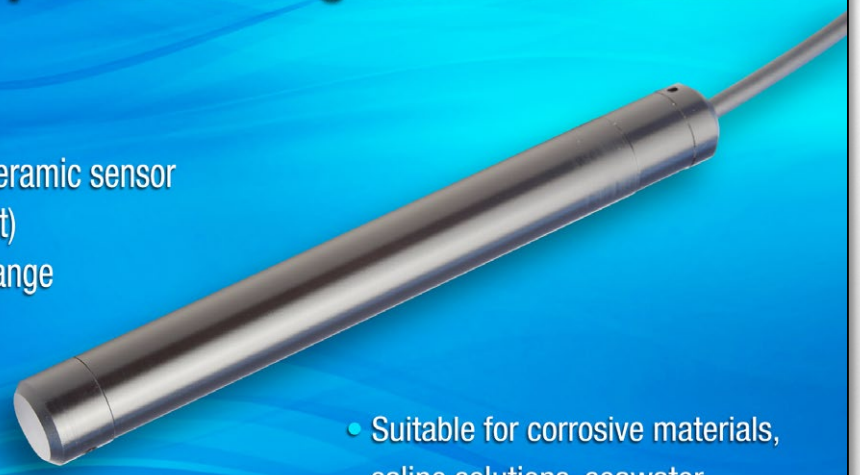
NIVELCO

2015/2

Magazine

NIVOPRESS N hydrostatic level transmitters with fully plastic housing from NIVELCO

- POM body
- IP68 protection
- Piezoresistive ceramic sensor
- Max. 20 m (65 ft) measurement range
- 24 mm (1") diameter



- Suitable for corrosive materials, saline solutions, seawater
- Remote programmable

PiloTREK – Pulse Burst Radar transmitter family

PRICE CUT! -200 EUR FROM THE LIST PRICE!

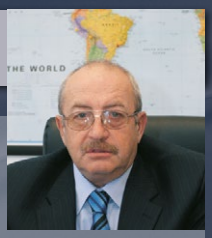
Effective from 1st January 2016 and valid for a period of one year.

Contents

NIVELCO Magazine 2015/2

Published by: **NIVELCO** Process Control Co.
H-1043 Budapest, Dugonics u. 11.
Tel.: (36-1) 889-0100 ■ Fax: (36-1) 889-0200
info@nivelco.com
www.nivelco.com

Introduction



Dear Partners!

*2015 proved to be also an extraordinary year in the history of **NIVELCO Group**, since several **NIVELCO** subsidiaries celebrated anniversary this year.*

*10 years have passed since **NIVELCO**'s Czech, Romanian, and Russian subsidiary companies were founded, and as we reported in our previous magazine **NIVELCO-POLAND** celebrated its remarkable 20th anniversary. In this issue we interviewed the company's executives and we provide a report about the birthday ceremony in the columns of our Magazine.*

*We remember back proudly to the challenges about the beginnings and the following successful businesses achieved during the market-building work. Thanks to all employees of **NIVELCO** for the efforts contributed to the company group's results. We continuously provide the suitable background and support as the basis of the future mutual successes.*

***NIVELCO** has been expanded the popular **NIVOPRESS N** hydrostatic level transmitter family with a new fully plastic housing version using piezoresistive ceramic sensor. You can read more about this new version submersible level transmitter in the Product News section. As usual, we published a good couple of application news, showing that **NIVELCO** devices can be found all around the world on various industry sites.*

*Please enjoy this issue of **NIVELCO Magazine** with great interest and visit our website for more news!*

Tamás Szőllős
President
(CEO)

New colours on the NIVELCO instruments

New blue covers for better recognisability

We are pleased to inform you that in addition to the continuous technological developments, ensuring constant improvement of our devices our company takes a recognisable step in improving the appearance of our devices. To ensure that our devices stand out from the environment **NIVELCO** changed the colour of the enclosure covers to blue instead of the standard sand colour.

The new painting will be surely a striking change for everyone which will be noticed when unboxing the first device with blue enclosure cover. We would like to see this colour scheme become one with the **NIVELCO** brand name in the future, giving a unique appearance to our devices. We regard as an important aspect that our devices are easily distinguishable from any other field instruments and allowing not to blend into their surroundings too much. With the contrasting colour combination **NIVELCO** devices are easily noticeable from far away, making possible to evaluate the level of instrumentation on a tank farm without needing a closer look.

The new colour concerns almost all level transmitters and level switches, excluding the following devices:

- **MAK-100** type optional, freely adjustable magnetic level switch which can be mounted externally to the **NIVOFLIP** Magnetic Level Indicator
- **NIVOCONT KSH-200** aluminium housing conductive multi-probe socket
- **NIVOMAG MK-200** magnetic coupling and **NIVOPOINT** magnetic tracking level switches
- **THERMOCONT TSP** Pt100 temperature sensors,

and these devices are manufactured continuously in the usual colours.

In addition to those listed above **NIVELCO**'s currently available **S-300** series EchoTREK ultrasonic level transmitters also won't be available with the new blue coloured cover. The new blue covers will appear in the soon to be released **EchoTREK S-500** series. This won't be the only change about the new series ultrasonic level transmitters since the transducers of the **EchoTREK S-500** units, and the full body of the **EasyTREK S-500** units will be manufactured uniformly with black colour instead of the previously used red (Polypropylene) and dark blue (PVDF) colours which were synonymous with **NIVELCO**'s ultrasonic units. The two transducer types can be distinguished by the markings engraved into the material.

The transducers manufactured out of Teflon (PTFE) will keep the white colour in the future.

New colours on the NIVELCO instruments

The blue enclosure covers are currently under manufacturing in case of the plastic (PTB) and the paint coated aluminium material, which housing materials both can be considered as the traditional housings of **NIVELCO** products.

The stainless steel housing devices will be supplied in the familiar form such as the **PiloTREK W□K** Pulse Burst Radar which was introduced in the **2014/1** issue of the **NIVELCO Magazine**. A new objective in connection with the stainless steel housing is that in the near future more and more level transmitters will be available with this robust stainless steel housing as a standard type, which meets the special requirements of certain industry segments, such as Food & Beverage, Marine, or Oil and Gas.

During the recent years **NIVELCO** introduced the usage of a protective plastic foil against scratches on the windowed covers used on those units which are equipped with **SAP-200**, or **SAP-300** plug-in display module. These foils provide perfect protection during transport and installation, so when the foil is removed, the costumers get a device with completely flawless, transparent window.

Of course this is not the last step in order to make seemingly perfect the exterior of our devices therefore other improvements can be expected in the further future which have no direct impact on the functionality.
We hope you will find our new covers pleasing, which appeared gradually on all of our aluminium and plastic housing devices, apart from the exceptions mentioned above.

Péter Szőllős
Vice President
NIVELCO Co.
pszollos@nivelco.com

Radar measurement stand

Laser distance meter at the quality control

NIVELCO has been always paid special attention not only to its own instruments, but the production and quality improvements as well. This can be measured on the significant number of specially developed custom equipment working not only in the Production Department, but also in the laboratories of the Quality Control Department. As a very good example in the previous issue of our Magazine we already presented the high precision measuring bench which allows the verification of the **NIVOTRACK** magnetostrictive level transmitters.

Next to the measuring bench at Quality Control Department there is another spectacular work tool, the rail-track movable measurement stand used for verify the **PiloTREK W-100** Pulse Burst Radar level transmitters.

At the same time up to six **PiloTREK** units can be mounted onto the measurement stand and can be tested in the entire 23 meter (75 feet) measurement range. On the wall in front of the stand there is a steel plate having ideal characteristics and size in the aspect of the microwave impulses.

The measurement results of the calibrated radars on the stand are compared with the reference values provided by high-precision laser rangefinder.

With the Bosch **GLM 100C** Professional laser meter the measured values can be transferred easily and quickly directly to a PC via the integrated data interface. The measurement process is fully automated which is done with the special version of **EView2** configuration software modified in accordance to the needs of the Quality Control Department. Just like that the **PiloTREK** transmitters are communicating with HART protocol, the Bosch GLM 100 C rangefinder is also use a virtual serial port to be connected to the computer.

The Bosch unit is connected with micro-USB port, and the transmitters are connected with the help of a **UNICOMM SAK-305** HART-USB modem to the calibration computer and communicate with the **EView2** software. The software compares the measured values of the **PiloTREK** transmitters with the reference measurement data of the laser distance meter and if the difference is within the permissible limits, then the colleagues of the quality control can continue the measurement in the next measurement distance according the verification procedure.

Csaba Nádasdi
Head of Marketing
NIVELCO Co.
csnadasdi@nivelco.com

Interview with the leaders of NIVELCO-POLAND

Irena and Dariusz Piszer, the leaders of NIVELCO-POLAND

- **Now we know your story from the previous issue of the Magazine concerning the beginnings with NIVELCO, but what is the story about you and your wife that you are both working in the same company for so many years?**

Dariusz Piszer (D.P.): Sometimes we both asks the same question but I think tolerance, well defined fields of activity and responsibilities within company solved this issue very well. The original plans were to start **NIVELCO-POLAND** with a larger group of committed specialists, but due to personal problems finally we started with three – me, my wife Irena and our colleague Andrzej Samul. Due to this fact we have had much more work than earlier expected and everybody did what was his task. Irena's was first of all the financial and legal issues within company, mine was technical and trade and Andrzej handled the service and logistics. Fortunately soon we were able to be supported by Waldemar Ciesla and then Ms. Zofia Kramar and this started to change daily life and operations in **NIVELCO-POLAND** Company. I have to admit that generally we were very lucky regarding the people who decided to join to us and now they are members of my "dream team".

- **However the eternal friendship between the Polish and Hungarian nations are known worldwide, in 1995 you were starting to introduce a quite unknown Hungarian brand in the Polish process automation market. These were the challenging days, aren't they?**

Irena Piszer (I.P.): Of course, but If I could choose I am still prefer those times because now the market crowded with so many, sometimes very "exotic" and not very durable and solid competitors. Twenty years ago the market and the people were hungry for all novelties and **NIVELCO** however was coming from the same side of "Iron Curtain" was considered as a very innovative company marketing aggressively relatively new solutions like first compact ultrasonic level transmitter. In my opinion all of us, I mean the broad **NIVELCO Group** team both in Poland and Budapest,

worked very hard to earn our customers' trust and big satisfaction bring us customers telling "your transmitters works better than…" any very well-known competitor can be mentioned at the end of this sentence. Of course there were many statements like "you'd better sell Hungarian wine", coming very often from people connected with our competitors, but my answer was always "Hungarian wine is one of the best over the world and the same is with **NIVELCO**'s instrumentation".

- **The subsidiary celebrated its 20th anniversary recently so there should be something you are doing very well. What do you think what is the main reason laying behind NIVELCO Poland's success?**

I. P.: In my opinion foundations of our success is the good team of people who likes each other, then this relation is conveyed to relation with our customers who appreciate our commitment and engagement in solving their measurement tasks. Of course this is possible only with proper, highest quality instrumentation which we have in our hands and be able to present it to the customers. Instrumentation which is reliable and durable makes us being able to fulfil our customers' demands and expectations.

- **After the 20th anniversary of NIVELCO Poland how you see the future of the company? How about the following 20 years?**

D.P.: Our aim is to provide our customers innovative and reliable means for various measurement tasks first of all industrial level and flow measurement. We believe that our mother company will provide us proper instrumentation to realize this task also for coming years, hopefully in the next 20 years too.

Interview with NIVELCO's retired quality control manager

Zoltán Botos, NIVELCO's ex- quality control manager

- **What is your story concerning NIVELCO?**

In 2005 I saw **NIVELCO**'s job advertisement in a newspaper I usually don't buy. It just accidentally got into my hands and I was very glad when I saw the job description completely fitting for me. It was no question that I immediately submitted my application for the offered quality controller position.

- **How do you recall the beginnings?**

After the job interview I was hired into the quality control department which was planned to be totally reorganized at that time. In the beginning we were under the leadership of the Production Director which was a source of several debates, making the daily routine regularly much more colourful. In those days the department's instrument farm was in need to be improved and expanded. What is more the available space for us was not really enough which also didn't make our job easier. A few years later I was appointed as Head of Quality Control Department, so I got more active role in achieving maximum commitment on the case for quality.

- **In what positions did you work in the past 25 years?**

Before I got to **NIVELCO** I have worked as the manager of **Duna Television**'s camera and control department. Later I worked as an environmental manager at **MATÁV**'s (Hungarian Telecommunications Company) as the Director of Purchase. At **NIVELCO** I was working in the quality control department for nearly 10 years first as a quality controller, than as the leader of the department.

- **What lays behind NIVELCO's success?**

In the absence of deeper insight I cannot say any word about the work of the other departments but I can say that the work of the quality control department actively contributes to the current and future successes of **NIVELCO**. The high quality which is continuously guarded by us and the three-year full warranty are essential aspects which could be important for the customers when an instrument purchase emerges.

Moreover I have to mention the positive price/performance ratio, as well as the flexible solutions to specific needs what are typically neglected by many of our competitors. These factors are also the strengths of **NIVELCO**.

- **What was the most memorable period for you over the past ten years at NIVELCO?**

The first five- or six-years time was the period of continuous development when we have risen above the difficult circumstances. The instrumentation of the department got better week to week and the number of the team constantly increased with excellent members. Likewise the working environment conditions progressively improved along with the working-relationship with the colleagues form the other divisions. With all these achievements we could solve more smoothly the increased tasks caused by the more and more increasing production volume.

Balázs Csibráki
Marketing Engineer
NIVELCO Co.
bcsibraki@nivelco.com

NIVELCO Tehnica Masurarii is 10 years old

10th anniversary of NIVELCO's Romanian subsidiary

10 years is a long time, in 10 years even the trees grow strong and bear fruits if we care for a tree. It is the same situation also with companies, such as with **NIVELCO Tehnica Masurarii**. 10 years ago we were a small group who tried to make a stand against the fierce business environment, through economic crises, between tough competitions. I have to say we have succeeded because we created a strong and confident team. We achieved to spread the **NIVELCO** brand name throughout Romania and made its products familiar on the market gaining respect from our partners and even among the competitors. In the last 10 years we managed to multiply our sales, we gave advices to our mother company about development directions of some product ranges. We have successfully turned into a **NIVELCO** subsidiary company which earned enviable reputation in the Romanian process automation market.

Therefore the 10-year anniversary even was not about the products, but about the story of our team. A company's most precious value is the team, and the people who are working for **NIVELCO** Tehnica Masurarii they are valuable parts of a well-forged, stable team, where everybody knows their place and their duty. So it was a great pleasure to us that we could spend together the celebration in a pleasant environment, with our friends and colleagues from the mother company and the other subsidiaries. During the one and a half day we recalled the 10-year long history of **NIVELCO Tehnica Masurarii** from the very beginning until nowadays.

As a part of the team building activity we travelled with a more than 100 years old locomotive between the village of Sovata and Câmpu Cetatii. The train passes over a 14 kilometer (8.7 mile) distance through the most beautiful areas of Mureş County.

After the trip with the steam locomotive we made a journey with military transport vehicles in the Niraj Valley where we could admire the beautiful landscapes of Transylvania and the Becheci mountain peak wrapped in mist.

Thanks to our respectful economical results we moved to a new, modern and larger headquarters. We would like invite all of our estimated Partners to visit our new location at Sângeorgiu de Mures.

See you again 10 years later in a similar event!

András Olteán-Péter
Sales Director
NIVELCO Tehnica Masurarii SRL
romania@nivelco.com

20th birthday of NIVELCO-POLAND

Glimpses from the celebration of 20th anniversary of NIVELCO-POLAND

On the 9th and 10th of June the Polish subsidiary company of **NIVELCO** celebrated the 20th anniversary of its foundation. This event was held in beautiful, historical city of Kraków located near to the office of **NIVELCO-POLAND** in Gliwice. The celebration has a form of Jubilee Seminar in which the full team of our Company, the top management from **NIVELCO Process Control Co.**, our colleagues from **NIVELCO Bohemia** and **NIVELCO** Romania and more than 25 customers attended. The first presentation was held by **Mr. Tamás Szőllős**, CEO and owner of the **NIVELCO Group**.

In his presentation Mr. Tamás Szőllős presented history of **NIVELCO**, the current situation, the product ranges and the intentions for the future. The presentation was listened to with special attention by our guests who got acquainted with many details and the background of our daily operation.

The next presentation was held by me as the Sales Director of the subsidiary. I showed the most important stages and milestones of **NIVELCO-POLAND**'s life, and shared some interesting and challenging applications and some details about the coming new products with the audience and I drew up the plans for the future.

After the presentations one of the most pleasant moments came for **NIVELCO-POLAND** team, presenting individual memorial medals for each member of team by Mr. Tamás Szőllős as well as diploma for the company itself to honour good work of our people.
When the official part of the celebration ended there was time for some refreshing as well as for informal talks behind the scenes with our esteemed and loyal customers. There were some discussions about potential businesses, applications and expectations for expansion of the product ranges as well as functionality of present ones.

20th birthday of NIVELCO-POLAND

The programme of the anniversary event continued with a sight-seeing tour when we had a chance to see the beautiful city of Kraków and its most interesting places. At the main market place we listened to the "Hejnal" performed by the trumpeter from one of the tower of Mariacki church. Then we walked on the old narrow streets of the old town and visited the Wawel including the Royal Castle and the Wawel Cathedral along with many, many more famous historical buildings located on the side of the Vistula River.

For the sightseeing our guests enjoyed professional guidance during the day. The day ended at a charming regional restaurant where our guests could taste Kraków regional food in nice and relaxing atmosphere.

The next day after the presentations and the sightseeing tour there was another pleasure to see the Wieliczka Salt Mine which is a World Heritage Site. There we saw dazzling caves made in stone salt, full of figures made of single block of salt, magnificent candelabrums and many, many more. During our underground quest we heard a concert performed by the miners' orchestra and met the legendary treasurer who brings luck and happy to miners and let's hope also to us.

All members of the **NIVELCO-Poland** team are grateful for all the guests who honoured our 20-year celebration by their presence.

Dariusz Piszer
Sales Director
NIVELCO Poland Sp. z o.o.
poland@nivelco.com

10th anniversary of NIVELCO Bohemia

10 year anniversary celebration of NIVELCO's Czech subsidiary

NIVELCO Bohemia s.r.o. was founded in December 2004 and the history of our company was published in the 2014/2 issue of the **NIVELCO Magazine**. On June 2015 the Czech subsidiary of **NIVELCO Process Control Co.** celebrated its 10th anniversary.

The celebration took place in the famous vineyard U Kapličky located in south Moravia, where 96% of vineyards in Czech Republic are situated for its sunny weather.

There were more than 30 customers and business partners invited to celebration together with top management of the mother-company and the colleagues from the other subsidiaries.

All guests who attended on the event received a small present package including a bottle of wine, a bottle opener and some marketing materials.

The event was accompanied with hot and sunny weather and officially started with the launch where traditional Czech food was served. After launch, a presentation by Tamás Szőllős CEO was given on the topic of the company's history together with a series of presentations by **NIVELCO Bohemia** team focused mainly on the products and new developments. There was also our showcar called **NIVELCO Demobus** located outside the conference room for those who wanted to see our products with their own eyes.

10th anniversary of NIVELCO Bohemia

Soon after the presentations part ended, relaxing activities and fun programs started including bow shooting and Segway personal transporters ride with instructor. Both programs were really popular despite the very hot weather and all the feedbacks came from the participants were positive. Those who finished they could choose from a wide variety of wellness programs or simply enjoyed the free time in the hospitality of a local bar providing drinks and snacks until the dinner.

The dinner was served in form of buffet tables again made of traditional dishes and after the dinner wine tasting was organized in the huge wine cellar underground. Each and every participant had a chance to taste seven different wines and was informed about the background of the particular wine by a local sommelier. The rest of the evening was spent with our partners in the dining room full of food, drinks and pleasant atmosphere.

Hereby, we would like to thank to all participants for their time and efforts and also to the organizers for their support and services contributing to the successful celebration event.

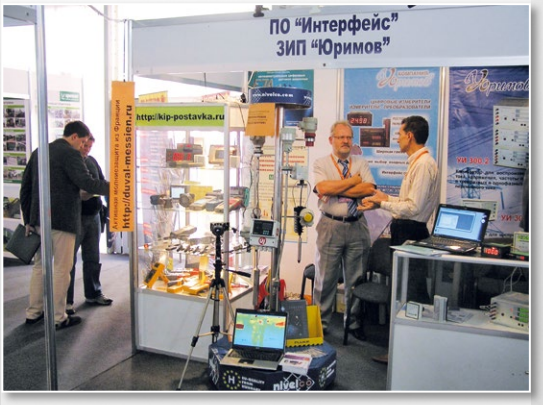
Karel Ševčík
Marketing
NIVELCO Bohemia s.r.o.
bohemia@nivelco.com

"OOO NIVELCO-Rus" became 10 years old

Covering the largest area among NIVELCO subsidiary network

"OOO NIVELCO-Rus" the Russian outpost of **NIVELCO Process Control Co.** celebrated its 10th anniversary this year. In the constantly-changing Russian market this can be considered a grown-up age for a company so until now we earned the attention of the competitors.

How it is started? The most competent person for answering this question is **Mr. Tamás Szőllős**, the president of **NIVELCO Process Control Co.** who made the first step in order to found a **NIVELCO** company in Russia. I, as the writer of this article joined the commercial activity in the next phase, during the establishment. This happened in 2005, at an exhibition in Moscow where **NIVELCO** were introduced in the Russian market.



The first three years was the period of continuous investments. In the beginning the Russian representation structure changed a lot, evolved from day to day and the single-member **NIVELCO** representation established the core of the distributor network in Russia. The subsidiary opened its office in Moscow suburb, Troick. Thanks to the continuous developments, this area is now one of the new districts of Moscow. The initial task was not easy, because we had to enter into a market which is dominated by the biggest competitors for more decades. Therefore we started a two-front battle and this action resulted that in 2007 we had worked with four-five potential distributors and numerous end-users. In order to improve the effectiveness of our work we participated in local exhibitions, we organized many company and product presentations and training sessions.

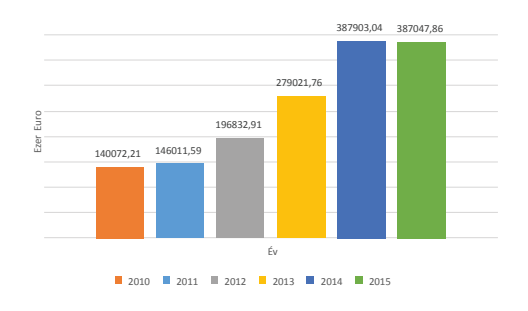
As a result of the hard work and the patience of management of the mother company we even got through the Asian border of Russia.

The Russian market can be mainly characterized by its composition which is significantly different from the basic strategy of **NIVELCO**. This means that water industry and the water-related sectors are not the most important and most advanced ones. Instead of water the primary industries are the mining and transmission of energy carriers (oil and gas), the industries processing these materials such as the electric power industry or the sectors using the energy carriers as raw materials like the petrochemical industry.

In these sectors the protectionism is strong enough to support the local companies which have been on the market for so many years.
This is why it was an outstanding achievement that we built a distribution network which provided the possibility to enter these industrial sectors. This resulted that newer and newer sales channels became available and we also found a labelling partner with the need for serious volume of level instrumentation supplying into the filed of the energy industry.

"OOO NIVELCO-Rus" became 10 years old

Another strongly emerging sector is the nuclear energy industry. In addition to these the sales volumes are also growing in the traditional water, food and construction industry sectors as well as the distributors are also developing. The progress is visualized in the following table:



The extension is essential in order to reach new sectors (e.g. shipbuilding) and those which are quite untouched by us (such as the water resource management) industries. We should enhance the professional level of the local distributors by supporting them with organizing more training events.

The certification of the products in the widest possible range is a key element in the future success, because this aspect significantly increases the marketability of the **NIVELCO** products in Russia. This process has been started and the larger wave meant by receiving more and more certifications are expected in the near future. This affects the expansion of the market, after the EACU (Eurasian Customs Union) is successfully growing in the region. In addition to the three founding countries (Russia, Belarus, Kazakhstan) new members have appeared (Kirgizia, Armenia) and more countries have indicated their intention to join. As a result of the new members some of the Russian certificates could be valid within the whole area of the EACU.

Of course the simplest method of the expansion is to increase the number of the distributors, primarily in regional split, secondly in industrial sectors.

Considering the prosperity business period which can be experienced on the world market and also on the Russian market the boom growth has been replaced with quality improving this year that may result another rapid volume growth in the future during the economic expansion.

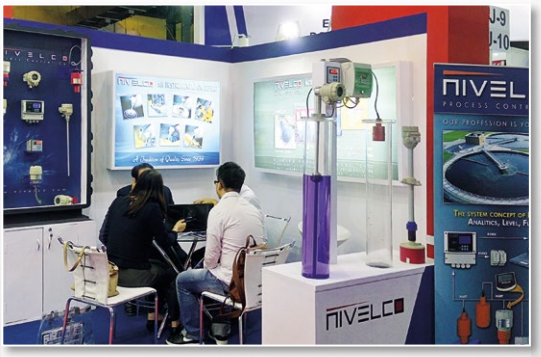
For this we wish everyone good health and strength that money can't buy, for everything else, there's your wallet.

Attila Kovács
Managing Director
OOO „NIVELCO-Rus"
russia@nivelco.com

AUTOMATION 2015 expo at Mumbai – India

Report about the participation on AUTOMATION 2015 exhibition

"AUTOMATION 2015" the International Exhibition at Mumbai, India was another successful participation in the Far-East Region for **NIVELCO Group**. The mission of the Automation expo is to promote new technology and solutions for the industry.



In the 4 days of the fair (from 24th to 27th August 2015), there was an overwhelming response of more than 500 visitors to **NIVELCO**'s 24 m^2 (≈260 ft^2) well-designed attractive booth which displayed live application of **UNICONT PSW-100** ultrasonic pump control system along with a **NIVOTRACK M-500** magnetostrictive level transmitter. In addition the "**NIVELCO-Demobag**" was used nicely to display the entire **NIVELCO** product range in live working condition. We were happy to come into contact with 174 quality visitors for their serious interest and requirements for various applications in level measurement and control tasks.

This platform provided us many new potential customers and increased our penetration into the market.

NIVELCO's Indian partners and distributors also visited the stand and we were happy to meet them at this important occasion.

We thank to all of you visited us on the show and our distributors who always support us on every occasion.

Shrikrishna N. Deshpande
Managing Director
NIVELCO India Pvt. Ltd.
india@nivelco.com

TAUD Conference and Exhibition – USA

NIVELCO instruments in the American exhibition

On August 12-14, 2015, Tennessee Association of Utility Districts (**TAUD**) held their annual Tennessee Conference and Exhibition in Gatlinburg. The objective of **TAUD** is the promotion and advancement of water, wastewater & gas utility members along with businesses that provide products and services to these utilities.

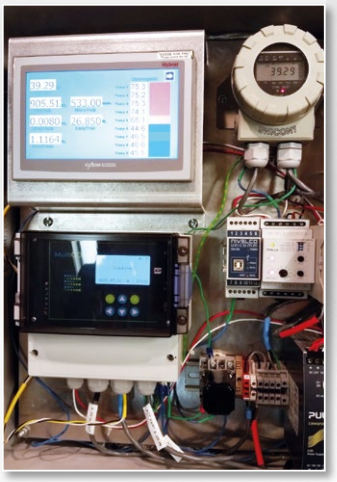
These objectives include: the furnishing of adequate, safe and satisfactory utility services and the conduct, operation, and maintenance of systems for the furnishing of water, sewer, sewage disposal, gas, electricity and other important services. The TAUD consists of utility districts from around Tennessee, including: Knoxville, Memphis, Chattanooga, Kingsport and many others.

The conference offers ample opportunities for continuing education on both the administration and operational sides of utilities. Over 100 vendors displayed products, allowing for plenty of opportunities to discuss trends with colleagues and industry representatives. In preparation of this well attended event, **George Paris Company** designed and manufactured special displays for **NIVELCO** products. Among the pictures you can see the sensor rack and control platform.

The colleagues of our representative worked diligently to set-up, install, configure, interconnect and successfully display a 100% functional data acquisition system from the sensor level to the user interface.

The demonstration tool utilizes three instrument loops; two are connected via HART to the **MultiCONT** which then interfaces with the 7″ hybrid PLC/ HMI (Programmable Logic Controller/ Human Machine Interface) via MODBUS communication. The other loop interfaces directly to the PLC.

The first instrument loop is powered by a **UNICONT PGK** intrinsically safe power supply with HART option and consists of a **NIVOTRACK**, an **EasyTREK**, and a **NIVOPRESS N** level transmitter plus a **UNICONT PDF** field display interfacing with the **MultiCONT**.

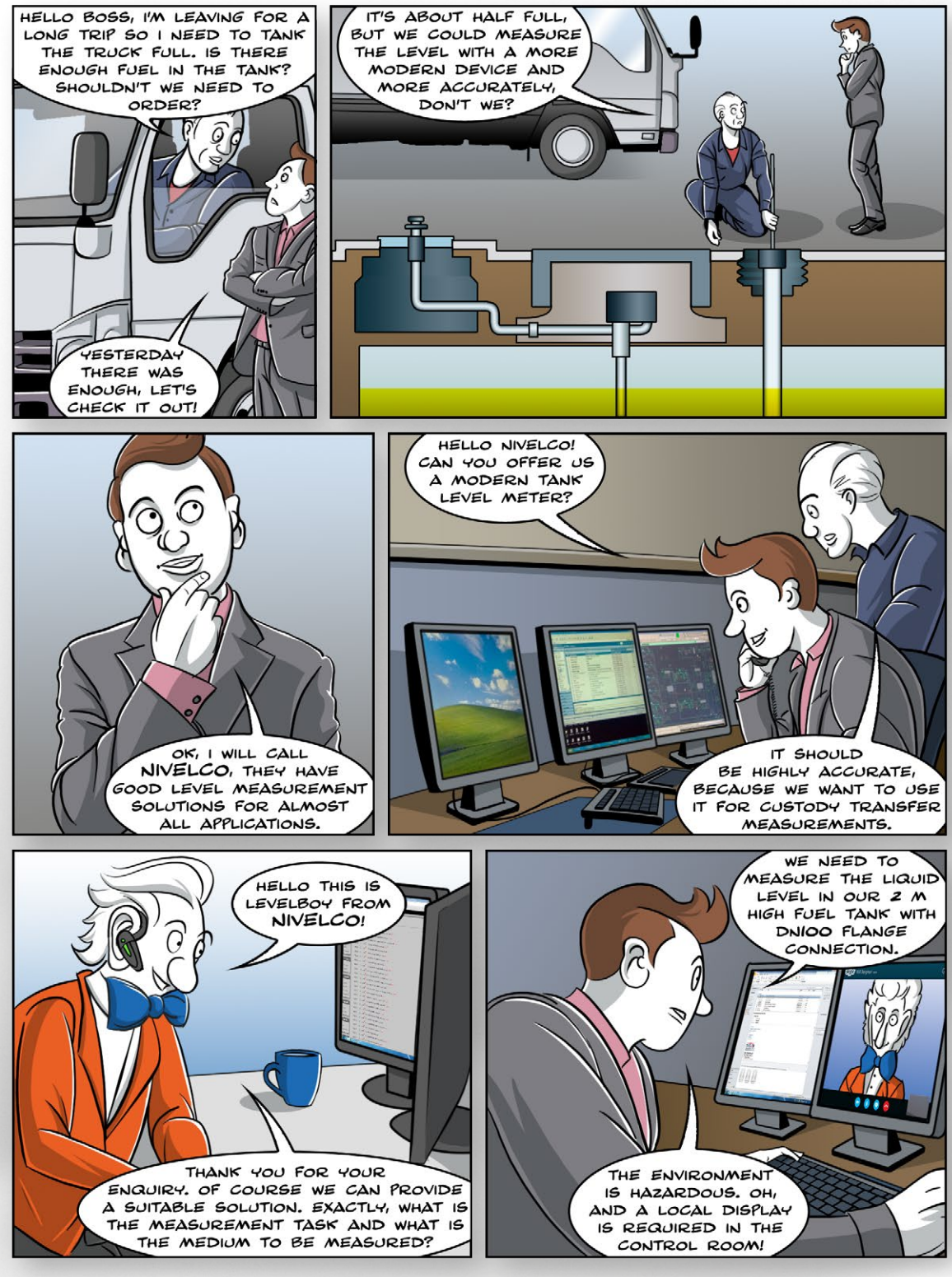


The second loop is comprised of the **PiloTREK** and the **MicroTREK** powered by the **MultiCONT**. The third instrument loop consists of a level conductance switch. The **NIVOCONT KRK-522** is connected to a **KSK-201** cable probe, and interfaces directly with the PLC.

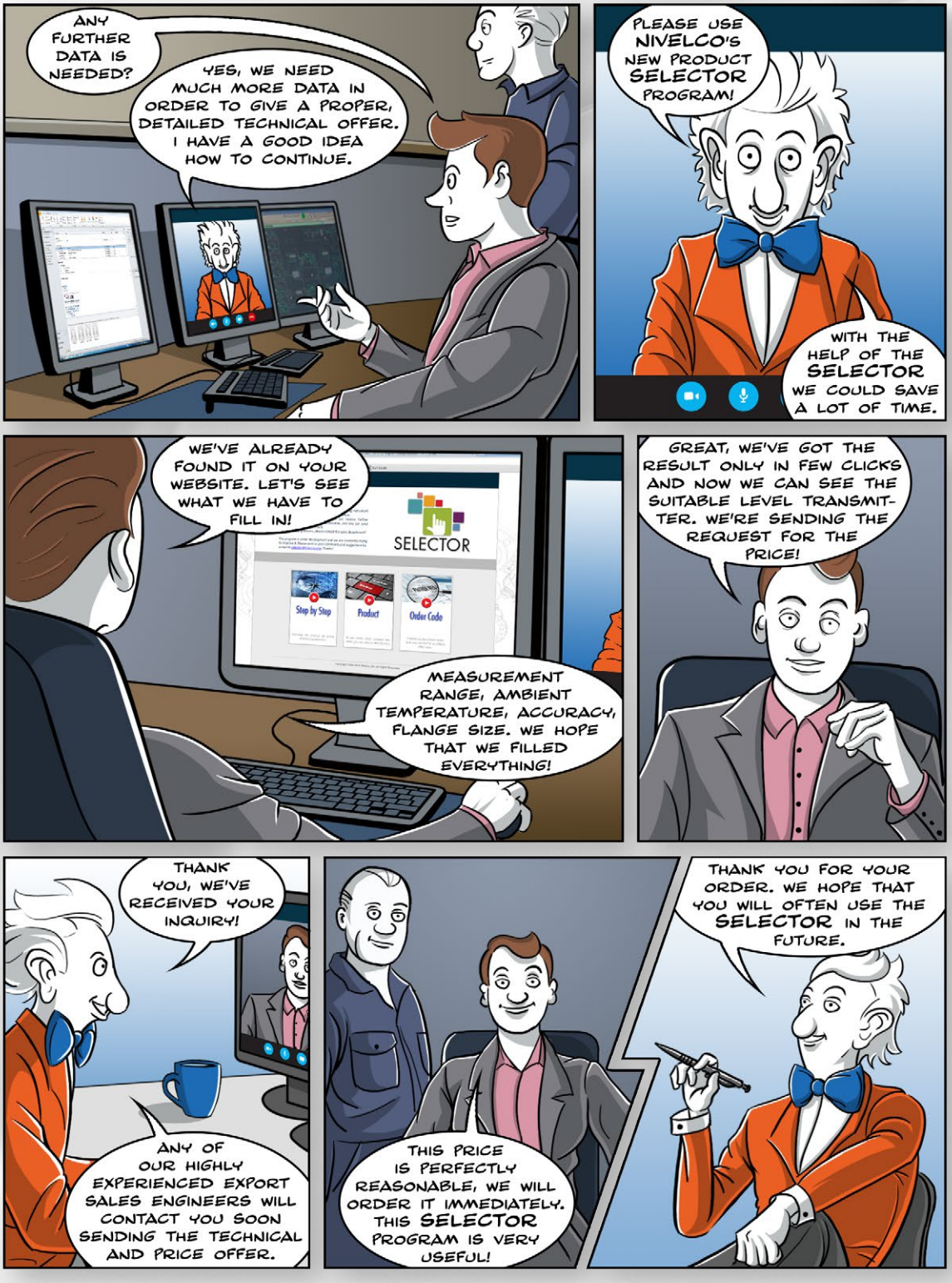
The Conference and Expo were a huge success and very well attended as always. Surely you will see **NIVELCO** among the exhibitors the next time.

David Miller
Managing Director
NIVELCO USA LLC
usa@nivelco.com

LevelBOY... Our Profession Is Your Level



LevelBOY... Our Profession Is Your Level



NIVOFLOAT switches approved for potable water

Float level switches with the approval of the Hungarian National Public Health and Medical Officer Service

NIVOFLOAT float level switches are being sold in the largest volume among **NIVELCO** products without any doubt. These simple units provide highly reliable level switching in countless different applications. The **NIVOFLOAT** float level switches are suitable for point-level detection in thousand kinds of low & high water level indication tasks in shafts, containers, swimming pools, cisterns and various river basins, wherever they are needed they are working with maximum reliability. They can be used successfully for wide ranges of applications. It is often used in households, such as pump control in wells for irrigation, in the water & wastewater industry for example as sensors for controlling filling or emptying.

The high durability of the units is proved as they continuously withstand the test of time. The double-chambered float is made of injection moulded tough polypropylene that ensures good water-proof protection. The contacting microswitch is incorporated in the float. The cable of the level switch is fed through the water-proof passage and the monolithic structure of the injection moulded plastic housing. The cable of the level switch is a flexible insulated copper cable with 3x 1 mm^2 (AWG 17) cross-section and PVC or Neoprene outer insulation.

The **NIVOFLOAT** product family consists of two different types. The **NL-100** type is recommended for level switching of drinking water, raw water or slightly polluted liquids with low solid content. The other type, the **NW-100** is perfectly suitable for level switching of highly contaminated, industrial and municipal wastewater.

Really frequently happens that our **NIVOFLOAT** devices operate in harsh conditions so even the operators could be quite surprised, when they realize that the units are still perform their tasks despite the high amount of deposit and dirt.

The materials used in the devices meet the strict requirements of the Hungarian Office of the Chief Medical Officer involving the instruments used for potable water production. This year **NIVELCO**'s float level switches obtained the required certification of the Hungarian National Public Health and Medical Officer Service (NPHMOS). According to this, the **NIVOFLOAT NLN-100** and the **NWN-100** type float level switches with Neoprene (HO7RN-F) outer cable insulation can be used in the field of drinking water production (up to 30°C / 86°F), and for hot water supply in thermal spas (up to 50°C / 122°F). This means that this certification can be converted and approved also in other countries in accordance to the local regulations.

Like the **NIVOFLOAT** product family some specific versions of the **NIVOPRESS N** submersible level transmitters (NP, NZ and NF series) have been also received this conformity certificate for potable water.

We hope these certifications open more and more new applications for the members of the **NIVOFLOAT** and the **NIVOPRESS N** product families.

NIVOPRESS N with plastic housing

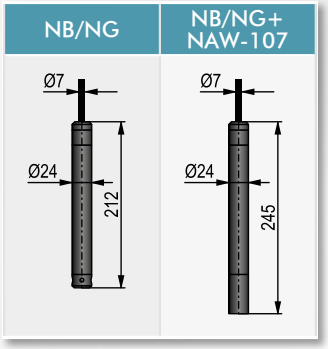
New plastic housing hydrostatic level transmitter in NIVELCO's product range

NIVELCO is manufacturing and distributing the continuously widening range of **NIVOPRESS N** submersible level transmitter product family with great success. The biggest proof about this is the ever-increasing demand which is about a total of 7,000 units sold in 2014 and 2015 together. This has been encouraged us to expand the **NIVOPRESS N** hydrostatic level transmitter family with a new type.

In this year, based on the successes of the stainless steel housing borehole sensors, a new fully plastic housing version was developed. This new type is utilizing the already proven electronics using piezoresistive ceramic sensor, but the body of the sensor is completely new, manufactured from a black plastic called (Polyoxymethylene) POM. Unlike the similar devices of the other manufacturers, when the sensor body is made out of plastic coated stainless steel, our submersible level transmitter is fully made from plastic. Except the ceramic sensor, the seals and the cable coating, which can be selected from PUR or FEP material versions, every other element of the device is manufactured from POM plastic.

The **NIVOPRESS NB/NG** borehole level transmitters with plastic housing are suitable for applications where galvanic corrosion could cause potential damage to the stainless steel surfaces, for example in case of sea water or other saline solutions. We recommend these new version hydrostatic transmitters with POM housing for weak and strong alkali, aromatic and aliphatic hydrocarbons as well.

During the design we have been focusing to achieve the smallest possible diameter, therefore the diameter of the transmitter doesn't exceed 24 mm, so it is suitable to use in a 1″ tube. This new design is completely identical in the aspect of the technical specifications to the stainless steel housing versions with piezoresistive ceramic sensor (NK and NN types). The maximum height of the measured liquid column is 20 meter (65.5 ft). The device has 4-20 mA + HART output as the standard option and also available with built-in Pt100 temperature sensor. The sewage adapter (can be ordered separately) working on the principle of the diving bell helps to avoid the direct contact between the sensor and the measured contaminated liquid. This accessory is only recommended in those applications where the submersible sensor is installed in a protective pipe eliminating the risk that the air in the sewage adapter may tilt or lift the sensor.



The new **NIVOPRESS N** units can be ordered with the wide range of well-known accessories such as the in-/outdoor overvoltage protection units, cable terminal boxes and cable mounting wedge clamps.

We are sure these this new submersible transmitters will be as successful as the stainless steel members of the product family and will fulfilling the demands of the customers just like all the other **NIVELCO** manufactured products.

Balázs Csibráki
Marketing Engineer
NIVELCO Co.
bcsibraki@nivelco.com

MicroTREK transmitters in the oil industry – Spain

Level measurement in oil storage tanks with guided microwave radars

TERMINALES CANARIOS, S. L. is a company dedicated to provide logistics services of reception, storage and delivery of fuels and lubricants in the Canary Islands, Spain since 1986. The company 50 50% owned by BP Oil España S.A. & Repsol Comercial de Productos Petrolíferos S.A., two of the most important and reputable companies in the energy sector.

The mission of the company is to provide a specialized logistics services with an integral approach and the highest levels of safety, quality, environmental respect and efficiency. The fuels and lubricants are destined to aviation, maritime, industrial and automotive sectors. Lubricant is essential to extending the life of any machinery, and proper lubricant storage is critical to maintaining a clean and healthy fluid. One of the key elements in the inspection and maintenance is checking and maintaining proper fluid levels in the supply tanks.

Thanks to **IBERFLUID Instruments**, **NIVELCO**'s Spanish distributor company, the high reliability **MicroTREK** Guided Wave Radar level transmitters are responsible for the level monitoring in the lubricants storage tanks at two sites of TERMINALES CANARIOS. The Santa Cruz de Tenerife port terminal has modern installations and equipment including oil storage tank farm with 100.000 m^3 (about 26.5 million US gallon) capacity, lubricants storage tanks and laboratory for oil products related tests.

There are eight 4.2 m (13.8 ft) tall standing bulk lube storage tanks which are equipped with **MicroTREK HTT-405-4** and another one **NIVOTRACK MBK-525-8 Ex** magnetostrictive level transmitter is measuring the liquid level in the 2.5 m (8.2 ft) high laying cylindrical gasoline tanks.

In the other site in Gran Canaria international airport road tanker discharge facilities, oil storage tank farm and refuelling loading bay can be located with access to fuel hydrant system. There are also eight 4.2 m (13.8 ft) tall standing bulk lube storage tanks which are also measured with **MicroTREK HTT-405-4** units and another four 2.5 m (8.2 ft) high laying cylindrical gasoline tanks are measured with **MicroTREK HTT-403-4** and one similar oil tank is equipped with a **NIVOTRAK MBK-525-8 Ex** unit.

Every level transmitter is connected to **UNICONT PMM-513-1** universal display units at both sites, providing local displaying of the measurement data. This successful project is again a very good example showing that the expertise of **IBERFLUID** Instruments and the excellent instruments of **NIVELCO** complementing each other and able to create an efficient level measurement system.

Juan Manuel Quiroga Sanmartín
Sales Engineer

IBERFLUID instruments

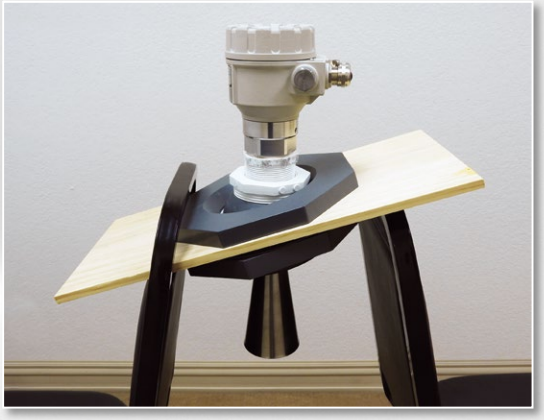
iberfluid@iberfluid.com

New NIVELCO representative in New Mexico, USA

Reworded representative of NIVELCO USA

K & B Technical Services Inc., located in Carlsbad, New Mexico is reworded of **NIVELCO USA**'s representative network. They serve many critical water and wastewater facilities in both New Mexico and West Texas, as well as the very large and long producing Permian Basin oil and gas fields in the same geographical region. The United States National Park Service is responsible for the world famous Carlsbad Cavern National Park, formed 250 million years ago during the Permian Era when an ancient reef flourished in the region. The water was warm, and near the shore was a favourable place for a host of marine lime secreting plants and animals.

K & B is owned by Loren Kirkes and John Bowen, and offers specialized engineering related services for the mining, oil and gas production, mineral production and other related industries in New Mexico and West Texas. An example of their engineering prowess can be seen in the swivel joint/mounting platform for **PiloTREK** that allows the radar unit to be installed in the vertical position on cone roof production tanks with varying roof pitch slopes.



Throughout the Permian Basin oil and gas fields, crude oil storage and water tank batteries can be seen that are accessed by tank truck/trailer for processing.

K & B are working with local operators to develop automated level detection and reporting systems using **NIVELCO** radar instruments. The benefit is cost savings over old, mechanical tank gauges and safety. If a tank battery does not have a mechanical tank gauge, the tank truck driver must manually "stick" the tank to determine the level. This is time consuming and a safety hazard due to possible exposure to possibly lethal, and highly flammable, doses of H_2S (Hydrogen Sulfide) gas.

Recently K & B have installed **NIVELCO** manufactured **THERMOCONT** temperature sensors and transmitters into a Joule Thomson (J/T) refrigeration effect skid for a regional gas processor, replacing manual bi-metallic gauges.

The J/T skid is critical to its operation to monitor the downstream temperature. The manual indicator has been replaced with four **THERMOCONT TBW-500** wall-mounted temperature transmitters connected with four **THERMOCONT TFP-524** Pt100 temperature sensors.

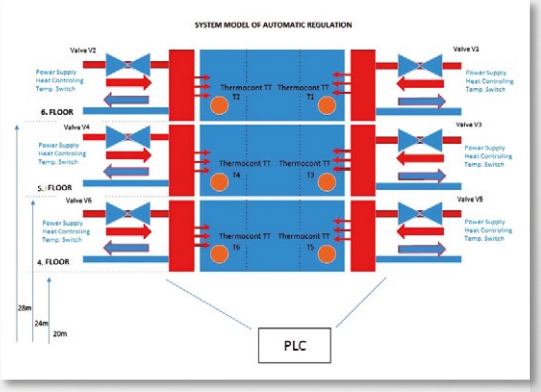
The units have allowed K & B to report status to a central control room freeing up time for operations.

David Miller
Managing Director
NIVELCO USA LLC
usa@nivelco.com

THERMOCONT in the agricultural industry – Croatia

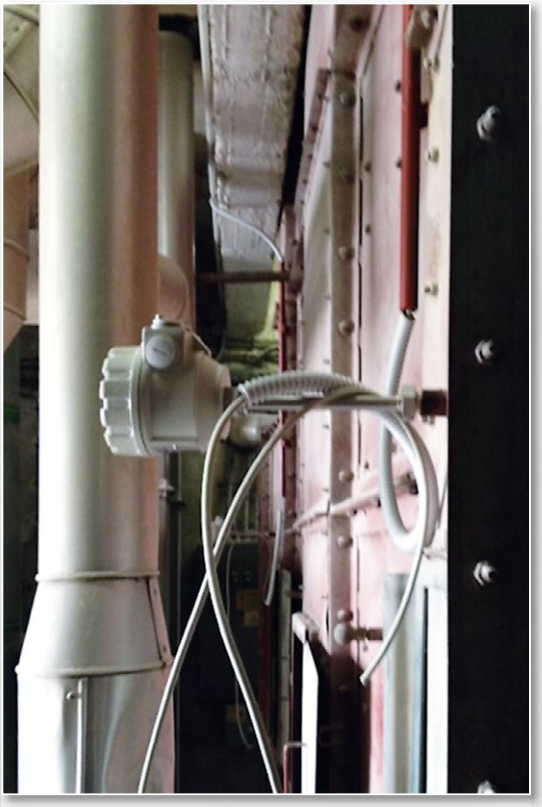
Continuous temperature monitoring system with THERMOCONT TT instruments

Thanks to the **Falcon Electronic d.o.o.**, our highlighted partner in Croatia, **NIVELCO Mjerna Tehnika** was able to offer a temperature measurement system for a grain dryer facility located in the town called Osijek, near to the Serbian border. This region of Croatian is very rich in fertile lands so the agricultural industry is one of the most typical ones. The owner of the grain dryer is Žito d.o.o. one of the biggest companies who are dealing with grain storage and drying in Croatia.



The main task was the complete automation and optimization of the steam flow in the six cells placed on the three floors. After the technical inspection of the facility, Falcon Electronic designed the technical solution which contains six electromotor valves and six **THERMOCONT TT** temperature transmitters which are altogether controlled by one PLC.

Each of the six temperature transmitter is working in pair with one affiliated valve. In each cell temperature can be set separately, and this solution provides that the optimal temperature is continuously achieved.



After the installation and putting the system into the process we have been very satisfied with the final result because we have were able to create a system which is fully automatic and also the constant temperature of drying is achieved which is very important for final quality of the grains. This improvement has been also meant remarkable savings in the energy consumption of the facility.

Marin Štefanac
Sales Director
NIVELCO Mjerna Tehnika d.o.o.
croatia@nivelco.com

NIVOMAG level switches in a rail carrier ship

MK-200 magnetic coupling float level switches for ships

The MV Bali Sea is an ocean going rail carrier operated by the CG Railway, Mobile, Alabama, which is owned by the International Shipholding Corporation. The railway operates an approximately 900 mile (1400 km) train ferry between the Port of Mobile, Alabama and the Port of Coatzacoalcos, Veracruz. The CG Railway connects with CSX Transportation, Norfolk & Southern, BNSF Railway, Canadian National and Alabama Gulf Coast Railway at Mobile, Alabama and Ferrocarril del Sureste at Coatzacoalcos, Veracruz. The CG Railway operates the MV Bali Sea and MV Banda Sea double deck rail carriers each capable of transporting 115 rail cars each.

In May, 2015, Kamil Ship Supply in Mobile, Alabama was contacted by the ship's Captain who was need of a replacement float level switch for the ship. Kamil Ship Supply provides a wide range of goods for ships and crews sailing into and out of the Port of Mobile.

The Captain provided photographs of the **NIVELCO** level switch and asked Kamil to find a replacement. **NIVELCO USA** was contacted and immediately offered a **NIVOMAG MKA-210-0** magnetically coupled level switch with the GL certification mark. An order was placed and shipped to Kamil in 3 weeks.

The float switch was delivered and installed on the ballast tank system which stabilizes the ship by weighing it down and lowering the center of gravity.

The **NIVOMAG MKA** switch is used to control pumps which then fill or empty the ballast tanks as needed to raise and lower the vessel when loading or unloading cargo, or in heavy seas. The MV Bali Sea was built in Japan by Mitsubishi Heavy Industries in 1981. It is a registered 24201 ton carrier with 8 upper tracks and 7 lower deck tracks for movement of the rail cars from port to port. It began its career as a submersible, able to pick up oil platforms from the ocean and transport them to other locations. It was then converted to a barge carrier for the ocean transport of barges from location to location. Today, the MV Bali Sea and Banda Sea continue to travel several times weekly between the two ports and deliver rail cars and their cargo safely and on time.

David Miller
Managing Director
NIVELCO USA LLC
usa@nivelco.com

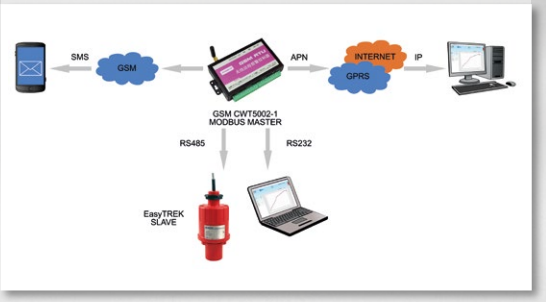
Flood monitoring with EasyTREK – Russia

NIVELCO instruments in northern Russia

Naryan-Mar is a sea and river port town in the northern part, (north of the Arctic Circle) in the European side of Russia. The town is situated on the right bank of the Pechora River, which is the largest river of the northern region considering its annual discharge. From late October until the early May the Pechora River is covered with ice. When the river began to defrost, ice dams may occur at the mouth of the river and could result floods in some areas of the town.

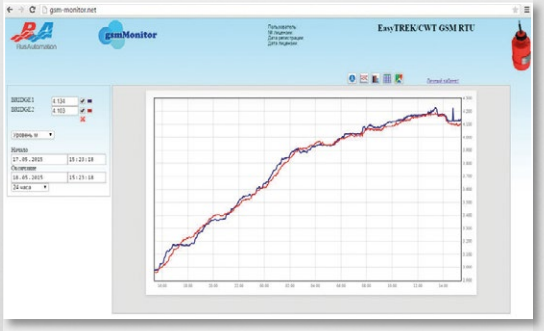
In May 2014 Naryan-Mar was hit by extreme flood destruction. Only centimeters separated the entire city center from being flooded by the Pechora River. The flood damaged more than a hundred houses in the surrounding areas. One year later in May 2015 a flood monitoring system was established in the river in order to predict similar disasters on time in the future. The system has been developed by **RusAutomatization**, our distributor partner in Russia, and the system is equipped with **EasyTREK** ultrasonic level transmitters providing continuous level monitoring of the river.

In addition to the ultrasonic level transmitter units the system also includes battery backups for the power supply and a MODBUS GPRS-RTU data terminal, which has a built-in GSM modem and RS-232 port, which enables to transmit the measurement data directly towards mobile or computer network.



The terminal used in the system has one analogue and two discrete outputs and also supports GPRS and SMS. The GSM network establishes the required connection for remote querying, remote control and remote programming, so the terminal can be configured by SMS commands. The RS-232 connection is important for troubleshooting and installation purposes because the configuration terminal software running on the service notebook use this communication method. These cases the same screen and information can be seen bath in the monitoring center and on the computer directly connected to the device.

The data is carried by a packet-switched network and transmitted to the server where the results of measurements are recorded and stored into a database. The users can access their own data easily via the Internet.



It is also possible to display the collected measurement data in charts. All the screens can be accessed by any traditional internet browser programs (such as I. Explorer, Firefox, etc.), additional viewer software is not necessary. The user can specify the water limit values directly on the server and when the level values are reaching the set limits the system sends SMS notifications to the specified mobile phone numbers. The system is able to send SMS notifications also when the external power supply is terminated or the batteries run out of power.

Attila Kovács
Managing Director
OOO „NIVELCO-Rus"
russia@nivelco.com

The building automation system of the Zalakaros Thermal Spa

NIVELCO instruments in the spa automation

The building automation, fire & security systems and building management systems are essential elements in the operation of a thermal spa. The building automation system includes the monitoring and controlling of wells and swimming pools, as well as the regulation of ventilation equipments, refrigerators and boilers, besides the temperature control of the offices, warehouses or even the elevator controlling.

In addition to the above listed items the reduction of the energy consumption is also an extremely important task. The usage of a programmed time-schedule provides us the possibility to reduce the intensity of the pump's operation or the temperature of the cooling/heating equipment at any part of a day on the selected days. This can result significant energy savings, not to mention the fact that this reduces equipments aging and maintenance needs too.

This includes the control of heating and cooling equipment which is depending on the external temperature, and the usage of heat-recovery along with the maximization of the energy consumption upon the contracted volume of the electricity. By using the monitoring system all of these tasks can be controlled from a central computer. In case of any failure many types of alerts can be sent to the maintenance staff which enables fast troubleshooting and continuous operation. The displaying and analysis of the complete thermal spa and its systems can be performed with the supervisory software along with optimization tasks. The users are able to start or stop the system from the central control room. They can register the changes or the errors and check the operation retroactively from here.

The selection of the building management system:
Last year Zalakaros Thermal Spa set the aim to implement an advanced building management system using the most recent technology available. The launch of the project was planned in two stages. In the first stage a complete data logging and data analysing system has been implemented and then in the next stage the complete process automation system will be based on this. Before the implementation of the first stage an extensive designing and testing process has been carried out for the selection of the most appropriate system and its components. The quality was one of the primary aspects in mind besides the best warranty conditions and the most favourable price. The offer which was fulfilling the requirements the best was given by **NIVELCO Process Control Co.**, a local, Hungarian company with more decades of experience in level instrumentation systems.

The building automation system of the Zalakaros Thermal Spa

The goals to be implemented with the building management system:

With the help of the BMS (Building Management System) we provided suitable solution for the following requirements:

- Measurement, optimization and automation of the buildings' energy consumption (for example time programming, which makes possible to reduce more energy consumption of the heating / cooling / ventilation at night; reduces the wear and maintenance needs of the heating / cooling / ventilation systems; maximization of the energy consumption upon the contracted volume of the electricity)
- Measurement, optimization and automation of the produced water of the wells
- Measurement, data logging and control of the temperature of the water in the pools
- Measurement, optimization and automation of the chemical level in the pools
- Measurement, optimization and central automation of the aeration and ventilation (for example air replacement depending on the humidity and the carbon dioxide content, providing pleasant environment, energy-saving operation; designing the possibility of cooperation between the systems)

- Monitoring the proper operation of the building, wells and mechanical elements; reducing the time spent on maintenance
- Providing remote diagnostics and the possibility of remote intervention
- Sending warning messages immediately when any equipment become defective
- Continuous control of the inspection tour made by the personnel
- Continuous data logging of the energy consumption, and events history about the operation of all equipment / mechanical items

The BMS is able to collect and evaluate the data of the following systems:

- Electrical power system
- HVAC system
- Security and safety system
- Fire protection system
- Closed circuit camera system

With the efficient usage of the Building Management System the more and more comfortable and economical operation of the buildings, wells, tanks and any other equipment are guaranteed. In the first phase the goal focused on the evaluation of the collected data. The implementation of the central process automation will be done in the second (or later) phase.

Short description of the BMS's subsystems and their elements:

The system consists of several levels. The data transmission devices are located in the lowest level, then the infrastructure tools level comes, and finally the central system performing the management is on the top.

The building automation system of the Zalakaros Thermal Spa

Data acquisition devices of hydraulic engineering system and swimming pool technology:
Hydraulic engineering system is divided into two sectors: one is the water production at the wells and the other one is at the pools where the utilization of water takes place. Both pipe-systems, the water production and water consumption sides are needed to be equipped with sensors. The measurement signals are connected to ADAM modules through cables.

These modules provide compatibility with the building management system. The system components belonging to the water pools are connected through cables, the only exceptions are two groups of wells where the signal is transmitted by FM antennas. The pools are organized in chain and connected to the control room. In case of the wells it is important to collect the data directly at the first few pipe sections of the water production to get information immediately in case of any changes. It's also important to place the sensors at the ending pipe sections near pools in order to measure the same values as of the pool.
In case of water production the three most important factors are the produced water volume, the water temperature and the pressure of the thermal well-head which have to be continuously measured. In addition to the water temperature it is necessary to monitor the parameters and the proper amount of disinfectants used in the actual chemical treatment process at the pools.

The equipments responsible for the monitoring of the parameters required for the automatic pool filling (such as water volume at the filling and empting pipe) will be installed during the construction in the second phase. The automatic chemical dosage of the pools has already solved because the water circulation system is already using this function. We had to integrate this chemical dosing system into the central control system in order to have central access and able to send notifications immediate if any changes occurred of if any intervention is necessary.

HVAC System:
The existing boilers, air handling units and liquid coolers can establish connection to the central computer by DDC (Direct Digital Control) controllers. This case there is no need to install a digital module, because these devices are already support digital communication as the necessary drivers are installed to the central computer. The air temperature in the halls is measured by separate devices as well as digital field displays are also provided which are located near the pools.

Power consumption:
The power consumption is also monitored by the central supervisory software. Separate modules which are authorised by the service providers have been installed to the electricity feeding points and to the central gas-meter. The current consumption data is recorded by the central computer for making trends which can be used to determine the contracted amount of these services more precisely.

The building automation system of the Zalakaros Thermal Spa

Infrastructure:
The devices collecting any kinds of parameters are connected by wires and in some cases there are wireless connections. Since the length of the cable network can be measured in several hundreds of meters (few thousand feet) for each division it was necessary to install junction boxes into every section. Thinking about the future improvements we had to install spare wires for the further units to be installed soon.

Monitoring software:
A very important aspect of choosing the central software was that it has to illustrate the changes immediately so only graphical software is suitable for this task. After the long lasting selection process the **NIVISION** process visualization software was selected for this purpose. All the measurement data is recorded into a database located on the central server. This provides possibility to view what happened in any areas of the spa retrospectively from the start of the system at any given moment.

Visualization:
The visualization took place in several monitors. A large central monitor with ~160 cm (63") screen size displays the complete thermal spa and the corresponding system components and two smaller monitors with ~85 cm (32") size displays the operation of the water production wells and all their data. In addition there is another monitor where any of the system components can be visualized individually and examined one by one and the settings of the software can be changed if necessary.

Summary about the installed system components:

- **THERMOCONT TTC-520** type temperature transmitters, many types of the **EasyTREK SPA-300** ultrasonic level transmitter family, **NIVOPRESS D-500** hydrostatic level transmitters, **NIPRESS D-400** pressure transmitters and **ISOIL ISOMAG** electromagnetic flowmeters.
- Motorized valves, magnet switches, inverters
- Digital and analogue DDC regulators
- GSM modem, UHF antennas and digital routers and data transmission devices
- Central computer running **NIVISION** process visualization software with on-line connection

The experts of **NIVELCO** have been involved in the set-up of the monitoring system, the design of the visualization and the customization of **NIVISION** software.

Operator experiences:
The reliable level control of the buffer pools and the time control of the already existing water re-circulating systems resulted that the energy savings of the thermal spa exceeds 50% since the installation of the system.

Ákos Noll
Domestic Sales Engineer
NIVELCO Co.
anoll@nivelco.com

NIVELCO Racing Team

Alpine skiing success in South America

This summer the members of the **NIVELCO Racing Team** had the opportunity only for a short one-week vacation. At the beginning of July they arrived into the cold Argentinean winter after a more than 30 hours flight in Ushuaia, the southernmost city in the world.

The **International Ski Federation (FIS)** invited the most talented youth runners to a common preparation in the southern hemisphere in early July. Due to the limited time we had to make a very quick decision and start to prepare immediately for the more than six-week long South American journey.

The first part of the program was a three week long intensive training camp in the Tierra del Fuego (Land of Fire) slopes in Ushuaia, organized by the International Ski Federation for the South American teams and for the joining competitors who were invited from many different countries of the world.

The international team of twenty members led by two coaches began the preparation in inclement weather conditions on the Cerro Castor tracks, where the sun comes up only about ten o'clock in the morning, but in this period of the year the sun doesn't shine on the slopes at all due to the special orientation of the mountain.

NIVELCO Racing Team

During the three week session the racers had the opportunity to practice all disciplines with wide variety of special training techniques and there was also time for the inevitable physical workout.

The FIS camp was followed by a three week long intensive competition program in different slopes of Argentina and Chile, where the races were part of the South American Cup series. It was difficult to predict what performance can be expected from **NIVELCO**'s young racers in a completely unusual environment in the middle of the summer but the test proved to be successful. They arrived to the competition as the best youth racers of Hungary and returned home as the most successful Hungarian adult competitors!

The various places of the competitions were beautiful and unusual venues at the same time and especially the friendly local people played a big role in that after the six weeks of intensive training and racing riders were not tired at all. With the leadership of Markus Erhardt coach they could carried out the training work in the same continuously concentrated way even until the last days.

From the achievements it should be highlighted that **Barnabas Szőllős** reached the TOP 10 results in every race and he also could stand on the top of the podium as the best U18 rider. With this result **Barnabas** has proved that he deserve a place among the racers of the II Winter Youth Olympic Games in 2016.

The best result from **Benjamin Szőllős** was a fourth place among the adult racers which meant a huge leap forward in the international ranking by increasing his FIS points so much. During the fall both of our youth riders practiced in the European glaciers for the winter season and now they are looking forward with high expectations to show that they are prepared for the season.

Lillehammer 2016 Youth Olympic Games

YOG DNA

NIVELCO Racing Team

Noa Szőllős made her usual summer preparation trainings, which is a vital part of the long winter racing season. In this season new challenges are awaiting for the only 13 years old contestant of the racing team. This year she could participate on international races as the youngest member of the Hungarian national youth team.

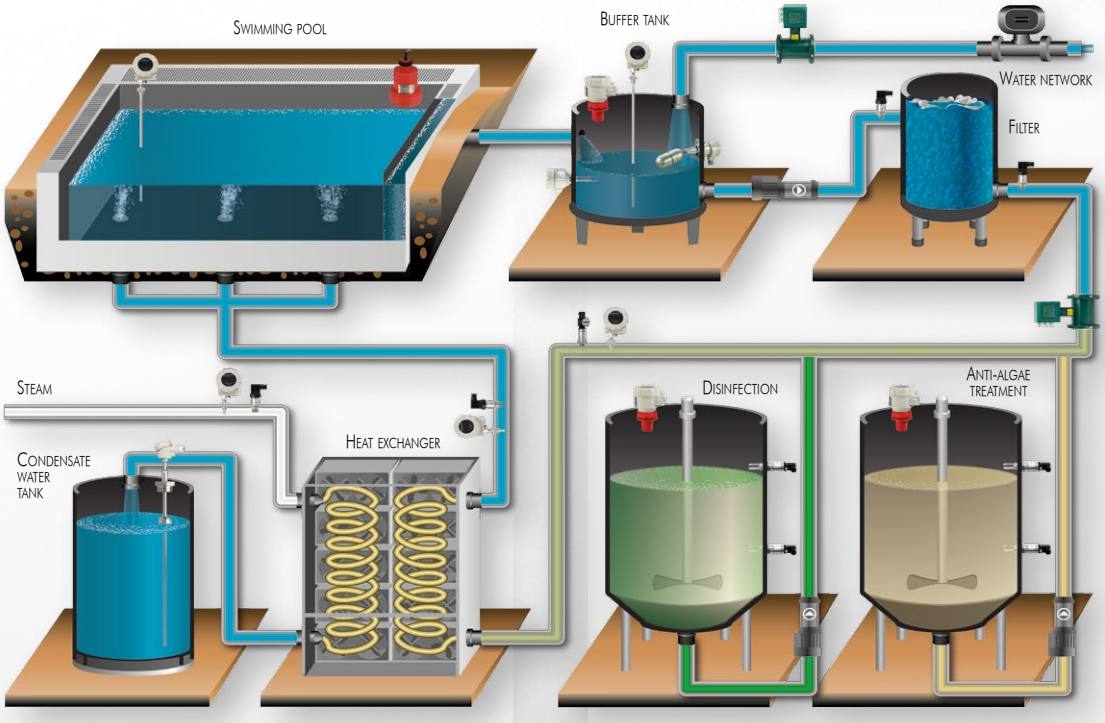
For the proper preparation she had to carry out a varied summer training program. Unfortunately, the extreme heat of summer soon melted the snow on all the European glaciers very quickly so this time more emphasis was placed on the physical training. The preparations were successful so all the test results showed positive changes.

Noa spent a lot of useful days with snowy training session as the invited member of the Styrian national team and she took the advantage of the favourable winter weather in the Austrian glaciers. The complete change of the gear and equipment was not so easy, but the results of the trainings were really encouraging. Now we have to carry on with the permanent hard working and then the results on the first international competitions will hopefully prove the lot of invested work!

We are very pleased that our persistent and effective work is recognized by the most successful manufacturers of ski sports equipment, therefore from this year our racers are among the largest factory race teams. The racers of **NIVELCO Racing Team** can race for the best results with using the skis and boots of the HEAD sports equipment company, with the skiing poles and protective equipment of LEKI and with the helmets and glasses of ALPINA.

Péter Szőllős
Vice President
NIVELCO Co.
pszollos@nivelco.com

Swimming pool water circulation system

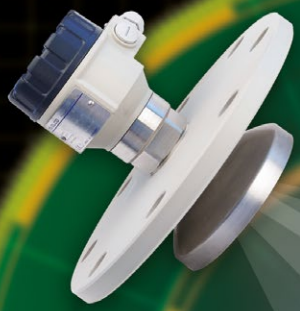


The overflowing water from the swimming pool is transferred by gravitational method and collected in a buffer tank. From this buffer tank the water is pumped through filters and then through a heat exchanger before the water returns to the swimming pool. The amount of the re-circulated water is continuously determined in accordance to the daily requirements and the number of hourly rotations can be set by a frequency converter. The amount of the circulating water determines operation times of the anti-algae dosing pump and the disinfection dosing pumps. The most important aspect in order to protect the heat exchanger is the upper temperature limit of the supplied water which should not be warmer than +38°C (100 °F).

Recommended instruments:

- **Swimming pool:**
  - Continuous level measurement: **EasyTREK SPA-360-4** ultrasonic level transmitter
  - Continuous temperature measurement: **THERMOCONT TTC-528-4** transmitter
- **Buffer tank:**
  - Non-contact level measurement: **EchoTREK SEA-380-4** ultrasonic level transmitter
  - Low level switching: **NIVOSWITCH RFM-501-0** vibrating fork
  - Level controlling: **NIVOMAG MKA-220-3** magnetic coupling level switch
  - Continuous temperature measurement: **THERMOCONT TTC-528-4** transmitter
- **Filter / Heat exchanger:**
  - **NIPRESS DRC-4A2-2** pressure transmitter is used to measure the pressure at the inlet and the outlet
  - **UNICONT PMM-321** universal controller calculates a differential between the pressure values and when it's above a specified value than a warning signal is released for cleaning the filter; other units are indicating the temperature or providing a control signal at the primary side of the heat exchanger
  - **THERMOCONT TBC-521-2** transmitter measures the temperature at the inlet and the outlet

Ferenc Kusztos
Technical Consultant
NIVELCO Co.
fkusztos@nivelco.com



PiloTREK W-100 Pulse Burst Radar
with parabolic antenna

- DN150 (6”) diameter parabolic antenna
- Max. 23 m (75 ft) measurement range
- 6° beam angle
- Suitable for liquids with low (min. 1.4) dielectric constant
- HART communication

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