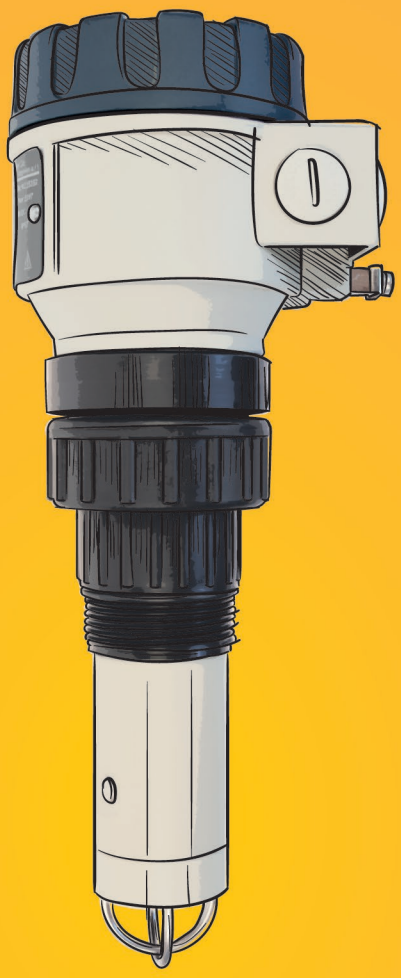
MAGAZINE

NIVELCO

AUTUMN–WINTER // 2019/2

ANALYTICAL TRANSMITTERS



NIVELCO

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Dissolved oxygen transmitters

Quality & innovation since 1939

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Contents

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CEO

NIVELCO Co.

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Introduction

Dear Partners,

Welcome to the second issue of **NIVELCO** Magazine in 2019.
This year marks the 80th anniversary of my father launching his first private business in 1939, which was dedicated to the design and manufacture of industrial telephone exchanges. From there, a long and effortful road led to the founding of **NIVELCO** in 1982, and today, as a result of unremitting development, the company, still a family business, has become one of the world's recognized manufacturers of industrial level measurement instruments. Today we can proudly say that for 80 years and 4 generations of the Szőllős family, we have a clear tradition formulated in the **NIVELCO** slogan: *Quality and Innovation since 1939.*

Let's have a look at what You can read in our magazine! We will talk about our regular "family" conference, which was held in May this year in Opatija, Croatia, and the economic results of the very successful last year. In addition, our new PiloTREK planar antenna radar on an affordable price is introduced and we give a taste of our products, which were developed to meet specific customer needs. You can read the second part of our article in last fall's magazine on **NIVELCO**'s manufacturing technology improvements, and explore the topic of heat treatment of products. In the context of the recent staff changes, we write about our Romanian subsidiary, whereas in the Distributors section our new Turkish partner will be introduced.
In our Applications section, You can get to know a new special feature of the EchoTREK ultrasonic level transmitter, PiloTREK with planar antenna is put through a harsh testing by our Czech subsidiary but we will also write about the use of our NIVOPRESS level transmitter in the Hungarian dairy industry and the successful use of our PiloTREK radar in paraffin tanks in Poland.
This time, LevelBoy engages himself in the process of renovating a dairy farm, but there are many more interesting things to read in our Magazine, I hope You will enjoy it!

Family Sales Meeting in picturesque Opatija

NIVELCO Group conference at the Adriatic Sea

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The subsidiaries, operating on three continents and in eight countries (Austria, Czech Republic, Croatia, India, Poland, Russia, Romania, USA) are key players in NIVELCO's sales strategy and worldwide presence. These daughter companies are mainly sales and product support sub-offices as production and development entirely take place in the Hungarian headquarter.

NIVELCO Group organizes its trade conference, Family Sales Meeting twice a year, with the presence of delegates from both the parent company and subsidiaries. These useful and forward-looking, two- or three-day events serve more purposes in NIVELCO's life.

On the one hand, they afford the opportunity for the management of the companies of NIVELCO Group to report to each other about their business results and experiences and to discuss occurring issues and complications.

On the other hand, a recurring agenda of each Family Sales Meeting is a team-building activity that greatly contributes to the cohesion between the parent company and its subsidiaries, leading to more effective cooperation and communication between them.

This year's first FSM conference was hosted by our Croatian daughter company, NIVELCO Mjerna Tehnika d.o.o. located in Rijeka. The event was held at the beginning of May at the Adriatic Sea, in amazing Opatija, directly at the beach in Remisens Hotel Admiral.

During the three-day program, participants reviewed the economic results of the parent company and the subsidiaries, market conditions and economic situation of the regions they represent, products and their applications, and current and planned developments.

Of course, culinary delights offered by the beautiful seaside town could not be missed either; in the evenings, participants have had the opportunity to enjoy the cozy restaurants serving local specialties.

On the closing day of the event, the team went on a boat trip to some exciting locations on the Adriatic Sea.

These three days spent together were again instructive and fun for all members of the NIVELCO group. We would like to thank our hosts, the team of our Croatian subsidiary for the great and memorable hospitality!

NIVELCO Group on exhibitions

Flashes from fairs of Bohemia, Romania, and Poland

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NIVELCO Process Control Co. constantly pays special attention to take part regularly in the major professional exhibitions and fairs worldwide mainly through its subsidiaries and distributors in order to strengthen the market presence of **NIVELCO**. Fairs are very important means to get feedback from the market, to hear the news, opinions not only about our company but also some comparison to competitors from our partners and customers, to think about those opinions deeply and take or correct our actions and efforts.
In order to be more successful on these events, we continuously support the exhibitor companies with a wide variety of marketing materials and our working exhibition demonstration models.
In this article, we give a short overview of some exhibition activities of the **NIVELCO** Group in the past few months of the year.
NIVELCO BOHEMIA participated in two fairs in 2019, these were the AMPER and the VODOVODY-KANALIZACE exhibitions.

NIVELCO BOHEMIA at the AMPER fair

AMPER is a 4-day international fair focusing on electronics, energetics, automatization, communication, lighting and safety systems. This annual event is held in March at Brno Exhibition Centre, which offers more than 130,000 sqm of area making it one of the largest exhibition centers in the world. In Amper 2019, 649 exhibitors from 26 countries presented their products and services to more than 43 thousand visitors. A record was made in exhibitor numbers from foreign countries like India, Slovakia, Germany, and China, strengthening AMPER´s position as an international event. The highlight of every AMPER fair is the GOLDEN AMPER contest for the most beneficial exhibits of the year. This year, among the winners, were products such as 3D circuit board printer, integrated machine vision system or luminance distribution analyzer.
We presented again on the 2019 show **NIVELCO**'s wide portfolio exhibiting a large number of instruments and marketing materials.
The second event we exhibited in was the international fair called VODOVODY-KANALIZACE or VOD-KA (WATER SUPPLIES-SEWERAGE) which is a smaller and more narrowly focused show held every 2 years at PVA EXPO multifunction exhibition center in Praha.

AMPER® 2020

VODOVODY-KANALIZACE 2019

The main domain of VOD-KA is water/wastewater management and also the products and services related to this field. For **NIVELCO**, with most of its product portfolio being used in the water industry, this fair is very important. Statistics from 2019 show participation of 371 exhibitors and more than 10 thousand visitors from 23 countries. The main focus of exhibitors was to strengthen existing business relations and general presentation of their companies, according to a survey. "VOD-KA is a great opportunity to meet our business partners and industry experts," said Jakub Vacek, area manager of **NIVELCO** BOHEMIA.

In May 2019, **NIVELCO** Tehnica Măsurării participated for the second time as an exhibitor at the RESONANCE ELECTRIC SHOW. This is a trade fair dealing with electrical equipment and products of the automation industry organized by the company RESONANCE.

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Our stand at the VOD-KA 2019

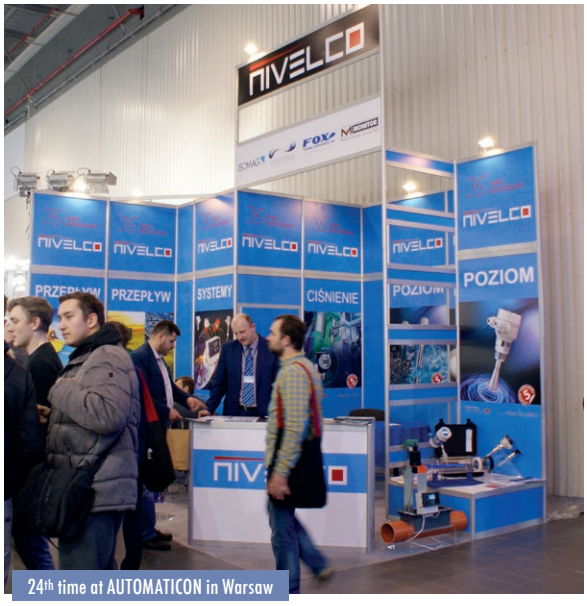
The RESONANCE exhibition brings together year by year all the major manufacturers and representatives of industry and trade from Moldova and the Republic of Moldova.
This year's event provided again a great opportunity for **NIVELCO**'s current and future partners to familiarize themselves with our company, product range, and innovations and to see our professional level instruments working on the Octopus exhibition model which was used for the demonstration.

The Octopus model at the RESONANCE ELECTRIC SHOW 2019

Surely, the most important event for instrumentation, control and automation branch in Poland is AUTOMATICON Fair. This year the 25th edition of the fair took place in Warsaw providing an excellent opportunity for hundreds of engineers both those looking for new products and ideas to improve their new technologies as well as those who daily supervise old industrial installations in practically all branches of industry.

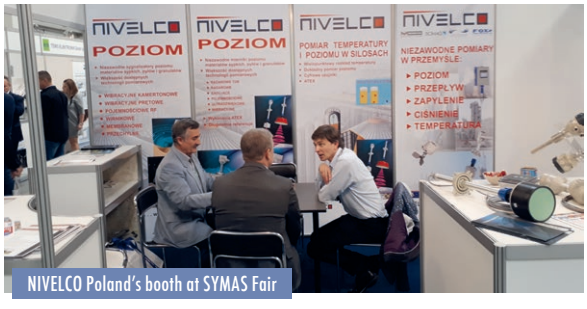
NIVELCO POLAND has participated 24 times in AUTOMATICON Fairs presenting its most important products for its customers and partners.

At the fairs, there is good opportunity to sit down and have a nice cup of coffee and exchange experiences, and show new products and experienced applications which may be in the interest of our potential customers. In such an atmosphere it is easy to find new application fields and special solutions for our customers.



24th time at AUTOMATICON in Warsaw

Other important events are branch fairs and one of them is SYMAS International Trade Fair which gathers people interested in storage and handling free-flowing solids like plastics, construction raw materials or different agricultural products. Here we have a good chance to present **NIVELCO**'s and other partners instruments intended and specialized for those tasks like for example **THERMOPOINT** which is an excellent instrument for temperature monitoring of materials stored in grain silos.



NIVELCO Poland's booth at SYMAS Fair

Our financial indicators

Financial overview of the NIVELCO Group in 2018

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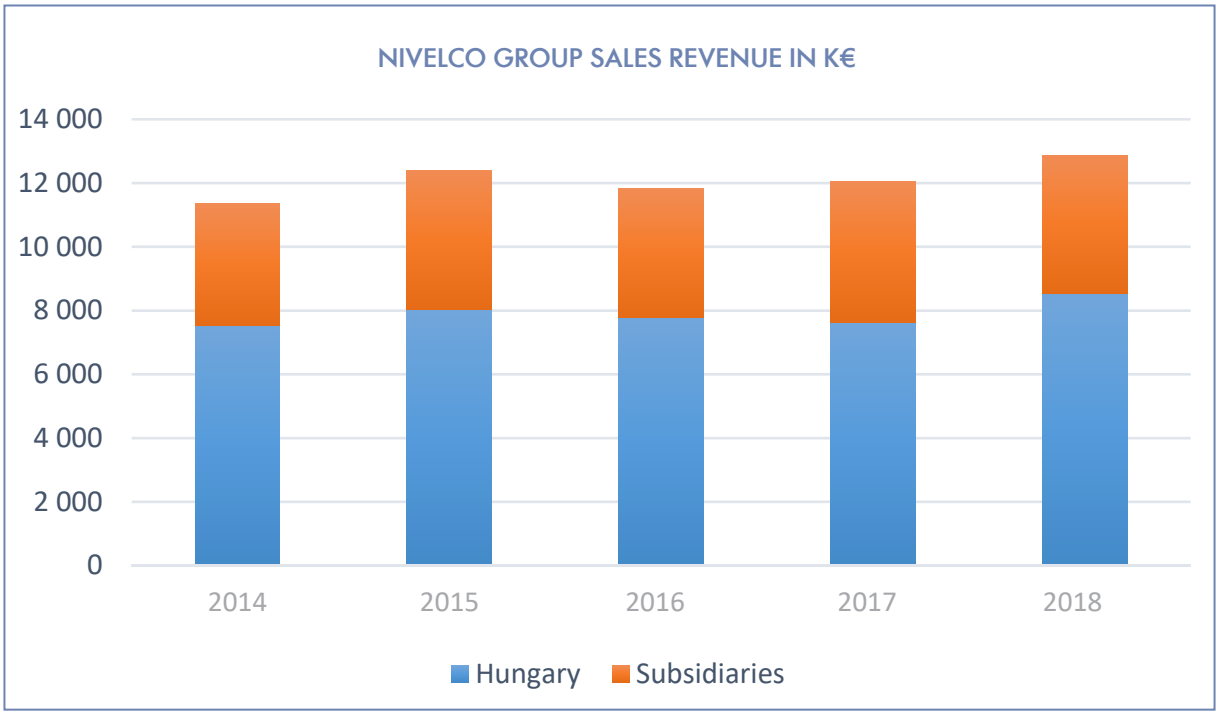
The **NIVELCO** Group had a very successful year in 2018, as the sales revenue increased again and we have succeeded to reach the highest annual revenue in the history of **NIVELCO** being close to 13 million Euro! This result has been reached by a 7% growth rate compared to 2017 and, if we compare it to 2016, the total revenue in 2018 was 9% higher.

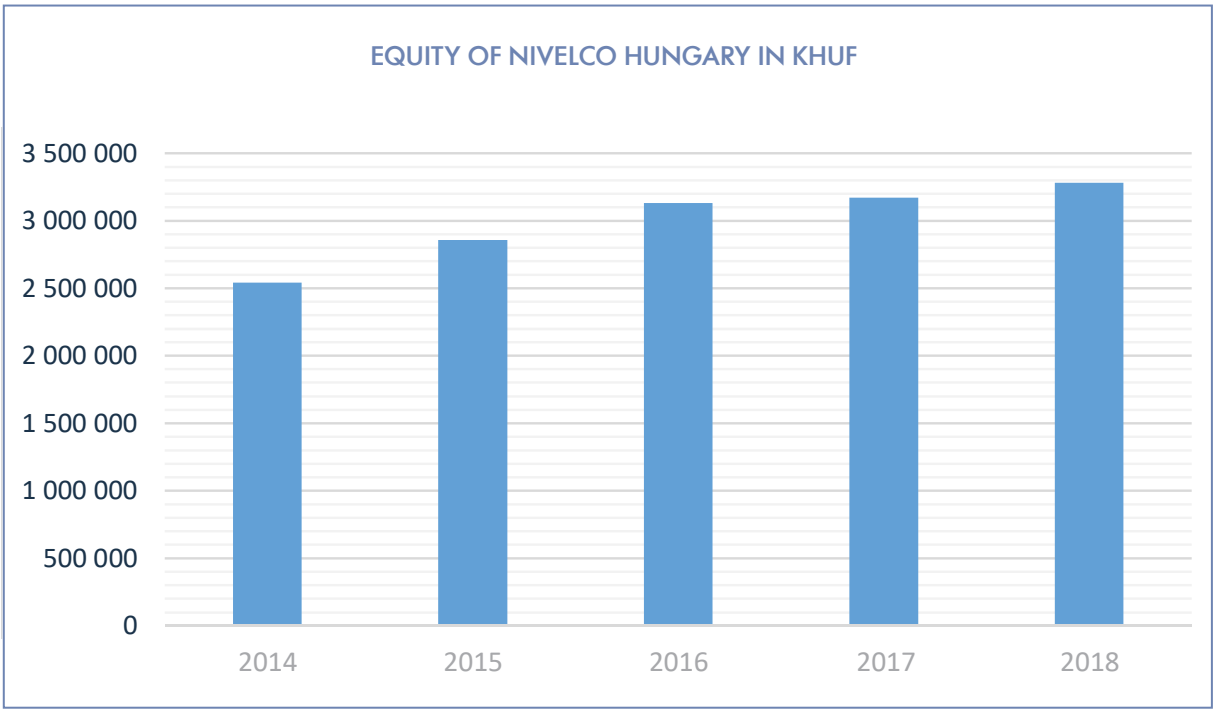
The revenue of our domestic sales has a 20% share in the Group's total revenue which means that our export markets still play a dominant role in our business life. The proportion of the sales revenue of the subsidiaries reached 34% in 2018. The remaining 46% is export sales without the subsidiaries realized by our distributor network. Generally, we can say that 80% of the sales revenue of the **NIVELCO** Group comes from the export markets.

The most important part in sales continues to be the sales of self-manufactured products the proportion of which is over 80% of total sales and this number has not changed essentially over the previous years. The product group of ultrasonic level transmitters is still of the utmost importance in **NIVELCO**'s sales strategy, the proportion of it is 46% of the revenue of the self-manufactured products. As a result of continuous technological developments and intensive marketing activities, **NIVELCO** Group is one of the top manufacturers of level transmitter devices, both in Hungary and worldwide.

The sale of commercial goods and rental of the **NIVELCO** office building make up the remaining 20% of our Group's total revenue. In these areas, we were able to keep the sales at the level of previous years. The utilization of the office building was nearly 100% at the end of 2018 and the fact that we have long-term contracts with our major tenants makes predictability in achieving our goals and business plans in the area of real estate management.

Similarly to sales, the profitability of our company is steadily increasing, with the aggregate EBITDA of the Hungarian **NIVELCO** companies increasing by another 16% in 2018 to EUR 1.7 million after a 25% increase in 2017.



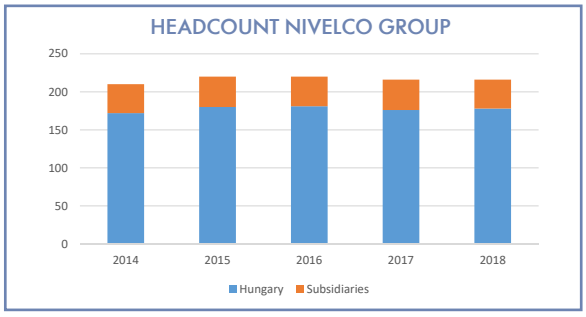


The operating profit has been used in the past years to finance significant production technology and capacity increasing real estate development investments, which have not involved external funding. We plan to continue to invest a significant portion of our future profits in technological developments in order to successfully maintain our competitiveness in the global marketplace.

Our company has been operating profitably for many years, which has a positive impact on our capital position as well, with an equity ratio of more than 72% at NIVELCO on the liabilities side of the balance sheet.

Despite the continuous increase in production and sales, the total headcount of NIVELCO Group remained unchanged in 2018 which means that sales growth was mainly achieved by increasing our operating efficiency. At the end of 2018, the NIVELCO Group had 216 employees and in 2019 only a small increase is planned in the number of staff.

All in all, in 2018 the NIVELCO Group had a successful year in every aspect and we are confident that this trend will continue in 2019 as well.



Our main goals for 2019:

- maintaining and expanding our customer base,
- increasing sales and production volumes,
- further development of manufacturing technology,
- further increase in operational efficiency.

Based on our goals we are expecting further growth in terms of both turnover and profitability.

Specialties of NIVELCO

Custom products or how to react to customer needs

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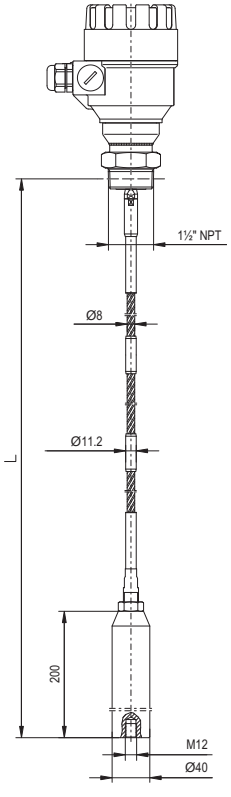
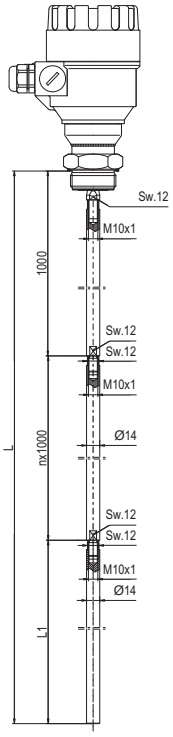
NIVELCO is a worldwide known and renowned maker in the industrial level measurement market. There are many reasons why the company and its products are favored by users; wide range of products, excellent quality, a five-year warranty, and affordable prices just to mention a few. But there is one additional factor that also contributes to our success and this is flexibility. We, at NIVELCO, constantly strive to meet the needs of our users as fully as possible and to supplement it, there is a high level of customer service.

What do we mean by that?

For example, NIVELCO regularly develops and manufactures product variants that are based on specific customer needs and are not part of the standard product range. In this article, we would like to introduce some of these product variations. They are not included in the product catalog as part of our product offers but have been developed to meet customer requirements. Product versions shown here are available on request but require an individual quotation.





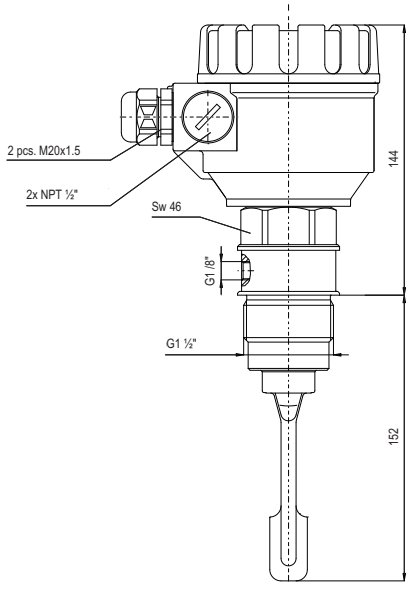
Let's take, for example, **MicroTREK** guided microwave level transmitters, for which modified probes can also be requested. Segmented versions are also available for rod and coaxial probes. Segmented probes consist of 1-meter sections which the customer can easily assemble at the site with the threaded connections, following the instructions of the attached installation manual. This design is particularly advantageous for devices longer than three meters, where the delivery would be problematic or disproportionately expensive in case of traditional designs. Another possible application is where the technological environment does not allow the many meters long probe to be fitted due to local conditions such as lack of space. In the latter case, only the rod segmented probe can be used not the coaxial one.

Staying by the **MicroTREK** example, HTN-4☐☐ models are also available with a twist-proof cable, which can also be supplied with a bigger counterweight on demand. Certain types of solids may produce extreme loading that causes the cable to twist. For these extreme applications our clients usually request using a reinforced probe cable and based on our experience, we also recommend using such a version for similar applications.

Moving on within the product range, **NIVOPOINT** magnetic tracking level switches are also available with integrated Pt100 temperature sensor. Naturally, this solution requires some compromise on other product parameters. On the one hand, **NIVOPOINT** level switches combined with Pt100 can be requested with up to 3 switching points only, and, on the other hand, the combined versions are currently not Ex-certified.

Staying by the level switches, let's see one of our most popular products, the **NIVOSWITCH** vibrating fork. The instrument versions with aluminum housing are also available with IP68 protection on request. This may be necessary for locations where, due to extreme climatic conditions, the IP67 enclosure is vaporized due to the inhalation and condensation inside the unit. The modified version with better protection grade is fitted with an integrated cable and all detachable joints are glued.

A special version of **NIVOSWITCH** RF300 vibration fork has also been developed at the request of a customer which is optimized for the measurement of extra-low-density, that is to say, ultra-light, fine granules of up to 6 – 8 g/dm^3. An example of such a material is expanded polystyrene. Because such lightweight materials have a high degree of static



adhesion to surfaces, this version has integrated compressed air nozzles which can be used to clean the vibrating blades if needed even when the instrument is installed into the process.

These, in the article listed custom products or, with a slightly longer, but much more elegant name, products developed to meet specific user needs, are just a few examples of our unique solutions from the past couple of years. It is also important to point out that in some cases such product versions prove to be so promising and popular that they eventually will be included in the standard product range of **NIVELCO**.

New antenna version in the PiloTREK family

Low-cost planar antenna radar from NIVELCO

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Responding to the customer needs and the industrial level measurement market trends in the last few years, **NIVELCO** Process Control Co. expanded its **PiloTREK** non-contact microwave radar level transmitter range with a new planar antenna version in 2019. These new versions are the most affordable members of the **PiloTREK** family while maintaining the advantageous features of these instruments, and what is more, in some cases offering better parameters.

The new planar antenna type **PiloTREK** has a black PP integrated housing and is available with 10 m or 16 m measuring range. It has standard 4 – 20 mA + HART® output, so can easily be used in HART® multidrop loops with the help of **NIVELCO**'s **MultiCONT** multichannel process controller or in a system with a PC applying our **UNICOMM** HART®-USB/Bluetooth®/RS485 modems. The operation of these radar level transmitters having planar antenna is exactly the same as of the other integrated types of the **PiloTREK** family.

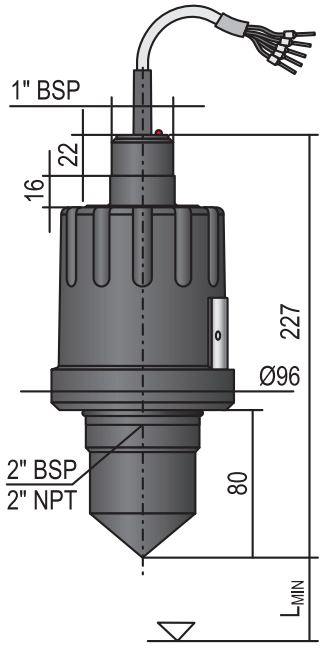
The planar antenna units can be ordered with 2" BSP and NPT process connections and, in the series, there are Ex ia versions as well.

PiloTREK
WPP-1A0

About the planar antenna

Planar antennas have been used successfully in different industrial areas for many years since they have a lot of advantages such as low-cost, conformability and easy manufacturing.

So-called antenna patch elements produced with the microstrip technique are the most common forms of such kind of printed antennas.



The **PiloTREK** radar featuring the new antenna type is designed to provide the largest possible measuring range and the best possible dielectric performance at a great price.

The integrated planar antenna is rated for electrically conductive or dielectric liquid products with a minimum of 1.9 relative dielectric constant.

The WPP-1B0 type features a 300 mm upper dead zone and a measuring range up to 16 m and even the most affordable WPP-1A0 type is able to measure up to 10 m. Providing these numbers, **NIVELCO**'s planar antenna models are capable of handling a much greater detection range than the similarly priced K-band radar transmitters of the competitors.

Please note, however, that the effectively usable measurement range can be limited for the planar antenna versions as well as in case of all radar systems by some particular circumstances of the actual application. Such circumstances could be, for example, disturbed or wavy surface, foam or dense fog over the surface, or condensation on the antenna, as well as the low dielectric constant of the measured medium.

Advantages of PiloTREK's planar antenna version

- *Excellent price/performance ratio*
  With its superb features and parameters the new planar antenna version ensures reliable level measurement of various liquids at a very economical price.

- *Small size*
  This version is the smallest sized **PiloTREK** radar which widens the range of possible applications as it is easier to install the device in process environments with limited space.

- *Up to 16 m measuring range*
  With its large measuring range the new planar antenna **PiloTREK** significantly outperforms the competitor's similar price category K-band radar transmitters.

- *Narrower cone of sensing*
  Our planar antenna radar features a 16-degree beam angle which is comparable with the sensing cone of the DN50 horn antenna type **PiloTREK**.

- *Better protection against build-up*
  Due to its build, the encapsulated planar antenna is less sensitive against build-up than horn-type antennas.

The table below shows the technical parameters of the **PiloTREK** non-contact radar with planar antenna compared to the parameters of **PiloTREK WPP-140** radar with an encapsulated horn antenna.

Mounting

There are two mounting options for installing the device into the technological process. On one hand, there is the usual 2" process connection (BSP or NPT), on the other hand, there is the 1" threaded neck on the top of the device offering the possibility to suspend it above the medium, which would be a typical water/wastewater application.

	PiloTREK WPP-1A0 (WPP-1B0)	PiloTREK WPP-140-4
Medium	liquid	
Measuring range	10 m (16 m) (32 ft (52 ft))	16 m (52 ft)
Dead zone	0.3 m (1 ft)	
Accuracy	<0.5 m: ±25 mm, 0.5 – 1m: ±15 mm, 1 – 1.5 m: ±10 mm, 1.5 – 8 m: ±3 mm, >8 m: ±0.04% of the measured distance	
Min. temperature	-20 °C (-4 °F)	-30 °C (-22 °F)
Max. temperaure	+60 °C (140 °F)	+80 °C (176 °F)
Pressure range	-1 … 3 bar (-14.5 … +43.5 PSI)	
Min. dielectric constant	1.9	
Process connection	2" BSP / NPT, 1" BSP	1½" BSP / NPT, 1" BSP
Housing	PP	
Antenna	planar 2", PP enclosure	DN40 horn, PP enclosure
Frequency	25 GHz	
Antenna diameter	2"	1.5"
Beam angle	16°	19°
Output	4 – 20 mA + HART®	
Ex	Ex ia	–
IP protection	IP68	

Planar antenna PiloTREK installed

Vetted materials

Housing	PP
Process connection	
Antenna enclosure	
O ring	EPDM

Application area

The typical application area of the planar antenna PiloTREK is the water/wastewater industry but it can also be applied in small to large sized vessels in the chemical, food/beverage, power generation and pharmaceutical markets.

Order codes

Versions, options and order codes of PiloTREK non-contact radars with planar antenna can be seen in the table below:

PiloTREK WP-100 with planar antenna

2-wire integrated compact pulse burst radar level transmitter for liquids with encapsulated planar antenna

5 years warranty

Version

W □ P – 1 ■ ■ – ■	
P	Integrated transmitter

Antenna / Housing

W P □ – 1 ■ ■ – ■	
P	PP / PP

Antenna / Connection size / Measuring range

W P P – 1 □ ■ – ■	
A	Planar / 2" / 10 m
B	Planar / 2" / 16 m

Process connection

W P P – 1 ■ □ – ■	
0	BSP
N	NPT

Output / Approval

W P P – 1 ■ ■ – □	
4	4 – 20 mA + HART®
8	4 – 20 mA + HART® / Ex ia

Cable

Maximum length 30 m; each started 1 m over the standard 5 m

Accessories to order (see relevant page for details)

S F A – 3 ■ ■ – 0	Flanges
S A T – 3 0 4 – 0	HART®-USB modem
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – 2	HART®-USB/RS485 modem
S A K – 3 0 5 – 6	HART®-USB/RS485 modem / Ex ia
S A A – 1 0 ■ – ■	Mounting brackets

Availability

This new model version is already available for ordering with our standard shipping time.

We are sure that the new low-cost planar antenna version of PiloTREK will strengthen even more the professional reputation of NIVELCO opening new markets and application possibilities for NIVELCO's non-contact microwave radars.

Heat treatment for the sake of quality

Heat chambers and deep-freezers in NIVELCO manufacturing

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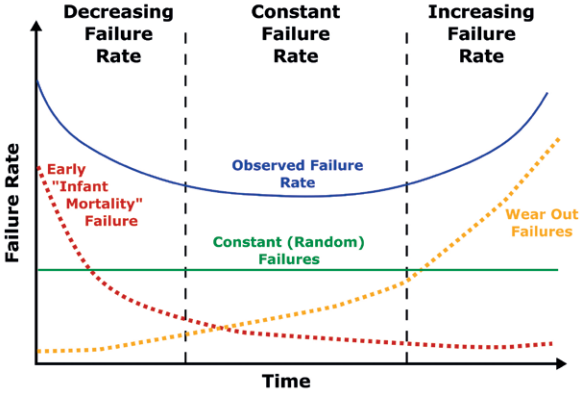
Quality has been a top priority at NIVELCO since the beginning which is, along with excellent value for money, one of the main arguments for our customers to choose our products.

As we have written in several previous issues of our Magazine, NIVELCO's Quality Management System, which was established based on ISO 9001 standard 25 years ago and has been working effectively ever since, employs many different methods, tools, and technologies to ensure top quality of our products and services.

Besides other factors, this quality allows NIVELCO to offer a five-year warranty on almost all instruments, which makes us unique among companies in this industry.



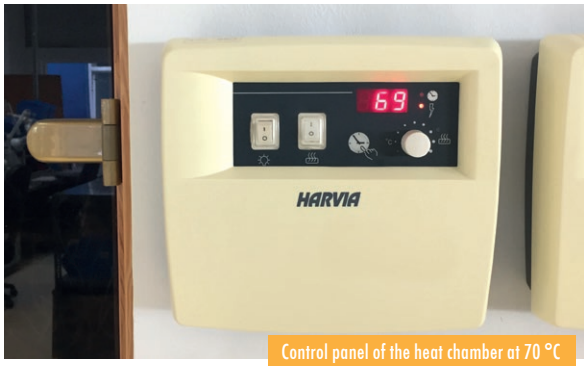
This article describes some of the techniques used in NIVELCO manufacturing technology that have a significant impact on the quality of NIVELCO devices. An important criterion for judging the quality of products is how reliable they are and how often failures occur. Product life cycle is broadly characterized by a relatively high failure rate in the early stages of its life, which declines rather quickly to a stable, low value. Towards the end of the product life cycle, failure rate increases again due to wear and tear. This phenomenon is well illustrated by the so-called bathtub curve.

Higher failure rates at an early stage cause a lot of trouble for manufacturers, as it can be very destructive to the image of a company if a newly purchased and installed device develops a technical fault almost immediately or within a short period of time. Manufacturing techniques used by NIVELCO and presented in this article, in order to reduce the rate of early failure, have previously been deployed primarily in the military industry, where high reliability is an extremely important requirement, so it is clear why they perform their task very effectively.

Mounted untested PCBs

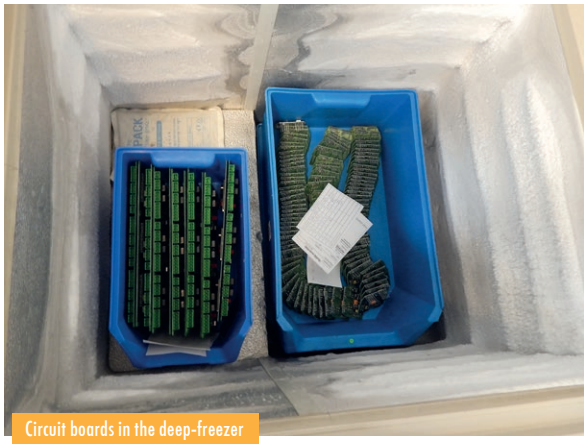
One such manufacturing method is the so-called temperature shock treatment. Printed Circuit Boards (PCBs) which are mounted and soldered but are not yet tested go through this process, in a passive, inactive state without supply voltage. All circuit boards of all NIVELCO manufactured devices receive this treatment.

During the process, PCBs first spend 1 hour in hotness in a heat chamber heated up to 70 °C then they are put into a deep-freezer at -20 °C for a further 1 hour. This means that all panels and components must suffer a temperature change, a temperature shock of 70 °C plus 20 °C, so a total of 90 °C.



Control panel of the heat chamber at 70 °C

However, hardship is not yet over as the next step is again the 70-degree Celsius chamber for another hour and the process is repeated twice more. In total, circuit boards undergo three temperature shock cycles this way.
But what do we expect from this aggressive heat treatment? It may sound surprising but the answer is failures. What does it mean?

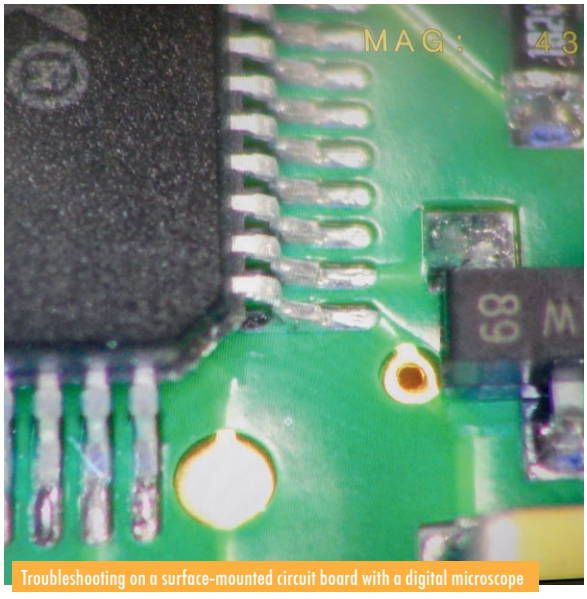

Circuit boards in the deep-freezer

Multiple, extensive temperature stresses can cause poor-quality components, soldering points, contacts, printed circuit wires to fail, potential hidden errors can be revealed and during the subsequent testing/ calibration will be shown if any of these components or circuits are malfunctioning.

It is difficult to decide which one is better: if we detect failures or if we don't. However, it is certain that if defects are found it is good news because then it is not the end-user who will be affected by this defect in the first hours or days after the installation. Statistics show that we found malfunctions caused presumably by the temperature shock treatment


Sauna-like heat chambers in NIVELCO production

in less than one percent of the cases. If a specific source of error is found and can be fixed, the faulty panels will be repaired. If repair is impossible or uneconomic, the panel is discarded, of course, with maximum consideration of environmental regulations. Repaired panels are again subjected to three cycles of temperature shock treatment.



Troubleshooting on a surface-mounted circuit board with a digital microscope

MicroTREK burn-in and test chamber

It is important to note that in the mid-nineties NIVELCO was one of the first companies in the industry to introduce this type of temperature stress process, in the hope that it could help get rid of early errors that the company was often forced to face. This decision regarding the quality policy proved to be successful; after introducing the method, the number of errors occurring in the first hours and days decreased significantly.

Another manufacturing technology method is the so-called burn-in, during which devices that have already undergone testing and calibration are placed in a heat chamber heated to 50 °C where they are connected to the rated voltage or a few percent higher than that. Accordingly, this is an active kind of heat treatment, the instruments should operate for about 1 day at 50 degrees Celsius. Under normal industrial conditions, equipment should rarely operate at temperatures higher than this.

The purpose of the burn-in process is similar to the temperature stress discussed above, which is to reduce the number of more frequent failures in the first stage of the product life cycle curve. Conditions which are artificially made more difficult, namely the continuous operation at near to the maximum ambient temperature allowed for the devices, at rated or higher power supply for almost a full day pose a challenge to the electronics. It speeds up the appearance of any malfunctions which, if operated under normal conditions, occur only after an extended period of time.

Heat treatment and testing of MicroTREK guided microwave radars happens in a slightly different way and in a special heat chamber. Transmitters which are already tested and calibrated are also operated actively under temperature cycles between +60 and -20 degrees Celsius, while the calibration values previously set at room temperature are being checked if they do not change at -20 and +60 °C, respectively. The burn-in process linked with testing is performed by a software-controlled automatic system.


Powered NIVELCO instruments in the burn-in chamber

The above-described heat treatment, testing and malfunction detection elements of NIVELCO's manufacturing technology and quality assurance system all greatly contribute to the worldwide recognized quality of NIVELCO instruments and to the company's success.

Serving the growth

Technological developments in NIVELCO manufacturing – Part 2

TIBOR SÁRI
Production Director

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Let me start this article with one of the last thoughts from Part one: 'In order to be able to increase the number of units we produce, we need to, besides the technological development, also increase the number of people working in the manufacturing and this task is becoming more and more difficult.'
Unfortunately, the above statement is still valid, to the extent that it is practically becoming commonplace in Hungary today. Solving this difficult task has and will require continuous effort from our side.
The workforce is constantly being replenished and we are working hard to find the right people on the domestic labor market who are on a long-term basis able to manufacture reliably and in high-quality NIVELCO's instruments, being sold worldwide.
But it is not enough only to increase the number of employees, workforce expansion brought new challenges with it. We needed to create the necessary infrastructure, more space and new workstations for the staff recruited for meeting the needs of growing sales activities and this meant further investments and reorganization from our side.

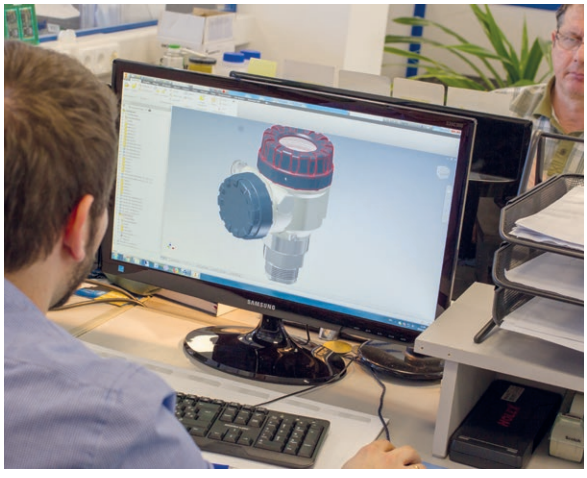
As part of the expansion of the manufacturing building in 2014–2016, a new, bright, modern 900 square meter production area was introduced in 2016, which we have been beginning gradually to penetrate with different technologies and production units, thus creating a more transparent, spacier and even safer production environment. Here, in the upstairs hall, we have created 24 new workstations for electronic measuring, assembly, and soldering.

Our employees were provided with modern, comfortable industrial furniture and working conditions which all meet the technological requirements of today. For the workstations, we tried to provide as much natural light as possible and the windows of the hall were covered with a UV filtering film to provide protection from harmful rays.

In addition to the traditional electronic workstations, there were also special workspaces created, utilizing the physical capabilities and dimensions of the hall. One longstanding problem was solved by creating a mounting area for our most space-demanding product. Our multipoint temperature transmitter, THERMOPOINT, is now being ordered in ever-larger numbers and with ever longer sensors; today the product is often manufactured in lengths of

38–40 meters, but from this year it can be ordered in versions up to 50 meters. The new production hall will also provide enough space for the assembly of these oversized 'boa constrictors'.
Another activity that also requires a huge space is the calibration of ultrasonic transmitters if we want to perform this operation covering the entire measuring range. Once again, taking advantage of the ample space available in the new hall, we have created a much more comfortable testing/calibration environment which significantly increases workflow efficiency and enables full-scale testing of NIVELCO's most significant product line, the EasyTREK/EchoTREK ultrasonic level transmitters.
Due to the arrival and the space requirements of the new, high-precision and extremely fast FUJI electrical component placement machine a.k.a. pick-and-place machine, which was mentioned in the first part of the series and wich is among our major technological investments, we had to significantly restructure and expand our SMD division. This change also affected the SMD workstations, electronic component storage, and other elements of the PCB (Printed Circuit Board) technology line. The reorganization not only made room for the new FUJI, but also the place and role of other equipment forming the technology line of the SMD division, the solder paste printer, infrared and wave soldering equipment, and the earlier component placement machine were changed. As a result, we have been able to take another step toward creating a fully automated, in-line technology which will allow the implantable, solderable electronic panel to pass through various technological phases without a human having to touch it.

Some of the production management teams have also been given new office space, thus their old place can be used for expanding the electronics warehouse or creating a service room. Determining exactly to which department this free place will be given and making the best use of available space will be a future task. For the time being, in the old office one can carry on special working tasks for the company, for example, one of our exhibition models is currently being repaired and modernized here, but product photo shootings, smaller meetings, and events can also be held here on request.



After the expansion of various components of the production so far and the creation of new workstations for the assembly and testing of the devices, there is still about 200 square meters of free space in the 900 square meter hall, which provides further opportunities for future expansion. Thus, within the given infrastructure framework, NIVELCO has been given the opportunity further to adapt flexibly to the needs of customer and growth in the turnover, as it has done in the past.
At our place, only one thing is permanent: the change!

LevelBOY, the level measurement expert

Dairy factory renovation and instrumentation renewal

PÉTER SZEBENI
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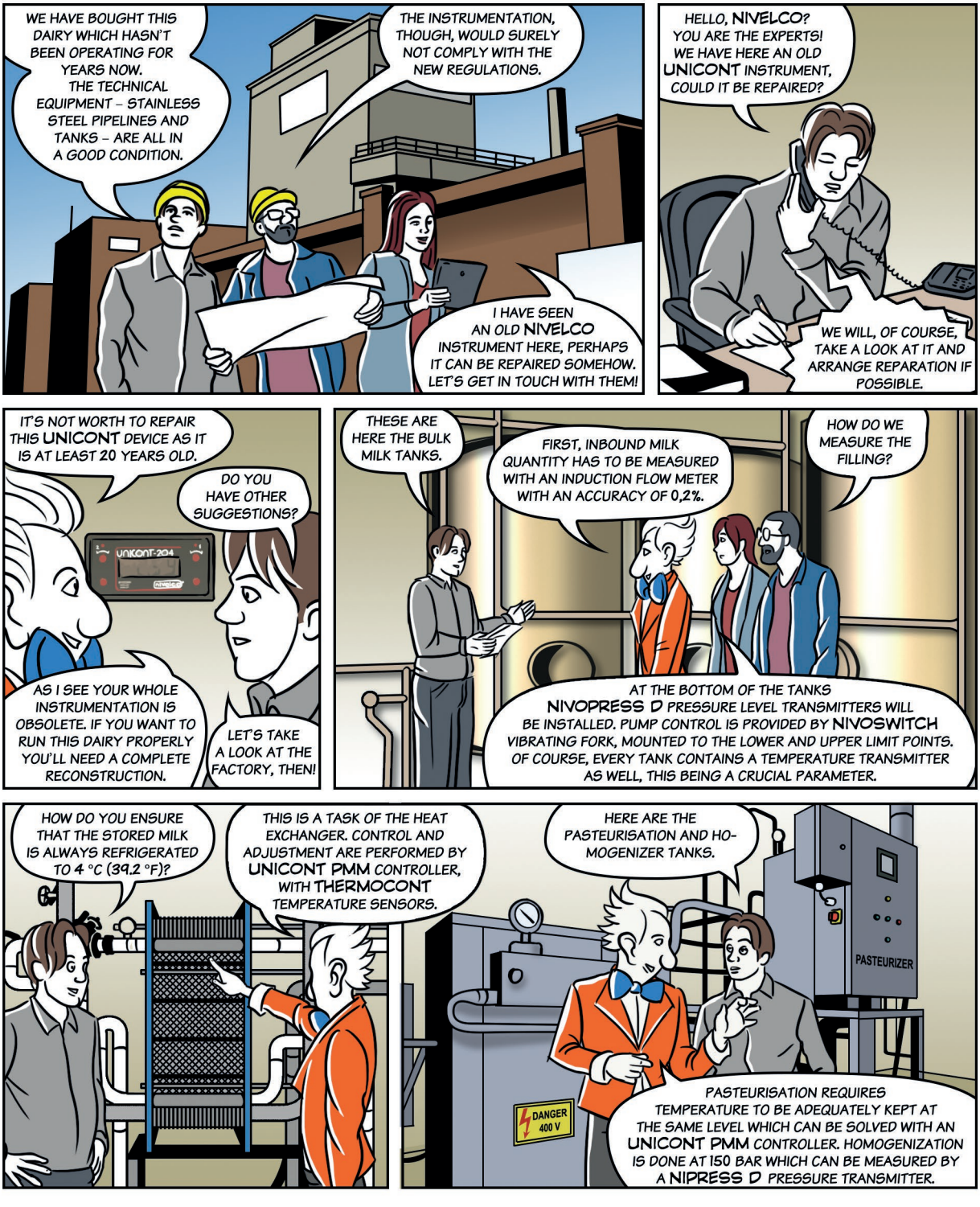

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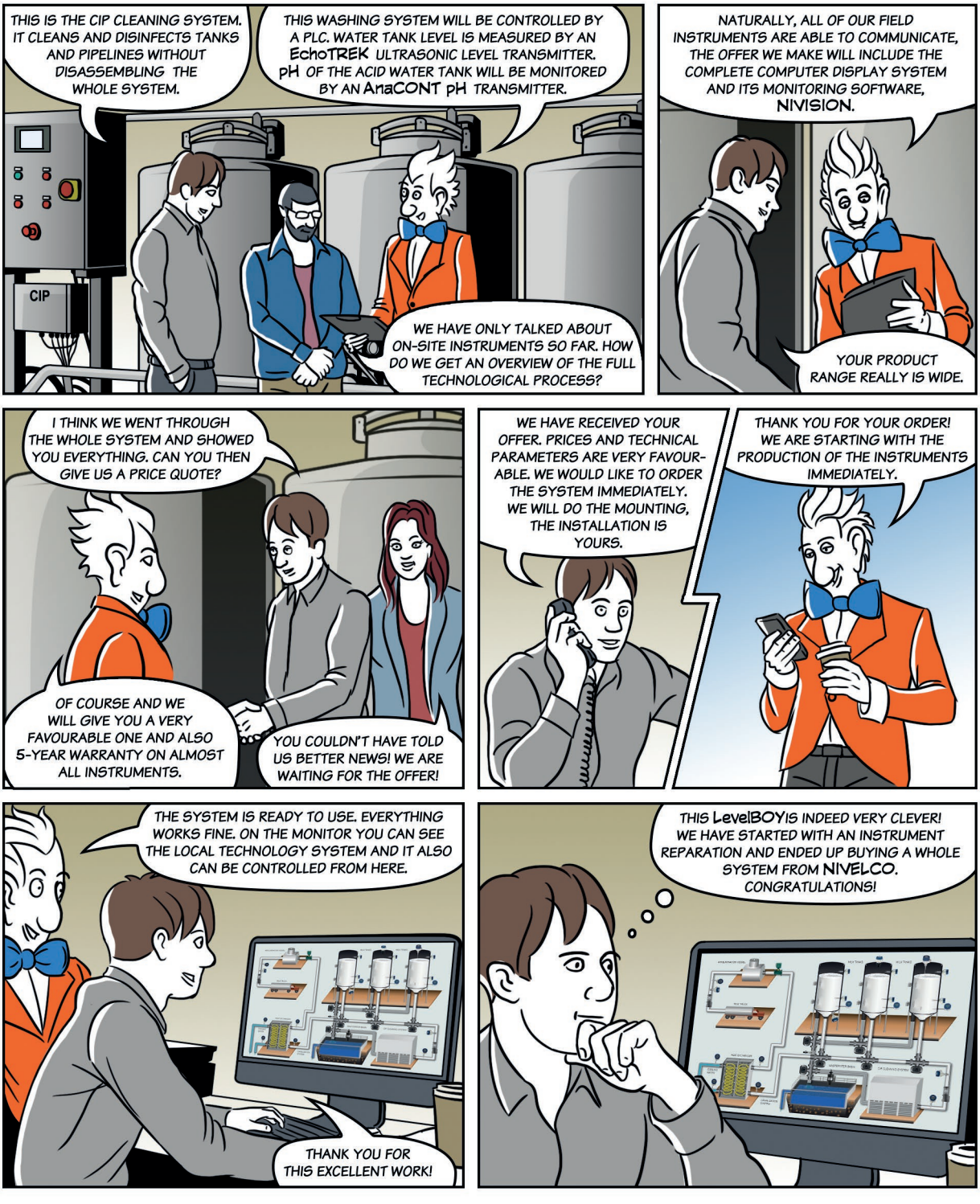

News about our Romanian subsidiary

Management changes at NIVELCO TEHNICA MĂSURĂRII SRL

MIHÁLY-ATTILA MODI
Commercial Director

NIVELCO TEHNICA MĂSURĂRII SRL
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NIVELCO Process Control Co. is a worldwide recognized manufacturer of industrial measurement instruments based in Hungary. In 2005, the company established his trading subsidiary, **NIVELCO TEHNICA MĂSURĂRII SRL** in Sangeorgiu de Mures, Romania. Just like the parent company, the subsidiary also provides technical solutions for the automation of various industrial processes.

Premises of NIVELCO TEHNICA MĂSURĂRII in Sangeorgiu de Mures

NIVELCO TEHNICA MĂSURĂRII SRL offers a wide range of products:

- level transmitters for continuous measurement of liquids and solids;
- level switches for indicating the lower/upper limit or intermediate level of liquids and solids;
- liquid analytical transmitters for measuring pH, ORP, dissolved oxygen and conductivity;
- pressure transmitters for measuring relative, absolute and differential pressures;
- temperature transmitters and heat resistors;
- electromagnetic flowmeters and open channel flowmeters;
- signal processors for displaying, processing and transmitting instrument output information;
- interfaces and software for parameterization of transmitters;
- computer process visualization software.

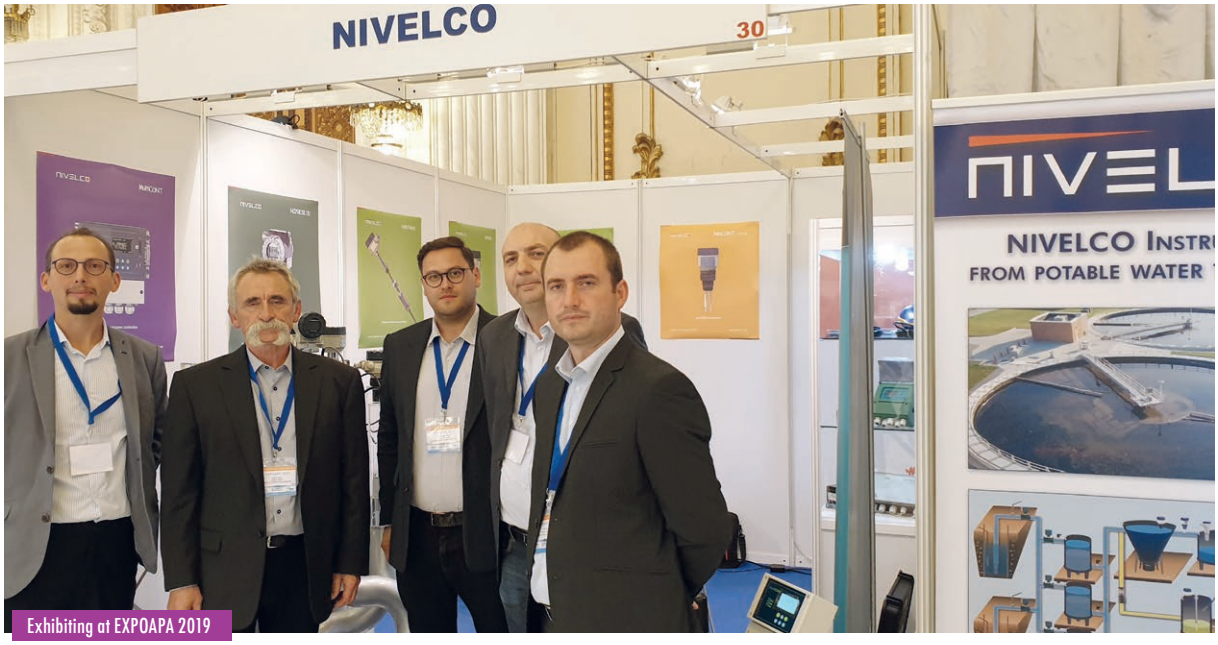
Our company is represented in all geographical regions of Romania by our specialists who provide sales service, technical consultancy, commissioning, technical assistance and, if necessary, maintenance services.

One successful project among many: high-temperature PiloTREK and NIVOCAP CK on a bitumen tank in the harbor of Constanța

Since launching the company, the number of products sold in a year has been multiplied and thanks to our constant feedback and suggestions we have actively helped the parent company to develop its product range and define new development directions. We have succeeded in becoming a **NIVELCO** subsidiary that has found its place in the Romanian market.

During the 14 years since its foundation, our company has carried out numerous successful projects. With the instruments of **NIVELCO**, our specialists have been part of a variety of instrumentation tasks in industrial applications. The biggest part of our activity has been and still is aimed to the water and wastewater industry, but with our instruments and solutions we are present in the construction, chemical, pharmaceutical, food, oil and gas, and energy industries as well. Our company has also provided industrial level signaling and process control solutions for irrigation systems, fuel, LPG and solvent storage, grain storage and other solid storage.

At the 2017 EXPOAPA trade fair with the demo model Hydra



Exhibiting at EXPOAPA 2019

From the beginning, we have been regular exhibitors at trade fairs in Romania such as IEAS (International Electric & Automation Show), RAILF-Romcontrola (Romanian Automation & Instrumentation Laboratory Fair), EXPOAPA-Danube Eastern Europe Regional Water Forum, or RESONANCE ELECTRIC SHOW.

This year, changes have taken place in our company's management.
As of June 15th, 2019, our new Commercial Director is Mihály-Attila Modi, taking over the role of András Oltean-Péter. Attila joined the Romanian subsidiary 8 years ago, and, as a regional representative, has had the opportunity to learn about **NIVELCO**'s entire product portfolio, while gaining a comprehensive view of the operational side of the company. His future key tasks will be to define a new corporate strategy, identify new markets and enhance sales dynamics.

The company's financial activities are now managed by Andrea Délczeg-Szia as Chief Financial Officer who has been a member of the **NIVELCO** Romania team since the beginning.

We hope that the new management will mean a fresh and dynamic drive for the company by implementing a new development strategy, aiming to expand the market segment covered by **NIVELCO**, further to promote the product range and brand in Romania and to make the working relationship with our partners more effective and successful.


Mihály-Attila Modi
Commercial Director

Andrea Délczeg-Szia
Chief Financial Officer

NIVELCO's new official distributor in Turkey

Introducing AYKOME Engineering from Ankara

ABDULLAH SARIKAYA
General Manager

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Our company, AYKOME Engineering Ltd. started its operations in 2014 and has adopted the principles of creating a coordination center using trenchless technologies to provide methods and technologies that can prevent uncontrolled and damaged excavations, to develop products and services for intelligent network management and to manage applications to handle NRW (Non-Revenue Water) problems, facilitating and expanding them.

AYKOME Engineering has been operating since 2014 with its staff having extensive experience in water loss (leakage detection), cable and pipe location, DMA (District Metering Area) and PMA (Pressure Management Area) applications, installation of remote reading and automation systems, water analysis, network design, and management.

Our company, which has the expertise in engineering, consultancy and counseling especially in infrastructure projects, is the Turkish representative of many large companies like NIVELCO, Isoil, Guterman, Sofrel, Rezatec, Detectronic, Rioned and Mini-cam. It has accomplished many successful case studies on water loss and leakage detection, underground cable and pipe location, flow measurements, parametric water analysis, pressure, and level measurements, SCADA automation, hydraulic modeling, and geographical information systems.

AYKOME Engineering, with which is in cooperation especially municipalities in the water and wastewater sector, has also cooperated with industrial automation companies, organized industrial zones, military units, automotive sector, large production facilities, and factories in recent years.

Our company has chosen to work with NIVELCO mainly because of its robust, reliable and competitive products. In addition, Isoil, which we have been a partner with for a long time with great pleasure, has a big role in the start of this cooperation. The R&D activities, the well-qualified and experienced staff, and the problem-solving approaches of the company can be listed as other reasons as well. Moreover, the 5-year warranty period is so noteworthy that it gives a strong idea about the quality of the products.

AYKOME Engineering is glad to become a partner of NIVELCO which has more than 100 distributors all around the world and sold more than 1 million products in its history so far.

30 years at the cutting division

Interview with Gyula Trautmann

BENJAMIN SZŐLLŐS
Marketing

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– When did you first hear about NIVELCO and how did you become a company employee?

– I already knew the Szőllős family back in the 70s, and by 1985, I had worked for NIVELCO, manufacturing various mechanical products such as vibrating rods and parts and had also helped with the supplying tasks.

– How do you recall the beginnings?

– In 1989, I joined NIVELCO as a lathe operator. The familiar atmosphere helped me through the initial difficulties and the attitude and helpfulness of my colleagues helped me to settle in easily, too.
After getting to know the products, I was able to participate in their development and renewal.
The production of more and more devices also contributed to my growing interest in my work, and the gradual development of the company gave me even more confidence to fulfil my tasks.

– In which positions have you worked so far?

– At the beginning of the millennium, I was appointed the head of the cutting division and after my retirement, I started working at the R&D department.

– What is, in your opinion, the key to NIVELCO's success?

– The success of the company is owing to the flexibility, continuous improvement and renewal of technologies, as well as the attitude of the management. Also, this is, in my opinion, the key to the company's future.

– What were the most memorable moments for you at NIVELCO?

– The introduction of various instruments at different exhibitions and their later market launch, the successful completion of my mission in Syria, and the trust that my leaders have in me are the most memorable.

– Can you tell us a little bit about your personal life?

– I am a grandfather of three and I am very proud of them for their excellent study results and good behaviour.

– Thank you for the interview!

27 years in foreign trade

Interview with Erika Heyn

BENJAMIN SZŐLLŐS
Marketing

NIVELCO Co.
benji@nivelco.com

– When did you first hear about NIVELCO and how did you become a company employee?

– In October 1992, I applied for the import administrator position at NIVELCO as I wanted to work in an area where I could benefit from my studies in foreign trade and my language skills. It was that period when the management of the company wanted foreign trade activities to be done in a more organized way and they started recruiting new colleagues for these positions. I received this opportunity from András Huppert, head of the department, and we work together ever since.

– How do you recall the beginnings?

– The company was headquartered on Béke road at that time; the atmosphere was very friendly and familiar so the colleagues warmly welcomed me. Since I was new to the field of industrial instrumentation, I got a lot of help from my engineering colleagues in professional matters and learned a lot from them about this industry. In addition to my import duties, I was also part of marketing correspondences led by Tibor Winkler, so I gained insight into this field as well. There have always been new and unexpected tasks related to the launch of the company's foreign trade, and my work has been very diverse.

– In which positions have you worked so far?

– Over the years, I have had the opportunity to try out many areas. For a few years, I have been responsible for the import area and then I was in charge of liaison and financial negotiation with the Vienna office. Later, I took part in handling export duties as well as the management of shipments and reparations. With the continuous growth of the company, management structure has also changed, export marketing and commercial divisions were merged and I became the head of the commercial department.

– What is, in your opinion, the key to NIVELCO's success?

– Success is the right combination of various components. Adapting to changing market needs, personal presence of owners, timely decisions, decades of professional experience and dedication of colleagues, the collaboration of co-departments, good product quality, efficient sales structure, flexible consideration of customer needs just to mention a few, but of course many other ingredients can contribute to the success.

– What were the most memorable moments for you at NIVELCO?

– One good memory is, for example, the biggest order in the company's history, where we faced countless unexpected challenges, there was plenty of excitement, but in the end, thanks to the dedicated work of the colleagues, everything was resolved. Company anniversaries, boat trips, company celebrations with old colleagues are all events where the homely atmosphere is present.
I am happy to be a member of NIVELCO team for 27 years now.

– Thank you for the interview!

NIVELCO replacing competitor's radar

Success story in the chemical industry in the USA

DAVE MILLER
Managing Director

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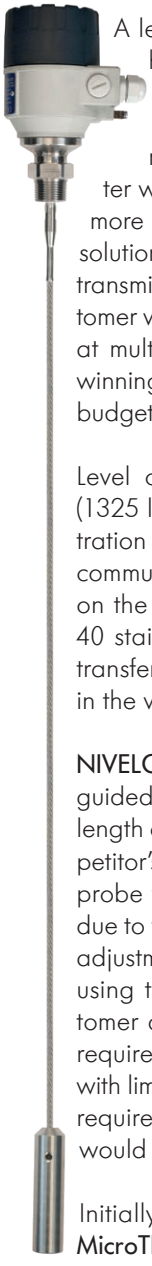

A leading global manufacturer and supplier of hydrogen peroxide, peracetic acid, persulfates and adjacent technologies recently contacted **NIVELCO** USA for help. Performance of a competitor's radar level transmitter was sporadic, leading the customer to seek a more dependable and consistent continuous level solution for their peracetic acid storage totes. If our transmitter provided the reliability needed, the customer would be replacing more than 30 transmitters at multiple plant locations. Also key to **NIVELCO** winning this customer's business was meeting their budget price.

Level of two four feet (120 cm) tall 350-gallon (1325 l) plastic totes containing a 25% concentration of peracetic acid was monitored via a PLC communicating with the radar transmitter, mounted on the top of 6.5 feet (2 meters) high, 2" schedule 40 stainless steel vent tube. A pump is started to transfer acid from one tote to the other when level in the vent tube reached low level.

NIVELCO proposed **MicroTREK** model HBB-420-4 guided wave radar with 6.5 feet (2 meters) insertion length coaxial probe as a replacement for our competitor's non-contact radar transmitter. The coaxial probe would provide a longer measurable range due to very short dead zones. No manual threshold adjustment would be required in the 2" pipe when using the coax probe. This appealed to the customer as the transmitter they currently were using required adjustment and calibration at installation, with limited measuring range. The **MicroTREK** would require minimal configuration by the customer and would provide the desired measuring range.

Initially, our customer placed an order for three **MicroTREK** transmitters. All transmitters performed as expected, so well that the customer immediately placed an order for three more **MicroTREK**. The plan is that at least three transmitters will be replaced at a time. Not only is the customer pleased with the ease of installation and set-up for **MicroTREK**, as well as reliability, but they are happy with a price that satisfies their budget and the three-week manufacturing time provided by **NIVELCO**. When the customer places

their order with **NIVELCO**, they also begin fabrication of the vent tubes. The vent tubes are fabricated at the customer's headquarters and shipped to various plant locations around the USA. **NIVELCO**'s three-week manufacturing time helps this customer to meet the installation time required by each plant.

One of the keys to success with this customer was selecting the most effective solution that completely solves the customer's requirements. **NIVELCO**'s wide variety of measurement methods provide a number of different ways to approach tough level applications. For this customer, **NIVOFLIP** with **NIVOTRACK** was considered, as was **NIVOCAP** and **NIVOPRESS D**. All were acceptable means to a solution, but **MicroTREK** was determined as the method that best meets all of the customer's requirements – reliability, price, ease of installation, minimal configuration, delivery.

EchoTREK Proves to be Spider-Proof

A WasteWater Treatment Plant application from San Jose, USA

DAVE MILLER
Managing Director

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BLACK & VEATCH

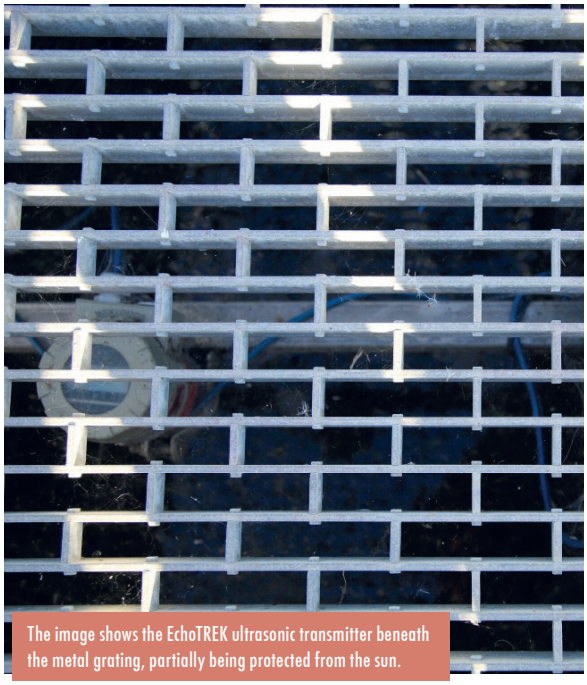
Recently, an engineer with Black & Veatch, based in British Columbia, Canada, contacted our sales representative in Toronto, Cancoppas Ltd, for assistance with NIVELCO ultrasonic transmitters for an expansion and upgrade project for San Jose, California.

Black & Veatch is a premier US engineering, construction and consulting firm with extensive expertise in water and wastewater plants worldwide. Black & Veatch is headquartered in Kansas City, Kansas, with offices and branches globally. Black & Veatch has approximately 10,000 professionals working out of more than 110 offices worldwide and has completed projects in more than 100 countries.

Although in our case the project engineer was based in Canada, the instruments would be purchased in the USA for delivery to the San Jose, California jobsite.

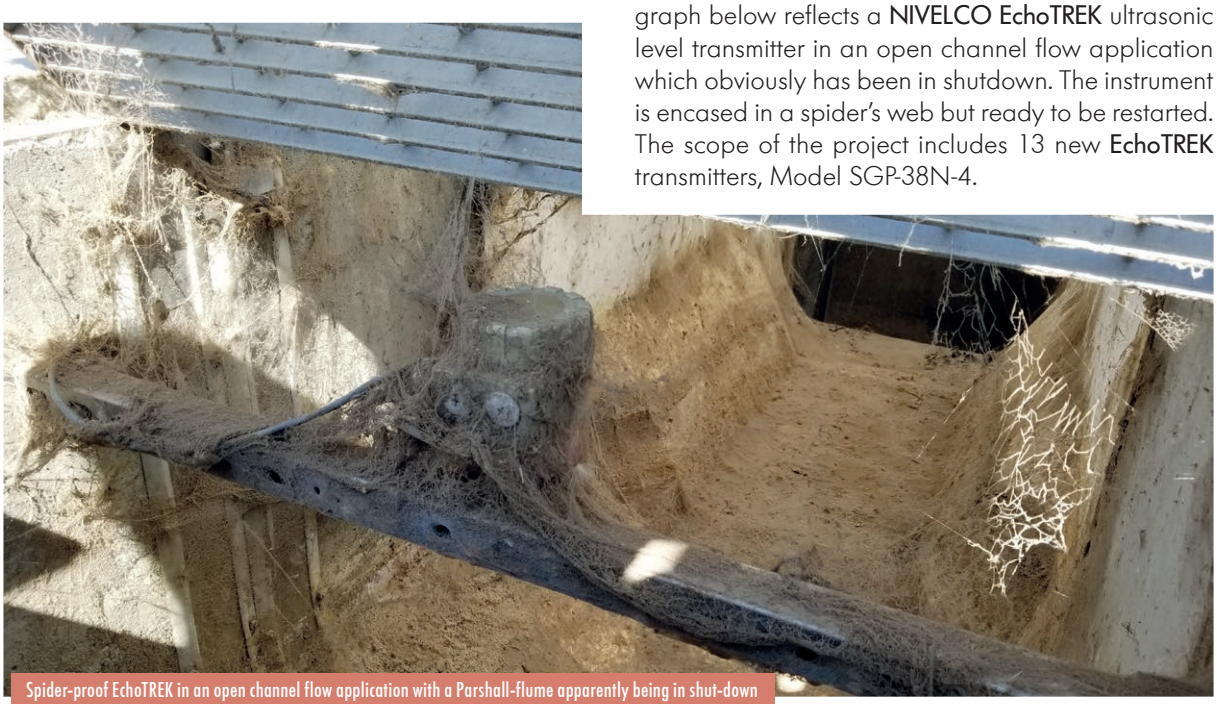
In addition, NIVELCO USA Representatives in Canada and the US were involved as well as the NIVELCO office in Naperville, Illinois.

Various images were provided by the project engineer to help in the understanding of the existing installations and what was required for the site expansion being engineered.



The image shows the EchoTREK ultrasonic transmitter beneath the metal grating, partially being protected from the sun.

Areas of the plant have been in a shutdown during the construction of additional clarifiers, which were part of the overall scope of the project. The photograph below reflects a NIVELCO EchoTREK ultrasonic level transmitter in an open channel flow application which obviously has been in shutdown. The instrument is encased in a spider's web but ready to be restarted. The scope of the project includes 13 new EchoTREK transmitters, Model SGP-38N-4.



Spider-proof EchoTREK in an open channel flow application with a Parshall-flume apparently being in shut-down

This image shows the area where the EchoTREK transmitters are installed in underground flumes. The grating serves as a walkway for plant personnel and the electric motors provide power to the pumps underneath.

It was determined that the City of San Jose also used sunshades to protect instruments from UV and thermal heating damage which they would fabricate themselves. The instruments would be installed underneath grates, which, by themselves, would provide some degree of protection from the relentless San Jose sunshine.

The outputs from the **NIVELCO EchoTREK** transmitters would then be wired to Precision Digital PD6770 Vantageview display units, which in turn would transmit real-time values to a PLC for control of the process.

Once the project was approved by the engineer and the City, procurement began and the contract was awarded to Tesco Controls, Inc. located in Sacramento, California. Tesco is a well-known, leading systems integrator and OEM. Their business is designing, manufacturing and integrating electrical and process control systems for water, wastewater, transportation, lighting, and renewable energy applications. When the project is completed, all areas of the facility will be back in service and the spiders will need to relocate.

The City of San Jose is very pleased with the **NIVELCO EchoTREK** transmitters and has standardized on it for this and all future expansion projects.

Image of a local display/controller housed in a watertight NEMA 4 enclosure. An additional 13 Precision Digital Displays wired to the NIVELCO EchoTREK transmitters are required.

Planar antenna PiloTREK in use

Successful application example from Bohemia

KAREL ŠEVČÍK
Sales Engineer

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NIVELCO's ultrasonic range from the early '90s

Ultrasonic technology has been one of the most frequently used methods for level measurement of liquids and solids around the globe. The main advantages are non-contact measurement, low cost, and easy commission.

NIVELCO, a pioneer in ultrasonic measurement, started to produce its own level meters based on ultrasonic technology in 1982, arguably among the first companies to do so, and today sells every 20th ultrasonic transmitter from total sold in the world.

Present EasyTREK and EchoTREK models

PiloTREK radars

Despite its popularity, however, progress in technology and cost reduction have made available a technology that had been once used only in the military. That is radar. Radar technology works with electromagnetic waves, which allow the signal to penetrate through foam, gases, vapors, and dust. The construction is also able to withstand much higher temperature and pressure than ultrasonic devices. The first test of radar level measurement dates back to 1976. Since that, a tremendous advancement has been made and today's non-contact radar level meters are almost on par with their ultrasonic counterparts.

In 2012, **NIVELCO** set a milestone with the introduction of its own non-contact radar transmitter **PiloTREK**.

Applicable only for liquids, 25 GHz **PiloTREK** offers great technical features, various constructions for different application areas and competitive prices, though these prices are still much higher than those of ultrasonic transmitters. Due to higher cost, **PiloTREK** has primarily been used only in applications with no other choice, but this factor has slowly faded as producers keep on making the price gap smaller and smaller. This worldwide effort lead to the introduction of new low-cost radar level meters with a goal to replace ultrasonics.

As a result, in May 2019, **NIVELCO** launched a new low-cost version of **PiloTREK** with planar antenna.

Its features have been selected mostly for use in the water and wastewater industry beginning with integrated construction with IP68 ingress protection, 10 and 16 m range, plastic body with small

Challenging environment

dimensions and remote programming. You can find a more detailed article about the new planar antenna **PiloTREK** in the Product News section of the Magazine. Our team in **NIVELCO** Bohemia, a subsidiary of **NIVELCO** for the Czech Republic, immediately purchased one model and put it to the test.

The test was done in a quite challenging environment of a narrow pump station as can be seen in the supplementary picture. Vertical pipe, ladder, and water outflow should theoretically have a negative effect on measuring result considering 16° beam angle though comparable to the devices of our competitors in the same category. Unstable liquid surface with a chance of foam occurrence didn't help either.

However, despite all these negative factors, **NIVELCO**'s new non-contact **PiloTREK** radar level transmitter with planar antenna measured correct level during the test, without detecting any false echoes.

After 14 days, **PiloTREK** still works properly throughout its set measuring range and both we and our customer are satisfied with the performance of the new **PiloTREK** radar level transmitter.

NIVOPRESS D in the food industry

Applying pressure transmitters in the milk industry

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Regional Representative

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Jásztej Kft. is one of Hungary's renowned milk producer companies; their products are very popular on the store shelves. Jásztej, which operates on the former location of Minna Tejipari Zrt. in Miskolc, which was closed down a few years ago, is now a member of Naszálytej "company group" due to its ownership background. This conglomerate has processing plants with advanced technology in several regions of Hungary, supplying consumers with a variety of high-quality dairy products under different brand names, throughout the country.

Raw milk containers

One of the most important tasks in dairy processing is the proper storage of incoming raw material, raw milk. Milk is known to be easily and quickly spoiled, so the storage must be done under special conditions. According to the public health regulations, milk must only be stored for a limited period of time and at an appropriate temperature and this must also be certified somehow; therefore there is a documentation obligation from the manufacturer's side.

At the Miskolc site, hygiene conditions of storage and temperature measurement had previously been solved in some form but the instruments being used had become obsolete over the years and the activity was not well documented either.

NIVOPRESS D hydrostatic transmitter mounted to a big milk silo

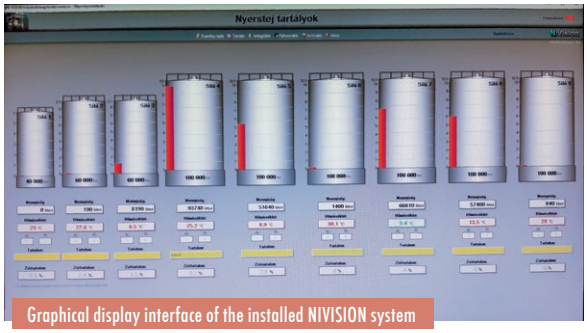
NIVELCO recommended a complex system for this application, including level transmitters and computer-based signal processing. While maintaining the existing temperature sensor system, NIVOPRESS DTO-651-2 hydrostatic level transmitters were selected for the three smaller storage tanks, while NIVOPRESS DTO-661-2 hydrostatic level transmitters were chosen to provide level measurement function for six big milk silos. All the installed instruments were equipped with 4 – 20 mA output and fiberglass housing.

Of course, in order to comply with the strict requirements of the food industry, process connections according to DIN 11851 was selected. The devices were programmed using an SAP-203 plug-in display module.

SAP-203 display

The signals from the level transmitters and the temperature gauges for a total of nine milk silos were connected into a common control cabinet on the wall of the tank room and displayed on nine **UNICONT** PMM-324-1 universal control panel instruments.

The control cabinet is located opposite the tanks where the operating personnel can easily read the instrumentation signals. The universal controllers with dual inputs, on the one hand, display the current measured values of the hydrostatic level transmitters and temperature transmitters and, on the other hand, they transmit them to the computer processing via MODBUS RTU protocol with the help of their RS485 output.



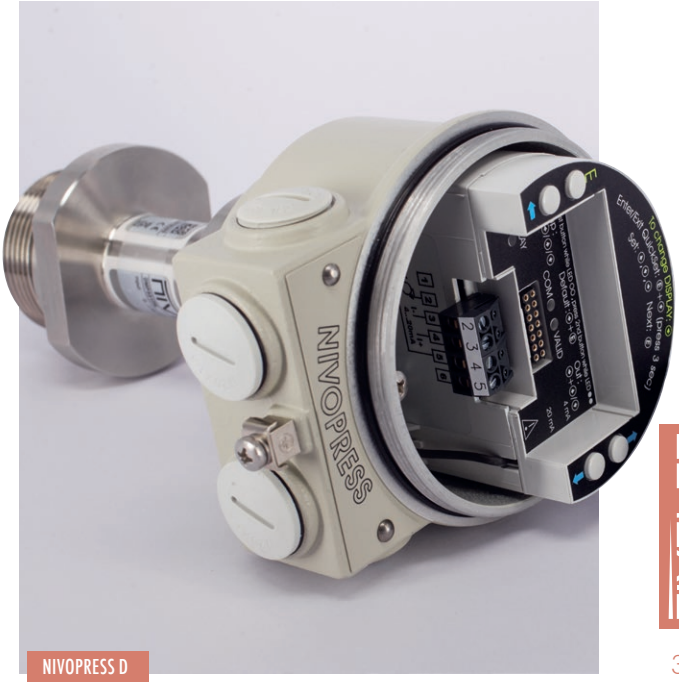
Graphical display interface of the installed NIVISION system

The necessary computer for this purpose, which was located in a central control room away from the tank room, was also supplied by **NIVELCO**. The data is

UNICONT PMM-324-1 universal control panel instruments in the control cabinet

processed and graphically displayed by **NIVISION** process visualization and data capture software, manufactured by **NIVELCO**. This way, specialists by Jásztej can constantly monitor the level of raw milk containers and the actual storage temperature, as well as other specific information related to the particular filling.

Data is captured and archived using a computer system, so that the supplied system is fully compliant with the standards and public health requirements.



NIVOPRESS D

PiloTREK's successful application in Poland

Meeting the challenge of paraffin level measurement

DARIUSZ PISZER
Managing Director

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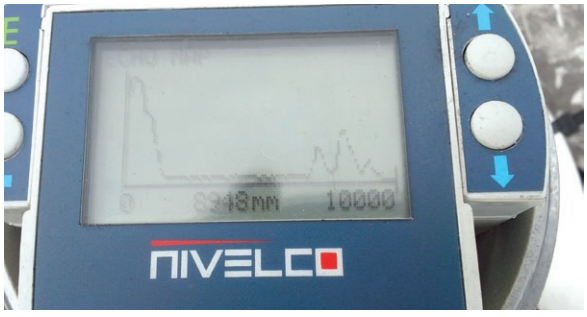
NIVELCO-Poland has been cooperating with one of the paraffin components manufacturers for many years delivering many of our products from level transmitters especially **MicroTREK**s to **AnaCONT** analytical instruments. Paraffin (wax) is a component manufactured in processing crude oil and then used for the production of many usable things like candles, anticorrosion agents, additive for greases and as a component of many cosmetics and pharmaceuticals. Customer owns a few large storage tanks for liquid paraffin working as buffers for incoming and outgoing shipments.

As excise medium amount of liquid paraffin in the tank is well controlled by weighing and recording incoming and outgoing tank trucks, so the customer has good insight into the amount of liquid paraffin kept into tanks.

The whole story started more than 3 years ago when non-contact radar level transmitter of one of our competitors broke down and in the same time customer had a very good opinion about delivered contact type **MicroTREK** guided microwave level transmitters which have worked perfectly since a long time already. We decided to take a challenge and tried our **PiloTREK** non contact transmitter on the quite demanding application of liquid paraffin and we installed one WGS-182-4 into the existing process connection from which competitor's transmitter was dismounted. This type of transmitter with the relatively big antenna was selected due to type of medium – liquid, hot paraffin which is characterized by very low dielectric constant in range of ≈2.5 which is much too low for DN50 or DN40 antennas especially in more than 11.5 m high tank with paraffin heated up to 60 °C.

First experiences were not really encouraging but **NIVELCO-Poland**'s team doesn't give up too easy nor fast. It occurred that existing heater on the bottom of the tank as well as other obstructions had created disturbances which led measurement into wrong at some specific levels, especially at a level near of empty tank, which is nicely illustrated on SAP-300 displaying multiple peak echo and disturbances on the level trend.

Fortunately, after some adjusting of **PiloTREK**'s parameters as well as performing "Background image" of the empty tank finally we've got results satisfactory for us and what is more important, for the customer who may check on their own visualization/registration software that observed trends and static state on the tank correspond with incoming and outgoing material from the tank with a high accuracy and repeatability.



As an outcome of this effort, **NIVELCO-Poland** got followed orders for two more units of the same, successful **PiloTREK** pulse burst radar type level transmitter.

Introducing the Hungarian Deaf Ski Team

DR. KATALIN EGRI
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It has been 7 years since Melinda Tulcsik (30), a hearing-impaired athlete and ski instructor founded the Hungarian Deaf Ski Team. Since then, the team has been participating every year in the Deaf Ski Europa Cup, organized specifically for the hearing-impaired people in various Alpine countries. Since 2012, Melinda Tulcsik has won several podium places in the adult category.

As a result of years of hard work, in 2015 she finished at place eight in the combined event at Magnitogorsk Deaflympics in Russia. In the 2017 World Deaf Alpine Skiing and Snowboard Championships in Innerkrems, Austria, she also managed to finish eighth in the very competitive downhill skiing. Her best result this year was achieved on the Les Gets ski slope in France, in the Deaf Ski Europa Cup slalom, where she could stand third on the podium winning the bronze medal.

The coach of Melinda Tulcsik, Dr. Katalin Egri is a former ski racer who has been doing the training voluntarily from the beginning. This kind of work is also a new challenge for her because she does not know the sign language used by the hearing-impaired, so she does the coaching by creating a special kind of inside communication between them. The team is now working harder and more thoroughly than ever, preparing for the 19th Winter Deaflympics in Santa Caterina, Italy, held in December 2019 where Melinda will represent Hungary in the Alpine skiing event.

As part of the preparation, Melinda will take part in two longer training camps in September and October in Saas Fee, Switzerland, and will also participate in FIS competitions starting from November, which will, fortunately, be held at the same place where the Deaflympics.

Coach Dr. Katalin Egri: "Preparation and entry into the races cost a huge amount of money which is very difficult to come by. That is why it is a great pleasure for us that NIVELCO has been supporting disabled people's winter sports for many years, for which this year the company received the well-deserved Paralympic Flame Award from the Hungarian Paralympic Committee, and to which we congratulate them warmly. As the first and permanent supporter of the Deaf Ski Team, NIVELCO not only provides financial assistance but is also constantly giving us the opportunity to gain direct experience of the professional work that has led to the great results of the Szőllős siblings: Noa, Barnabas, and Benjamin."

The Hungarian Deaf Ski Team regularly reports and posts pictures about their activity on their Facebook page, under the following website:

www.facebook.com/hundeafskiteam

SKIING ON SNOW AND WATER

Joys and challenges of the preparation period

PÉTER SZŐLLŐS
Vice President

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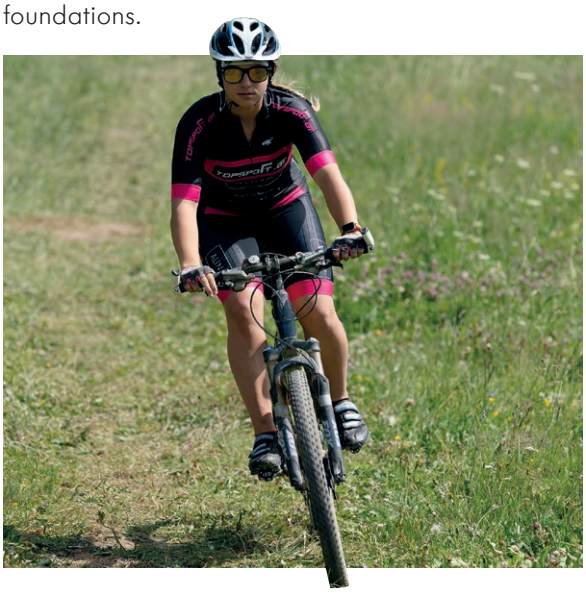
The **NIVELCO** Racing Team is eagerly awaiting the start of the snowy season after a successful summer preparation.
Training, like every year, began with seemingly endless ground workouts this spring. Long hours on the bike or lonely runs in the woods - all the basis for a successful season later on. Even the most cleverly built house will not stand without perfectly solid foundations.

As usual, snowy training this year started at the Austrian glaciers and continued at a new location for the team, between the 3,600-meter peaks of Les 2 Alpes (Les Deux Alpes) in France.
At this stage, the main emphasis was on selecting and testing new equipment. Noa Szőllős has now switched to the skis that fit the rules of the adult FIS competition, while the boys have begun to try out several brands for the 2019/2020 season.



The decision has finally been made and Salomon skis and ski boots were chosen; thus, all three of our racers have now become members of the Atomic - Salomon racing team.

No matter how hot the summer is, NIVELCO racers will always find the opportunity to ski!

In addition to special strength and coordination training, more emphasis was placed on water skiing and wakeboarding this year, compared to the previous ones. In the past few years, many wakeboard parks have been opened in the Budapest region, where you can practice ski-like movements even at 35 degrees Celsius. Jumping up to 10 meters and sliding on various objects improve the sense of balance, and test your courage, which is essential for ski racing.

Another great opportunity for practice and training came when, in the second half of the summer, the team had the chance to buy their own sports boat, which means that our competitors can now enjoy skiing even on the Danube that splits Budapest.

Life is always exciting with three athletic children and every season comes with some extraordinary events that require extra attention and preparation from the team.

This year, both boys have already moved on from junior to adult category so they have a slightly more relaxed preparation period ahead of them. As for Noa, however, this will be her first year as a junior (FIS), which will certainly be a big challenge for her.

It is never easy for adolescent athletes to move to the international junior/adult age range, because while only two age-groups compete in the children's category, there are no age categories for adults anymore, so the newly arrived youngster have to compete with experienced racers who are 10 to 15 years older.

In addition, this year will be a particularly difficult and exciting year for Noa, as the YOG 2020 (Youth Olympic Games) will be held in early January in Lausanne, Switzerland, where the 2002–2003 age-group can compete against each other. Noa, born in 2003, represents the younger age class who have a significant disadvantage compared to those a year older, who were already able to score points last

season. Noa, therefore, does not have much time to catch up with the older ones but immediately has to jump into the deep water! In the previous Youth Olympics, Barnabas has set the standards very high as he achieved historic success in slalom by finishing seventh in a fantastic race.

Noa Szőllős

It was a tough start into my first FIS season, I had troubles getting used to the longer skis but with the help of my new coach, I was able to make a

lot of progress fairly quickly. Summer training was hard but worth it, already showing results in Les 2 Alpes, France where I was much stronger not just physically but also mentally compared to last year's preparation in Saas-Fee. Concerning my gear, I'm also very happy with Atomic, not just the skis and ski boots but also the team working there.

Benjamin Szőllős

After finding a new ski team for myself in January, I decided that I will fully commit myself to this team. It gives me extra pleasure that my brother decided to take this path together with me. I can't give a statement about my skiing yet, because we are working on building up a new technique. But physically I reached my goals in the summer period, which gives me big confidence. I also decided to change to a new ski supplier this season, however, this is considered as a big risk in alpine skiing, because the material is a

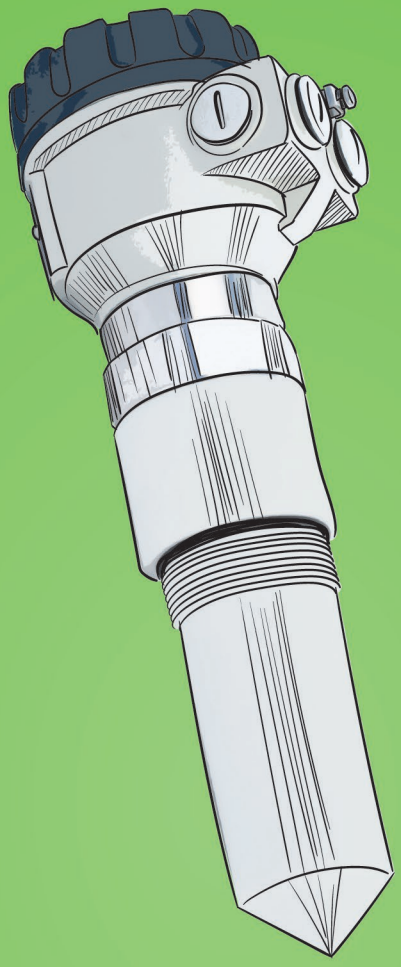
very important factor. Until now I feel very confident on the new skis. The first races will show if it was a good decision to change the material.

Barnabás Szőllős

After two years of speed racing alone (without a team), I decided to join my brother and his new team, the Kronplatz Racing Center in Italy. It was not an easy decision switching to the technical disciplines

but the lack of speed training possibilities and the insufficent cooperations with other teams made this a lot easier. Another important step in transitioning from speed to technical was changing materials. After five years of skiing with Head, my new Salomon skis really surprised me and I'm very happy with the decision we made. I'm looking forward to the first races, seeing how I stand against my brother and all the other racers. The main goal of the season is to find my way back into slalom and to keep my good points in speed.

LEVEL
TRANSMITTERS



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Péter Szőllős © 2019 @Plitvice Lakes National Park