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Hydraulic Test and Exhibition Stand for Hawle Valves in the Modeling Hall of the Faculty of Hydrotehnics in Timisoara

Ioan David¹, Teodor Eugen Man¹, Hans-Jürgen Brenninger², Rupert Wagner², Calin Giosan³,
Radu Racelescu⁴

Abstract.

In the paper the realization of an Hydraulically test and exhibition stand in the modeling hall of the Faculty of Hydrotehnics in Timisoara is presented which is an exhibition stand with HAWLE fittings, combined with the test region for students and researchers. The idea of such a stand was initiated in 2008, during a cooperation visit by Professor David from Politehnica University of Timisoara, at the Hawle Company, Germany. The next and deciding step was the visit by Mr. Brenninger, Chief Executive Officer by HAWLE Company at the Faculty of Hydrotehnics in Timisoara in 2009 where the cooperation between both institutions was discussed started with the support of dean prof. Man. The planed test and exhibition stand is fully executed in the modeling hall of the Hidrotehnics Faculty of Timisoara and the first operational tests were also carried out. The stand including the world's highest standard of products for the water industry and represent an important knows how center in Romania.

1. INTRODUCTION 1.1 60 YEARS EXPERIENCE IN WATER ENGINEERING

Timișoara, important administrative, cultural and industrial centre in the West of Romania acquired the quality of "*civitas academica*", since the beginning of the XXth century, with the foundation of the Polytechnic School of Timisoara by Royal Decree in 1920. The Education reform of 1948 brought many changes as far as organization and university study programmes are concerned. In the university centre of Timisoara there were founded 4 higher education institutes: Teaching

Institute, Polytechnic Institute, Agronomical Institute and Medicine Institute. The Polytechnic School became the „Traian Vuia” Polytechnic Institute of Timisoara and coordinated the teaching, technical, scientific and research activity of 4 different departments with 18 specializations (sections) for future engineers: Department of Mechanics, Department of Electrotehnics, Department of Constructions, and Department of Industrial Chemistry.

In 1948 the Hydrotechnical section was founded as part of the 18 specializations provided by the Polytechnic Institute of Timisoara belonging to the Department of Constructions together with the Civil industrial and agricultural constructions specialization. In the university year of 1952/53 the Water supply specialization was established within the Hydrotechnical section. This specialization functioned until 1956/1957 when the Department of Constructions was reorganized in two sections: Civil, Industrial and Agricultural constructions (CCIA) and Hydrotechnical Installations (CIH). In 1962/1963 the Agricultural Hydrotechnical section was founded (HA). In 1968/69 it became the Real estate improvement section (IF). Thus was founded the Department of Hydrotechnical Constructions and Real estate improvements (CHIF)”.
Since the foundation of the Hydrotechnical section until now, among the teaching staff there have been activated and are still activating prestigious professional academics with remarkable didactic, technical and scientific contributions in training future

¹)UNIVERSITY “POLITEHNICA” FROM TIMIȘOARA FACULTY OF HIDROTEHNICS Str. George Enescu 1/A Tel: +40-256 404116, Fax: +40-256 404117 300022, Timișoara, www.hidro.upt.ro, decan@hidro.upt.ro, ioan.david@gmx.net.

²)HAWLE ARMATUREN GMBH Liegnitzer Straße 683395 Freilassing, Deutschland Tel. +49 8654 6303-219, Fax +49 8654 6303-222, <http://www.hawle.de>. ³)S.C. HAWLE S.R.L Str. Calea Sagului 73, Jud. Timis Tel.: +40 356 800 667; Fax: +40 356 800 668, www.hawle.ro, calin.giosan@hawlw.ro. ⁴)S.C. AQUATIM S.A. Timisoara, 300081, Str. Gh. Lazar nr. 11/A, Tel: +40 256.294.756, Fax: +40 256.294.753, aquatim@aquatim.ro, www.aquatim.ro.

engineering specialists in hydrotechnics and hydrotechnical works in Banat and all over the country.

The hydrotechnical education of Timisoara entered a new era when the Faculty of Hydrotechnics was founded within the Technical University of Timisoara, in 1990 departments: Department of Hydrotechnical Constructions (CH; Department of Real Estate Improvements and Rural Development (IFDR) and Department of Hydraulics and Environment Engineering. These organizing measures established the hydrotechnical education of the western Romania conferring it a prestigious place together with the academic centers of Bucharest and Iași where Faculties of Hydrotechnics had been existing for several years.

Currently, when we celebrate the 20th anniversary of Hydrotechnics Faculty, the Faculty is composed of two departments: Department of Hydrotechnical Constructions and Real Estate Improvements (CHIF) and the Department of Hydraulics, Sanitary Engineering and Water Management (HISGA).

During all this period of about 20 years there have been significant changes concerning the content of the teaching and scientific research activity. The traditional themes have been reoriented and expanded accordingly to the new needs according to the framework conditions established by the integration of Romania to the European Union. Among all these, we shall mention certain major aspects such as the environmental impact of hydrotechnical elements of all kind, assessment of pollution level and technical and engineering measures necessary for water and soil conservation, of ecosystems in general, aspects related to the efficient and appropriate establishment of water supply systems and sewerage in rural areas, used water purification systems, hydrotechnical and real estate improvement systems for a sustainable developments, major importance works necessary for enforcing the infrastructure of the country. Digital models and modern calculation techniques in all hydrotechnical engineering fields, environment protection and sustainable development have been applied. A prestigious professional teaching staff made of 14 professors, 3 lecturers, 13 paper coordinators, 3 teaching assistants and 2 preparators out of whom 23 have a PhD. Degree ensure the training of future specialists in hydrotechnics.

The development of this specialization and the diversification of the research activity led to the possibility of various qualifications by the young generation, by enrolling in a PhD programme.

Now when we are celebrating the 20th anniversary of our Faculty and more as 60 years of hydrotechnical education in Timisoara, we express our deep gratitude and honor to our forerunners, we appreciate the achievements of our present staff and hope in the successful achievements of our future generations.

In this regard the realization for this occasion the Hydraulic test and exhibition stand in the modeling hall of the Faculty of Hydrotechnics in Timisoara, which including the world's highest standard of products for the water industry, combined with the test region for students and researchers, represent a small step because it is a important knows how center in Romania.

1.2 OVER 40 YEARS OF SUCCESS HAWLE COMPANY

Hawle Armaturen GmbH, based in Freilassing, Germany, was founded on 10th April 1967 by Engelbert Hawle Jr. and Hans Fach.

At that time, Mr. Hawle Sr. had already invented the first resilient-seated gate valve with O-ring spindle sealing's. Since then the development of the Hawle Armaturen GmbH business has been characterized by superior levels of growth, and Hawle is now one of the market's leading manufacturers of fittings, gate valves, flanges, valves and molded parts. Our own ideas, the motivation that our customers awaken in us, and the global exchanges that take place between the autonomous affiliate companies and licensees provide a range of products that is focused on the customer. The driving forces behind Hawle Armaturen GmbH are its several hundred motivated employees, who work with a responsible attitude and with the well-being of the customer in mind.

Systematic quality

We believe that quality is something that can be both controlled and measured. It is for this reason that our company introduced a quality management system several years ago, covering all areas of operation and all departments: construction, materials handling, production and dispatching. The standards that we apply are supported by the strict guidelines set out by the German Institute for Standardization (DIN). The work of HAWLE Armaturen GmbH is based on a quality management system that complies with DIN EN ISO 9001 and is certified in accordance with this. The concept behind this holds that not only quality but also the steps taken towards achieving it require standardization. Work processes that are organized and documented according to this principle will ensure that all products achieve perfect quality-standards.

Our customers also reap the benefits of our quality management system, in the form of a five-year warranty on all HAWLE Armaturen GmbH products.

In tune with the environment

Hawle Armaturen GmbH puts the issue of the environment and how to protect it into practice in every single aspect of its work. In its environmental policy, the company commits itself to 14 mandatory guidelines for environmental protection, which encompass every area of the company. Since 1996 the Freilassing and Fürstenwalde sites have been using a certified European environmental management tool that complies with EMAS (Eco-Management and Audit Scheme). Where alternative energy sources concerned, Hawle puts its faith in environmentally friendly solar power, and has installed an extensive solar panel system at both sites. The production processes which have undergone optimization over several years are helping to protect resources; in its position as a manufacturer of fittings for municipal potable water, Hawle is keenly aware of the sensitivity that surrounds this issue. The award of the 1998/99 environmental prize by the company "Arbeitsgemeinschaft Selbstständiger Unternehmer e.V." has highlighted Hawle's endeavours in this area.

High standards from a single source

Manufacturing products that satisfy even the highest customer requirements has been the source of Hawle Armaturen GmbH's motivation for over 40 years. In this respect, the Freilassing and Fürstenwalde production sites are crucial links in an efficient manufacturing chain.

Duktil Guss Fürstenwalde, the company's in-house foundry, is where high-quality unfinished castings are manufactured. The cast material is then processed in Freilassing using the latest CNC production systems. Following an aggressive bout of abrasive blasting, the EWS coating - an epoxy powder coating manufactured using a fluidized bed sintering process - is melted onto the heated casting surface. The use of industrial robots during this provides an even coating thickness (at least 250 μm^*). Hawle even produces the elastomeric/plastic components that are required for the final assembly process in-house. Before shipping, all products are subjected to a rigorous final inspection procedure.

2. HYDRAULIC TEST AND EXHIBITION STAND FOR HAWLE VALVES

The idea of realization, an exhibition stand with HAWLE fittings, combined with the test region for students and researchers was initiated in 2008, during a cooperation visit by Professor David from Politehnica University of Timisoara, at the Hawle Company, Germany. The next and deciding step was the visit by Mr. Brenninger, Chief Executive Officer by HAWLE Company at the Faculty of Hydrotehnics in Timisoara in 2009 where the cooperation between both institutions was discussed started with the support of dean prof. Man.

First there was the idea..... than the planning started...



Fig 1. General view of modeling hall, location of the planned stand

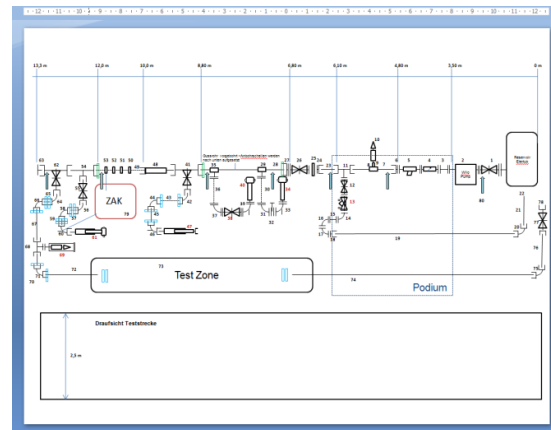


Fig.2 The scheme of the planned stand

...there was a lot of work to do...





Fig. 3. Aspects during the realization of the stand

Finally the test and exhibition stand is fully executed in the modeling hall of the Hidrotechnics Faculty of Timisoara and the first operational tests were also carried out. The stand including the world's highest standard of products for the water industry.



Fig. 4. Overview of the realized stand in the modeling hall

3. DESCRIBING OF THE COMPONENTS

1. BAIO®-SYSTEM

Flangeless connection for main-pipes
DN 80 - DN 300



For new installation and re-development work.
The fast connection in pipeline building.

The restraint system operates in opposing directions, interlocking the BAIO® double function socket couplings with Hawle spigot fittings, e. g. free flow underground hydrant; spigot/socket gate valve; F, S and R fitting.

All of the sockets of the BAIO® system are equipped with DCI pipe seals for potable water as standard.

- **Economic advantages**

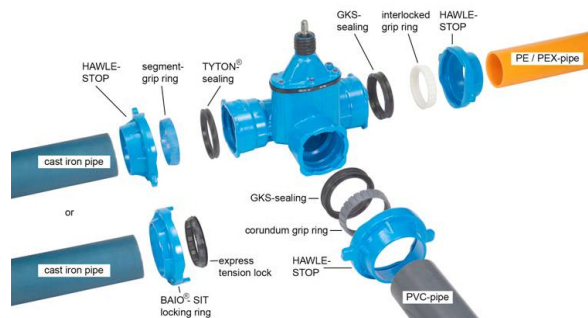
- no special tools required
- short installation time = lower costs
- less material = less investment
- reduced handling cost

- **Technical advantages**

- restraint connection
- long-term corrosion resistance
- flexible joint up to 3 °
- universal use for all types of pipes

- **Logistic advantages**

- simple stock keeping and less stock
- simple logistics at the job site



2. ZAK®-SYSTEM

Thread less jointing system for service connection
d 25- d 63

The ZAK[®] system is a thread less jointing technology connection for connecting to the service valve via a bayonet coupling, using corrosion-proof protected components that can be connected with each other applying simple manual forces.

- easy and quick installation
- thread less jointing system
- no hemp covering needed to seal the fitting
- integrated in pipe saddles, gate valves, valves and fittings
- reliable sealing because of double O-ring in the ZAK[®] connection

The ZAK[®] system is applied in a wide range of service connection products:

- pipe drilling and milling saddles
- service valves
- pipe fittings



3. Free-flow underground hydrant

Corrosion protection by means of fluidized bed epoxy powder coating and use of non-corroding materials

- **free passage**
 - high flow rate: approx. 153 m³/h
 - low head loss
 - subsequent drilling
 - alternative to drainmanhole
 - suitable for camera inspection
- **available with**
 - BAIO[®] spigot end DN 80
 - flange DN 80
 - PE tail d90 and d110
- **pipe cover depth: 0.8m – approx. 4.0m**



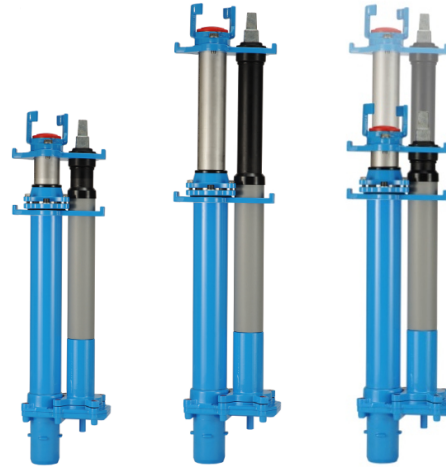
4. Hawle-Telehydrant DN 80

The telescopic underground hydrant has been developed to allow faster and easier access to underground hydrants without fitting a standpipe. The new telehydrant therefore combines the advantages of an underground hydrant with those of a surface hydrant.

- integral telescopic stand pipe
- jaw coupling replaced by new enclosed hydrant head
- high-grade corrosion-protected design by means of fluidized bed epoxy powder coating
- proven shut-off technology

⇒ **well protected from dirt**



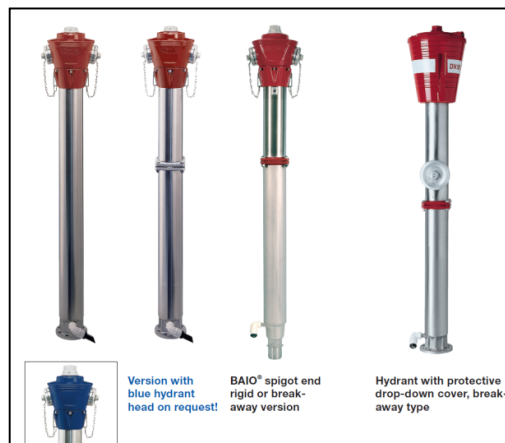


6. Stand post hydrant H4

- Fast flow rate:
 - DN 80 - 2 B: ca. 253 m³/h (requested in EN 14339 - 140 m³/h)
- With or without predetermined breaking point
- Use of stainless materials above and below breaking point
- Hydrant head made of aluminum with Syntorex coating,
- Subsequently rotatable
- Spare bolts in hydrant head
- Connections:
 - flange DN 80 and DN 100
 - BAIO® spigot end DN 80

5. Free flow underground hydrant, height-adjustable

- Cast components: GJS-400 (GGG-40)
- Medium pipe: stainless steel acc. to DIN EN 10088-1
- Protection jacket: PP
- Sealing's: EPDM, approved for food handling acc. to KTW standard
- Spindle and blank actuator: stainless steel acc. to DIN EN 10088-1
- Blank: stainless steel acc. to DIN EN 10088-1
- Cold-rolled - tensile strength > 1600 N / mm²
- Max. operating pressure 16 bar
- Corrosion protection: fluidized bed epoxy powder coating and use of non-corroding materials
- Minimum flow rate: 153 m³/h at a differential pressure of 1 bar (60 m³/h required by EN 14384)
- CE-label according EN 14384
- Pipe cover depth: / adjustable from:
 - 1.00m – 1.30m
 - 1.25m – 1.55m
 - 1.50m – 2.05m



Technical features:

Max. operating pressure: 16 bar

Material:

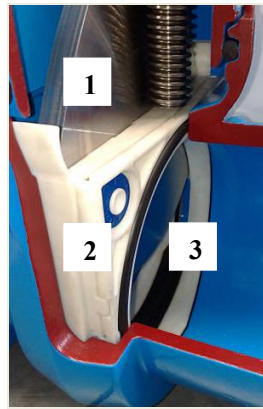
Hydrant head: aluminum alloy, resistant to saltwater with non-fading Syntorex coating

Column and standpipe: stainless steel

Valve rod / spindle: stainless steel
 Valve body: stainless steel

Accessories:

Drainage element for standpost hydrants



Hydrant ratchet key

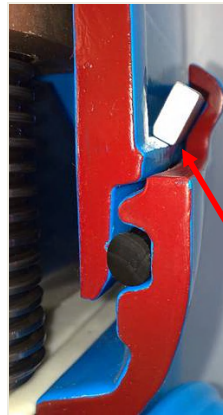


Full protection against corrosion

- Reliable, smooth and thus energy-efficient
- Screw less connection of valve body and bonnet
- The stainless steel shut-off blade is sealed against an elastomeric surface that is reduced to a minimum

7. K3® valve

The latest generation of shut-off valves - fascinating with technical innovation and modern design!



Screwless connection between valve body and bonnet



The name “K3®” is derived from the new 3-component sealing system of this innovative valve:

1. Stainless steel shut-off blade
2. Plastic inserts for bearing shut-off blade and fixing sealing element
3. Sealing with reduced surface

Because of the epoxy powder coating, the K3® is perfectly protected against all environmental conditions.

8. HaVent® air valves

Ventilation at the highest level for water pipelines

- Improved air intake and release capacity

- Extremely high air release during operation continuously variable from 0 to 16 bar
- High-grade materials
- Easy maintenance
- Excellent UV resistance
- Only for air release or air intake - on request
- PN 25 - on request



Large outlet cross section for maximum air release and intake capacity during pipeline filling or draining
 $A = 1500 \text{ mm}^2$

HaVent®

Technical features

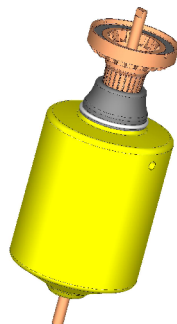
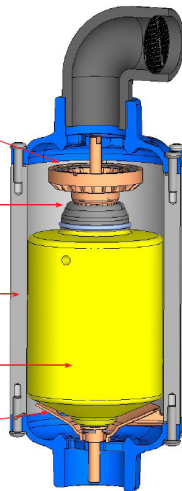
Large outlet cross section for maximum air release and intake capacity during pipeline filling or draining
 $A = 1.500 \text{ mm}^2$

Large air release cross section for reliable air release during operation
 $A_{\text{max.}} = 200 \text{ mm}^2$

High-grade enclosure of aluminium

Robust float of foamed plastics

Flow control for optimized closing



Valve mechanism

- No loose components
- Can be taken out in one piece
- Easy cleaning
- Easy replacement of wearing parts if required

9. Control valves



- hydraulically operated up to PN 25, DN32-400
- pressure reducing
- float valves
- pressure relief and safety valves
- check valves
- solenoid controlled valves
- pump control valves
- flow control valves
- pipe burst safety shut-off valves
- back flow preventer
- many others on request

4. FINALLY COMMENTS

Customer orientation, quality and innovation

For Hawle Armaturen GmbH, customer proximity represents the benchmark for our work. Communicating with customers, suggesting ideas as part of this process and drawing up solutions are the cornerstones up on which any customer relationship is built. Committed in-house and field service staff demonstrates a competent approach in catering for the wishes and needs of customers, as well as ensuring transparency at all stages of a process. Here at Hawle, our customers are right at the heart of what we do.

Innovative technology coupled with beautiful design comes naturally here. By means of its intelligent products, Hawle is creating new quality benchmarks for its customers and users. Accolades such the global *red dot design award* and the gold medal for innovation awarded to the Hawle Tele-Hydrant® at the "VOD-KA" trade fair in the Czech Republic, as well as the *iF Design Award* for the Hawle H4 stand post hydrant, are all proof of our appreciation of progressive ideas and investments.

Best workplaces in Germany 2009

The nationwide competition "Deutschlands Beste Arbeitgeber 2009" (Best Workplaces in Germany 2009) saw Hawle Armaturen GmbH ranking among the 100 best employers in the country.

This accolade is the sign of a reliable management team that works together with its employees with

fairness and respect, the employees' strong sense of identification with the company, and a powerful team spirit. Hans-Jürgen Brenninger, Managing Director of Hawle Armaturen GmbH, accepted the special award at the official gala ceremony which took place in Berlin on 12th February, 2009. Thanks to this outstanding appraisal, Hawle has managed to be one of the most attractive employers anywhere in Germany.

"This special award means so much to us. Achieving 50th place in the rankings is a clear sign that Hawle, together with its employees, lives out its corporate culture. Not only do we give our employees performance objectives to aim for, but we also provide them with an extremely attractive working environment," says Hans-Jürgen Brenninger.

For a great future

Special thanks from the HAWLE Company were expressed to the University of Timisoara for giving the opportunity to present the products here in Timisoara.

Our best wishes go to the lecturers, students and workers in the water industry, and we are looking forward to an excellent cooperation between them and the HAWLE Company.

REFERENCES

- 1.*** www.hawle.de
2. Man, T.,E., David,I., Sumalan,I., 60 years of hydrotechnical education at the "POLITEHNICA" University of Timisoara, Scientific Bulletin of the POLITEHNICA" University of Timisoara, Romania, Transaction on HYDROTECHNICS, Tom 53(67), Fascicola1, 2008, pg. 3-12