the respective national procedure



**The driving rain test stand simulates an extreme weather situation.**



## ■ ■ ■ | These kinds of products are tested and certified

### Closures

- Emergency exit closures with latch and push plate for doors in escape routes (EN 179)
- Panic door locks with a horizontal bar for doors in escape routes (EN 1125)
- Mechanically operated locks and locking plates (EN 12209)
- Electromechanical locks and locking plates (EN 14846)
- Mortise locks according to DIN 18250, DIN 18251-1 to DIN 18251-3 and DIN 4102-18

### Hinges

Hinges – technical rule EN 1935

### Latches (Door handles)

- Door handles and door knobs (EN 1906)
- Protective armours (DIN 18257)
- Door handle fittings for fire and smoke control doors (DIN 18273)
- Fittings for sliding and folding doors (EN 1527)

### Closure means and associated components

- Controlled door closing devices (EN 1154)
- Electrically driven hold-open devices for revolving doors (EN 1155)
- Closing sequence controllers (EN 1158)
- Controlled door closing devices –

Part 1: Door latch at the top of the door with crankshaft drive and spiral spring (DIN 18263-1)

- Controlled door closing devices – Part 4: revolving door operators with self-closing function (DIN 18263-4)
- Hinges for fire control doors: spring hinge and construction hinge (DIN 18272)

### Doors and Gates

- Wind load and driving rain tests for products according to DIN EN 14351-1 resp. 13241
- Air permeability according to DIN EN 1026
- Driving rain impermeability according to DIN EN 1027
- Resistance to wind loads according to DIN EN 12211
- Durability test according to DIN EN 1191 resp. DIN 4102-18
- Tests on smoke-tight doors according to DIN EN 1634-3 resp. DIN 18095
- Fire resistance test according to DIN EN 1634-1 resp. DIN 4102-5

### Certification body for

- Windows and exterior doors according to DIN EN 14351-1
- Doors, gates and windows according to DIN EN 16034

In this case MPA NRW also offers the customer all services from one hand: The experts from Dortmund can also conduct tests on electronic systems in cooperation with external service providers and testing laboratories.

A modern accessible climatic chamber has recently been commissioned. In this chamber complete door systems as well as individual accessory parts can be tested on their resistance against various cli-

matic conditions like heat and cold. A further strong point of MPA NRW is its close cooperation with its customers before, during and after the test: you present your products to the test department and they determine the testability and the individually necessary scope of testing. "This saves costs for unnecessary preparations", says Hermann Jansen.



Climatic chamber for environmental tests





# Dew, sun and rain in the laboratory

■ ■ ■ “We offer our customers an attractive overall package”, says Thorsten Frank, head of the testing laboratory for Analytical Chemistry. In the following you can find a service overview of his department.

## Let the water flow!

Sanitary fittings in use release heavy metals into the drinking water. While lead was in the focus a few years ago, we are now focussing on nickel: this substance triggers allergies. The drinking water ordinance has set limit values, the compliance with which is tested by MPA NRW in its laboratory for Analytical Chemistry by request of the manufacturer. The procedure simulates reality: two types of sanitary fittings with five test pieces each can be simultaneously connected to the water network. During continuous operation it then becomes clear which amount of harmful nickel or other heavy metals are released into the drinking water.

The water remains in a 24 hour cycle with 22 rinses and different periods of stagnation in the fitting. A sample is taken after every four hours of stagnation and analysed in the mass



**Lavatory taps in the test stand for determining the migration of heavy metals**



**Xenon weathering unit for three-dimensional samples**



**Salt-spray chamber according to DIN EN ISO 9227**

spectrometer with inductively coupled plasma.

## Metal in the mist

The scope of coated metals used in housing construction is almost infinitely large. Among other things sanitary fittings, door handles, window accessories, parts of the roof construction or trapezoid plates are used because the house owner appreciates the longevity of these products. This longevity has to be proved by endurance tests. Depending on the requirements of the individual product standard a test in the salt-spray chamber of MPA NRW normally takes 96, 240 or 480 hours – but also any other period of time is possible. During the test period a fine mist consisting of a five-percent salt solution simulates long years of use. Corrosion that would start in reality only after many years becomes visible in the chamber only after a few days of continuous operation.

## Leaktight in the screed

Underfloor heating is becoming more and more popular. Today mostly plastic tubes instead of copper tubes

are laid in the screed: they are more flexible and more cost-effective. However, as only few institutes in Germany test the material properties demanded by the standard DIN 4726, there are no manufacturers of testing devices. Therefore the experts of MPA NRW have developed their own testing device. This determines whether and how much oxygen diffuses into the tube. When the tubes are laid in the floor, the house owner has to be sure that they are leaktight.

Thorsten Frank, head of the testing department is always well-informed about the latest developments on the underfloor heating market: he participates in the national standardisation committee.

## Sun in the laboratory

The testing department for Analytical Chemistry recently acquired a xenon weathering unit, in which three-dimensional samples can be placed in order to determine atmospheric influences on the material.

“There are not many institutes which use such a device”, says Thorsten Frank, proudly presenting



The apprentices as a chemical lab technician taking samples at the test stand for determining the migration of heavy metals

Water samples for measuring the heavy metal content (below)

the unique selling feature of MPA NRW. Plastic components or coated metal parts can be placed into it. The sample is then exposed to light, and the light intensity is measured. Additionally, various comparative measurements are possible in order to determine the condition of the material before and after the test. Dew is simulated by spraying water. This is done to make the irradiation realistic. "In the laboratory we can simulate weather conditions in fast motion and thus determine if the material possesses the property required by the standard", explains Thorsten Frank. In another device flat samples can be tested on the same properties. These samples are mostly coated or painted metal sheets and floor coverings.

#### How thick is the layer?

The testing laboratory also offers its customers a non-destructive analysis of the thickness of metal layers. "Depending on the material we determine its thickness with the eddy-current method, the magnetic procedure or a wet chemical process", says the head of the testing laboratory.

#### A good basis:

##### Apprenticeship at MPA NRW

The laboratory for Analytical Chemistry is momentarily training two chemical lab technicians.

Originally, Hanna Ebert, 19, had wanted to study biochemistry. But then she thought that an apprenticeship as a chemical lab technician would be a better basis for this. The apprentice moved "from the beautiful Sauerland" to Dortmund and feels happy at MPA NRW which she found on the internet. In the testing laboratory she is integrated in responsible tasks and witnesses many processes.

Also her fellow apprentice Karina Kremer, 24, had at first wanted to study chemistry. But after having done some research on the internet she decided to do an apprenticeship as a chemical lab technician. She applied at MPA NRW "because I liked the company's mission statement, especially the team spirit described there and the furthering of the staff's professional development."



#### ■ ■ ■ | Testing services of the testing laboratory for Analytical Chemistry

- Tests in neutral salt fog according to DIN EN ISO 9227 and DIN EN 248
- Tests of the oxygen diffusion on underfloor heating pipes according to DIN 4726
- Measurement of layer thickness according to DIN EN ISO 2808, DIN EN ISO 2178, DIN EN ISO 2360
- Determination of the mass of zinc coating according to DIN EN 10244
- Determination of chrome (VI) according to DIN EN ISO 3613
- Determination of the carbon content on copper surfaces according to DIN EN 723
- Tests of the heavy metal release of fittings and materials.
- Weathering with UV-radiation according to DIN EN ISO 4892, DIN EN ISO 16474 and DIN EN ISO 15187



# Audit underground

■ ■ ■ The auditors of MPA NRW went down a coal mine at the Ruhrkohle Aktiengesellschaft in order to carry out an audit



After about one hour underground the bell sign of the pit cage operator brought everybody back to the light of day

At the end of 2018 the last black coal will be extracted from the mines in the Ruhr district. But the impacts of mining will keep the experts busy for many years. "It is a never-ending task", says Artur Orlikowski. In August 2016 the head of the department "Certification of Quality Management Systems" at MPA NRW visited the Ruhrkohle Aktiengesellschaft (RAG) together with his team of auditors for the annual audit which was to be carried out not only above ground but also underground. "Even if the collieries are no longer active the groundwater control has to be carried out continuously", explains the graduate engineer. A mammoth task for the RAG: about 80 million cubic metres of pit water have to be removed from the pit per year in order to prevent pit water containing salts, sulphur and iron mixing with the drinking water.

These processes have to be coordinated and were therefore comprehensively described via QM-system

by the RAG in 2015. MPA NRW assessed and certificated this system.

Besides the normal monitoring of the management and administration processes in the offices of the RAG, the audit "above ground" so to say, the surveillance audit also contained an audit "on site" in order to inspect the groundwater control.

After the "paperwork" in the offices the audit team went into the coop to change. "We received a complete miner's gear including helmet with miner's lamp and breathing apparatus in case of an emergency", says Artur Orlikowski. They went down the "Zollverein" in Essen. In this mine which is well-known as an architectural and industrial monument they went down a thousand metres in a pit cage with a speed of two metres per second. "It took about eight minutes until we were down there. The temperature on site was 30 degrees Celsius." The auditors surveyed the pump system, its maintenance and repair organisation.

## ■ ■ ■ | Personnel updates



### Dr. Joanna Krasch

As from 7 November 2016 Dr. Joanna Krasch is the new head of section "Construction Safety". Since 2010 she has been head

of the department "Thermal Insulation, Organic Building Materials and Analytical Chemistry" and continues to participate in national and international committees like the German Institute for constructional engineering (DIBt). For many years the graduate chemist has also participated in the development of product and testing standards at the European Committee for Standardisation (CEN) and the German Institute for Standardisation (DIN).



### Dr. Matthias Dümmler

On 1 November 2015 the head of department "Safety Glass", Dr. Matthias Dümmler also became head of section "Radi-

ation Protection, Calibration, Quality Management". Furthermore, the graduate physicist participates in national and international standardisation committees. Apart from that he functions as a consultant for the Federal Ministry of Transport and Digital Infrastructure in the sphere of motor vehicle glazing as well as in national expert committees and the committees of the United Nations (UNECE).

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