

MAGAZINE

NIVELCO

40 YEARS

SPRING-SUMMER // 2023/1



ADVANCED 80 GHz RADAR



LEVEL TRANSMITTERS

NEW PiloTREK W-200 series



TRANSCEND YOUR CHALLENGES

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NIVELCO Magazine 2023/1

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Follow us!



TAMÁS SZÖLLŐS
Chairman

NIVELCO Co.

Dear Reader,

Welcome to the first issue of this year's NIVELCO Magazine!

We are proud that our devices are present in more than 80 countries in a wide variety of industries. Regardless of the complexity of the field of application, our devices stand up to the toughest challenges.

We are glad that – after several years – we can again present our products at international trade fairs so that people can get to know NIVELCO devices all over the world.

Despite the difficulties of the last period and the accelerating inflationary financial environment, our company overcame the obstacles and significantly increased sales in 2022. You can read about this in detail in our economics section.

We are introducing our readers to the mysteries of soldering technology and present our updated website's quotation system, the Selector 2.0.

Our new PiloTREK W-200 80 GHz microwave level transmitter is already hugely popular, and we will soon expand the product range. You can read about our development plans in the product recommendation section. We continue our articles on the NIPRESS product family, where you can learn about three pressure transmitters.

In this issue, you can get to know our Iranian and Argentine partners in our section that presents our distributors.

You can read a number of interesting articles about the applications of our devices in various fields, such as the wastewater industry, the chemical industry, and cream liqueur production.

We also tell you about the successes of our ski team and the outstanding results achieved at the world championship. Naturally, you can read about LevelBOY's latest project and many other interesting things in our magazine.

Have fun reading!

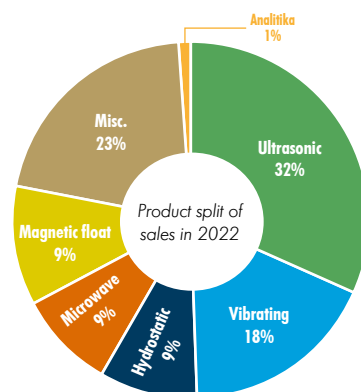
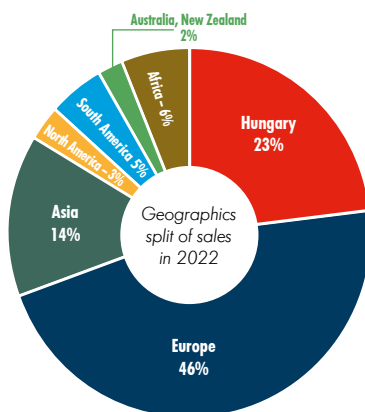
Management of the NIVELCO Group in 2022



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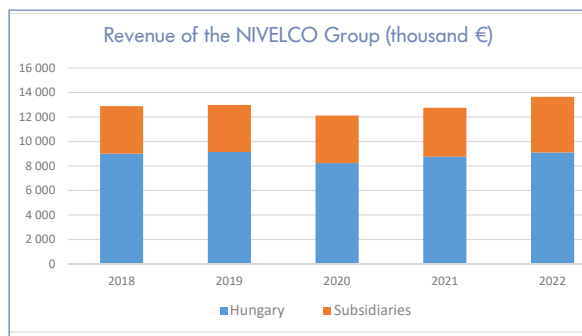
In the last few years, we have gotten used to often facing new challenges, which was no different in 2022. The importance of the coronavirus epidemic decreased, but from the second half of 2021, we found ourselves in an accelerating inflationary environment, which was further escalated by the Russian-Ukrainian war that broke out in February 2022, causing a significant increase in energy prices and production costs, as well as an uncertain economic environment. The most important challenge was providing the parts necessary for production, which required daily, close cooperation between the production, sales, and development departments. The work of our colleagues is praised by the fact that we were able to fulfill our orders to our customers on time, which played a key role in the increase in the NIVELCO group's sales revenue in EUR by 7% compared to the previous year. The growth was even more significant in forints 15% annually, mainly due to the favorable development of the EUR/HUF exchange rate, which resulted in us achieving record sales revenue at the company group level in 2022.



subsidiaries, and the American company achieved the largest increase (+56%). Export sales outside subsidiaries occurred in 75 countries in 2022, so NIVELCO is already present in 83 countries.

The defining element in sales is always the sale of self-produced products, with a share of nearly 80% of total sales, which can be said to be constant in recent years. The product family of ultrasonic level meters maintains its prominent position in NIVELCO's sales strategy, and in the future, our radar level measuring instruments will also represent an ever-increasing share. The sale of commercial goods and the rental of the NIVELCO office building make up the rest of the total revenue, around 20%. It was possible to keep the income at the level of previous years in these areas as well. The occupancy rate of the office building also exceeded the market average in 2022, and we hope that despite the uncertain economic environment and the increase in overhead costs, we will be able to retain our tenants in the future.

In 2022, there was an abundance of positive and negative effects in the financial sector. The most significant challenge was financing the supplies needed for production, which burdened our company's cash flow. On an annual level, NIVELCO stock increased by €800,000, and by the end of the year, it exceeded €2.5 million, which we managed to finance from the usual operating cash flow without involving an external bank loan. The other significant challenge was the rising production costs due to runaway energy prices. In the case of gas in 2022, the service providers only offered a contract price following the daily market

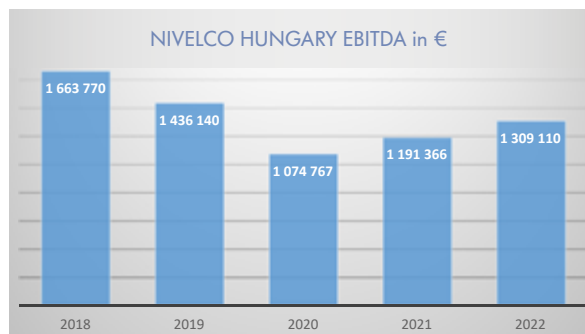


Our domestic sales of goods in HUF increased by 3%. However, the sale of our products increased by 5% compared to the previous year. The export revenue exceeded the 2021 level by nearly 20%, the highest growth rate within 1 year compared to recent years. The share of our subsidiaries is still significant, accounting for 1/3 of our total revenue. The largest amount of growth in 2022 was produced by our American (+223,000 EUR) and Czech (+212,000 EUR)

price (from 2023, this practice also applies to electricity), which – especially after the outbreak of the war – made the development of our energy costs extremely unpredictable, and overall, 234% on an annual basis increased compared to the previous year. Fortunately, energy costs are not a determining factor of our production cost structure, so we managed to handle this significant increase.

The most significant positive event of the previous year was the favorable development of the EUR/HUF exchange rate, which was, on average, 10% more favorable than the average exchange rate of the previous year on an annual basis, thereby contributing to a significant increase in the revenue realized in HUF. The growing sales revenue provided a solid basis for our management, which made it possible for us – in addition to the usual increase at the beginning of the year – to give additional wage increases to employees during the year, thereby helping our colleagues in the worsening inflationary environment.

As a result of rising energy costs and wartime sanctions, we decided on energy modernization, for which we took out a HUF 180 million, 0.5%, state-subsidized loan under the Széchenyi Investment Loan program. We will use this loan to finance our solar investment in 2023, with the help of which nearly 40% of our annual electricity consumption will be produced from renewable sources. In addition to the solar panel, we plan to upgrade the heating system and replace the windows and doors, thereby reducing NIVELCO's energy consumption.

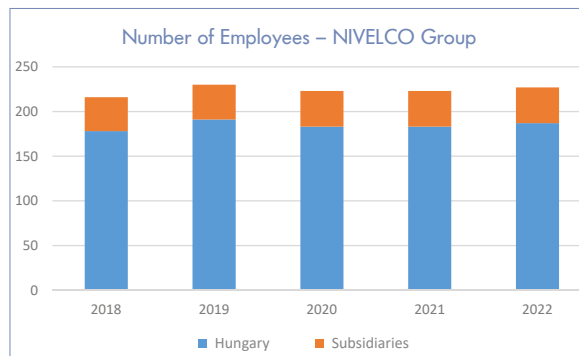


Our company's financial situation is stable, and we have adequate reserves to deal with expected and unforeseen challenges. Our company's profitability – primarily thanks to the increase in sales and

operational efficiency – continued to increase in 2022 compared to the previous years. The aggregate EBITDA value of Hungarian companies (not including subsidiaries) increased by 10%, and in HUF, it is already 9% higher than in 2019.

The profitable operation of our company for many years also has a positive effect on our capital situation, which creates a solid foundation for successfully facing the challenges of the years ahead and ensuring the operation of NIVELCO.

The total number of employees in the company group increased only slightly (by 2%) compared to the previous year, so the increase in sales revenue was primarily achieved by increasing efficiency. The owners are still committed to maintaining the number of employees since a stable, high-quality workforce is essential to realizing our plans and ensuring continuous growth. Thus, investing in human resources will remain of primary importance for the company



In conclusion, the NIVELCO group successfully adapted to the changing market conditions in 2022 and significantly increased sales revenue. This achieved the highest group-level revenue of all time. In addition, it maintained profitable operations despite the significant increase in costs (mainly energy costs).

In 2023, the focus will be primarily on the realization of energy investments, and by optimizing the inventory level, we will release part of the money tied up in the inventory. This way, we can provide sufficient internal resources to finance further financial growth.

Trade Fairs, Conferences, Trade Shows & Events Worldwide



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NIVELCO's events

Exhibitions → → →

**NIVELCO
FSM 2023**



20–22 April,
Eger, Hungary

The NIVELCO group organizes its biannual trade conference, the Family Sales Meeting (FSM), which is attended by delegates from the parent company and subsidiaries. During the event, the participants will review the financial results of the parent company and its subsidiaries, the market conditions and economic situation of the regions they represent, the products and their application possibilities, and current and planned product developments. 🔒

At the event, we offer professional guidance to learn to use and program our new devices, like the *PiloTREK W-200* 80 GHz radar and the *MicroTREK HT-700* guided microwave transmitter, along with a few others that have been around for a while, like our ultrasonic transmitters. 🔒

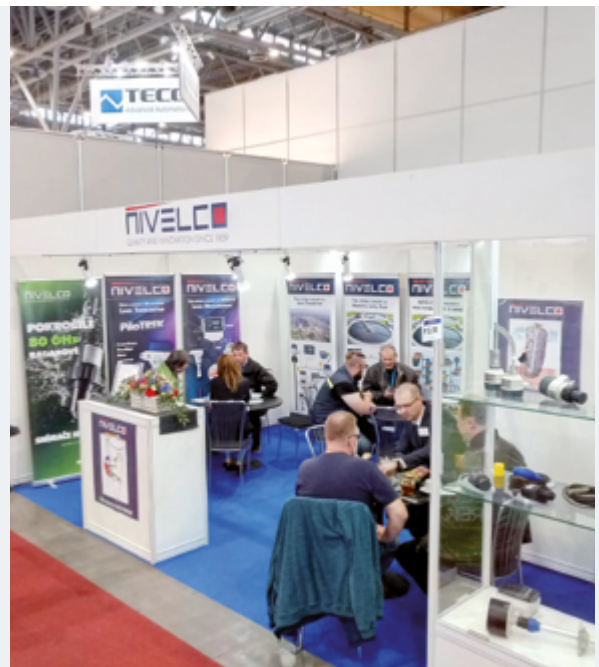
HANDS-ON TRAINING 1.0

3–4 May, Budapest, NIVELCO HQ

NIVELCO Professional Days

9–10 May, 2023

The NIVELCO Professional Days, held in the spring and autumn, provide general knowledge about the operation and application areas of our devices. Biannually since 2010, we have been giving our Hungarian partners an insight into the everyday life of our company during a factory tour. Registration for the spring event opens soon. We will send the invites out in the domestic notification newsletter.



**AMPER[®]
2023**

21–23 March,
Brno, Czech Republic
NIVELCO Bohemia

The 29th trade fair of electronics, energetics, automation, communication, lighting, and security technologies.

**WATERPHILIPPINES**

22–24 March, Manila, Philippines

YESS – YUYUNA ENGINEERING SUPPLIES AND SERVICES

The leading international water supply, sanitation, industrial wastewater treatment and purification event in the Philippines.



13–14 April, Pécs, Hungary

NIVELCO PROCESS CONTROL Co.

The meeting place for university, industry, and engineering.

INTERNATIONAL
POWDER & BULK SOLIDS
CONFERENCE & EXHIBITION

25–27 April, Chicago, IL, USA

Control Plus, Inc.

The International Powder & Bulk Solids Conference & Exhibition is the only event in the western hemisphere bringing together the powder & bulk solids handling and dry processing sector — the community of OEMs, process engineers, and executives whose activity accounts for 70% of the manufacturing lifecycle of every product on earth.

INTERPHEX

25–27 April, NYC, USA

Process Tech Sales & Service

The premier event for the global bio, pharma, device development, and manufacturing industry.

DELIVERING THE FUTURE
OF OFFSHORE ENERGY



Offshore
Technology
Conference
2023

1–4 May, Houston, TX, USA **Process Solutions Corp.**

The Offshore Technology Conference (OTC) showcases leading-edge technology for offshore drilling, exploration, production, and environmental protection. OTC is the world's foremost event for the development of offshore resources. The conference attracts attendees and exhibiting companies from around the globe.



2–4 May, Tel Aviv, Israel

Technomad Ltd.

The 27th international exhibition in Israel for electrical engineering, control, instrumentation, automation, pneumatics, lighting systems, energy, and energy efficiency.



**WARSAW
INDUSTRY
AUTOMATICA**
2nd EDITION

9–10 May, Warsaw, Poland **NIVELCO-Poland**

Warsaw Industry Automatica is an innovative event in which exhibitors from Poland and abroad will participate. The fair is distinguished by the availability of the largest exhibition space in Poland, giving exhibitors almost unlimited possibilities for presenting what they have to offer.



VODOVODY-KANALIZACE

23–25 May, Praha, Czech Republic

NIVELCO Bohemia

The 22nd International Exhibition of Water and Sewage Management is the most important biennial meeting of water management experts.

**IFAT
Africa**

5–7 July,
Johannesburg,
South Africa

African Water Utilities

IFAT Africa is the leading trade fair for water, sewage, refuse and recycling in Southern Africa, featuring solutions from around the world and masterclasses addressing trends, challenges and solutions from the water, sewage, refuse and recycling sectors.

weftec
the water quality event™

30 September–4 October, Chicago, IL, USA

Control Plus, Inc.

There is no better place than WEFTEC to meet water professionals, the best water quality educators, leading experts, the latest technology and trends, and proven solutions worldwide.



**SYMAS[®]
MAINTENANCE**

24–26 October,
Kraków, Poland

NIVELCO-Poland

For 14 years, the SYMAS[®] and MAINTENANCE trade fair has been one of Poland's most important industry meetings. Combining two widely present industrial issues, one being the handling and transporting of powders and bulk solids and the other, maintenance tools and methods, it is an excellent opportunity for companies to present their solutions.



Sport educates you for life, for independent living

I AM VERY PROUD THAT I MANAGED TO PASS ON THIS KNOWLEDGE

Péter Bohus' interview with Péter Szöllős

(excerpt from the book "LEVEL UP – 40 Years of History & What Lies Behind It")

Péter Szöllős is not only a director at NIVELCO but also the founder of an Olympic dynasty, who uses his experience in sports to manage the company and his family. He is proud of his children, who are also Olympic participants and scorers. Péter is the head of the family. Under his guidance, this successful and mutually beneficial future is taking shape.

– The Szöllős family is a sports family. Your grandmother swam, and your father and uncle exercised regularly. But according to your father, you were the one who raised sports in the family to a higher level. How did this story begin?

– Tamás and András both skied. It all started with amateur family skiing. I was eight years old when I first competed.

– Where could you go skiing back then?!

– We went to Czechoslovakia. There was a team there, and it turned out that skiing could be done competitively. It is difficult to draw parallels between the competition and preparation we were given in the eighties and the sports careers of children today. I competed until I was 26 years old, for quite a long time as a member of the Hungarian national team, then in 1991, I became part of the Israeli national team. We had to prepare in much more difficult conditions and didn't succeed. We could only ski thirty days a year, and not in conditions like now. The guys are now on snow at least 150 days a year, but their preparation is still not perfect. We are still not where the Austrians are...

– How do you use what you learned from sports?

– That's what I live off! I think sport educates you for life. For independent living. Sports and skiing involve

a lot of traveling. If we just look at the fact that the kids got on a plane all by themselves at the age of 16–18 and went to the farthest corner of the world, Argentina, for a three-week training camp, where we followed only three weeks later, the complete independence they got from sports is spectacular.

We all take punches in sports, but they usually move us ahead. Sports open up the world. At the time, I didn't learn a word of English in Hungary, but I already knew German because, at international competitions, you had to communicate with the competitors. Today, everyone speaks English, but in the eighties, if someone knew two languages well, they could build a career. And the twenty years I spent as a coach shaped how I deal with people.



– When I asked your children about you, they also mentioned that you are strict.

– I was brought up strictly. In such a dangerous sport, we need discipline. Whether we are talking about your children or others. I taught children who had never seen snow in their lives. You can simulate skiing on a plastic carpet, but in real, cold conditions, you can't be everywhere at once on a huge slope, and I had to yell every now and then. So, I have a pretty strong voice.

When I was looking for an additional sport for the children, an acquaintance told me that her children were playing water polo and that the coaches were always hollering. Well, I said, we'll go there, so I'm not the only one yelling all the time.



– How did your relationship with NIVELCO develop?

As a child, my father took me to the company, and later I went in regularly to assemble things, solder, turn, and experiment. The roles were set. András handled the economic part. Tamás was not interested in finance at all. He doesn't even care about money: if someone lives on a shoestring, it's him.

Tamás was in charge of production and development, he has been doing it since he was a child, so I would not have had a chance to have a say in it.



I started to help a little in the asset protection business and organized exhibitions, and since no one was doing marketing, that's how I started to do it. I am an IT specialist and have been for as long as I could keep up, and I also studied marketing.

But no matter what you start doing, you can quickly learn things at such a large company. In 2000, we started to renovate building 3, where our production is located. We had a colleague whose husband was an architect: Until then, he had helped with all major developments, and I had time anyway and said I would do it with him. By the time the development started, he was given a huge project, so he said that he would only be able to check in once a month at best. Thus, the entire construction became my project, and I learned architecture rather quickly.



– Do you think there is an advantage to working with family members?

– It has advantages and disadvantages. But it's the same with friends. You either succeed, or you don't. For example, I'm 100 percent friendly with everyone. While Tamás is still being addressed in a friendly way by the old colleagues, new people don't dare to do so. The atmosphere is familiar and strong bonds developed between colleagues. Some people have been working here for 20–30 years. There are many old colleagues.

– Your task is to build the brand. The NIVELCO inscription is on your ski helmets. Does this have advertising value?

– Now it absolutely does. There were the three racers with whom I knew we would travel the whole world and compete. Taking advantage of the situation was an obvious thing to do. It's a harsh word, but it's the truth. Sponsorship does not work at all in Hungary. The NIVELCO sign they wear on their helmets is the logo of the head sponsor, the Austrian company because sponsorship is recognized there. The sports club is 20 years old. In the beginning, no one thought we would get this far, but today, there is no question that there are real numbers and real value behind the sponsorship. The Austrian tax office will not question this either since spon-

sors pay quite a lot of money for sixth place in the Olympics. We were also very successful in Hungary with NIVELCO SE. All three children won consecutive Hungarian championship titles. They stood on the top of the podium fifty times only while competing here. They always approached us about joining, but I said it was a family club.

– And is that possible now?

– While I was coaching other children, I learned that when your children are on the team with other children, you can't

relate to them emotionally the same way. There were two years when I was the team captain of the Hungarian youth national team, and my children suffered the most because if I was even a little uncertain, I decided much more towards the other child since it looks bad when you seem biased towards your own child. That's why there wasn't and couldn't be any other way, because we moved faster and differently. No one else could have done this crazy way of life with us anyway.

– Can you imagine one of your children starting to work somewhere else?

– It's in the cards. There were two main directions in their education: sports and preferably playing sports together. This has come true. The other is that they constantly visit NIVELCO and absorb the atmosphere of a family business. They are here if they are not ski-





ing, and their studies allow it. They know the people, the jobs, and the tasks, and they are looking for their place in the company's future.

Benji already has a strong connection, and he is writing his economics degree about NIVELCO. Barni likes to visit the machine shop, where he designs, turns, and welds. He inherited his technical sense from his grandfather.

Noa is now graduating from an economics school in Austria, where the boys used to attend, and after that, we are waiting for her with open arms. I would really like them to take the company over, and it would be even better if all three of them did it together.

– How has the marketing strategy changed recently?

– 10 or 15 years ago we used to put ads in newspapers, there were two big exhibitions a year in Hungary and two abroad, but they have all died out. Now we have Facebook, Instagram, LinkedIn, and people are looking for new interfaces. We're not spending on newspaper advertising because there are hardly any newspapers in Hungary, and the professional papers abroad, which are read in a very narrow circle, are unaffordable, so we are online.

My thesis was on NIVELCO's first website. It's not a big deal today, but they still estimate the company to be ten times the size based on our website and marketing materials. Our portfolio is also much larger than it could be for a company of that size.

– Is it good when the kids are there with you?

– Good, of course. Bonds with the children usually loosen at the age of 16–17. Yet here I am, 90% of the time traveling with them to this day. It was always a big problem that they were of different ages and went to different competitions, and then who would I go to a competition or training camp with.



I didn't go to Canada with Noa for the Youth World Championships after the Chinese Olympics. That was her first big competition, where I entrusted Benji with organization and team management. Everything worked perfectly, and they came home with a fantastic seventh and ninth place.

– I am very proud that I managed to pass on this knowledge.

New Momentum

Selector 2.0



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With the rise of the Internet and mobile devices, just like our private lives, the corporate sphere is clearly moving towards the online space, which is why NIVELCO has to keep up with the competition.

We are pleased to present our updated quote request website, **NIVELCO Selector 2.0**. Important changes affect both the appearance that ensures the user experience and the background processes running on the server. The functions are expanded in accordance with the daily transactions with business partners. The site is capable of more detailed searches and provides a quote for more complex needs.

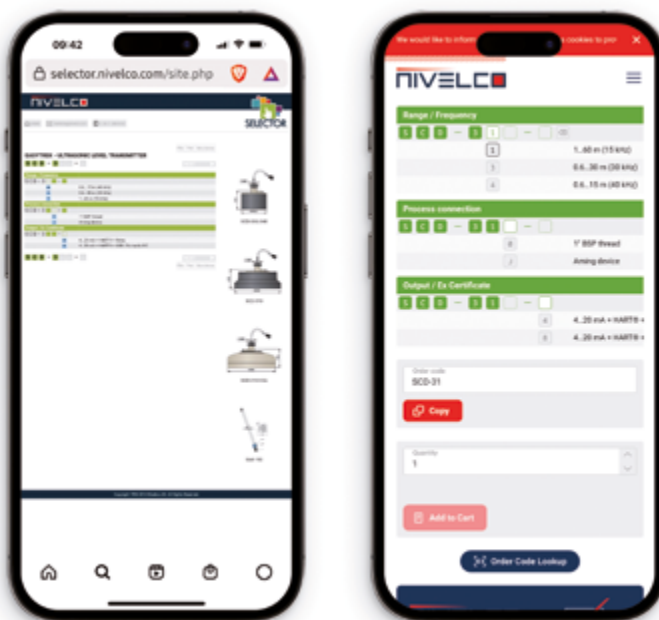
At first glance, the most noticeable change is a more contemporary, cleaner, and user-friendly appearance. We aimed to design an interface that meets current standards to make cooperation easier for customers.

For example, those accustomed to using dark mode, which is getting more and more widespread, will now also have access to this option.

The page's appearance was made with a responsive approach, thus providing a suitable appearance on various devices (*mobile phones, tablets, computers, etc.*). We are working on requesting a quote for all platforms for our business partners.

The fact that we can generate the page's content on the server even before the browser processes it with the help of SSR (Server-Side Rendering) technology is also a sign of the future compared to the websites of the competition. Thanks to this, the website will be significantly more search engine-friendly, and the most popular search engines will position us higher in the search results list for important keywords related to our products. This way, we can provide more relevant results than our competitors.

The web framework behind the site enables more stable operation against external attackers and anomalies occurring during operation (e.g., server downtime). We handle personal data per the General Data Protection Regulation (GDPR) of the European Union.



Current and new mobile view

Additional goals

The renewed Selector is the first step of an even more grandiose project, the aim of which is the complete renewal of NIVELCO's current online presence. In the future, we would like to integrate Selector into the NIVELCO website so that all content related to our products is available in one place.

NIVELCO Trade Center

Offices to Let



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NIVELCO Trade Center is an office complex located five minutes from Újpest Városkapu. From the point of view of transportation, its location is extremely favorable because it is about 15 minutes from downtown by car or public transit. Free parking is available for our tenants and guests in front of the building. In the inner courtyard, which contributes to the friendly and cozy environment with its wooded green patches, there is also a guarded parking lot with 150 spaces and a bicycle storage room.

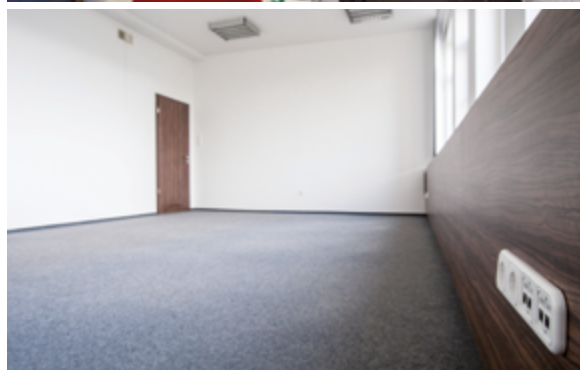
The modern, three-building complex covers an area of nearly 10,000 m² (107,639 ft²), has air-conditioned offices with a varied floor area, ground-floor rooms suitable for multi-purpose use, and business premises with street entrances and large portals. Office spaces that can be flexibly divided and designed to fit unique ideas. It has a 24-hour reception desk, security service, and a video surveillance system, all meant to satisfy the tenants.

The building has a buffet with a canteen, daily menus, and cleaning and maintenance services available to our tenants.

It is also possible to rent warehouses, vaults, and meeting rooms. Our meeting rooms of different sizes can accommodate up to 40 people. The buffet services can also be used to conduct business meetings in the meeting rooms.

The building complex, equipped with modern technologies and communication, provides a pleasant working environment for existing and future tenants. Environmental awareness and cost-effectiveness are important to us, so we installed a solar system on the roof of the buildings.

All in all, the office building is easily accessible by public transit and car, has excellent services, an exceptional location, and offers unique opportunities to future tenants, even considering recent market trends. Many of our current 25 tenants had various customization needs that we fulfilled, like smaller offices, laboratories, workshops, and warehouses. Regarding their activities, there are accounting offices, advertising agencies, social organizations, and freight companies, who often take the opportunity to establish a partnership, thus making their work easier. Find out about the currently available spaces on the website tradecenter.hu or by sending an e-mail to info@tradecenter.hu!



Keeping up with soldering technology



IMRE RÁCZ
Process Engineer

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BTC (*bottom terminated component*) parts are gaining ground fast in the market of active SMD components. They are problematic during installation and repairs due to their minuscule size and the "invisibility" of their pins. Their characteristic is that they have a large pad and are prone to void soldering, the latter of which greatly affects the performance and reliability of these components. These pads require a certain percentage of contact between the solder and the panel.



With the soldering irons used for repairs, it has become extremely important to be able to choose the tip best suited to any given task from a wide selection. The device must be able to maintain the set temperature exactly, and last but not least, to respond quickly to the fluctuation of the heat demand.

Our old, well-proven soldering stations could no longer fully meet the above requirements. Based on the price-value ratio, we finally opted for the devices of the JBC company. A great advantage of these, in addition to the above requirements, is that it is extremely easy to replace the soldering iron tips, which allows the user always to use the soldering iron tip that best suits the given soldering task, without this being a question or a challenge for them.

The development was carried out in several stages:

- Buying a soldering-desoldering station and a lower heating station and placing them in a central location so that they are accessible to anyone who needs to use them.



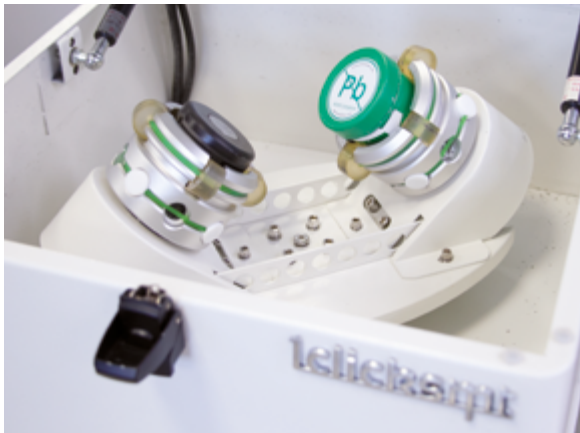
- Continually replacing old, obsolete devices with new soldering stations so all workplaces that solder SMD components have modern soldering equipment.



- Gradually expanding the range of soldering tips for special tasks.

A solder paste mixing machine, an ultrasonic PCB washing device, and a drying cabinet for storing moisture-sensitive components (MSC) were purchased as part of the recent investment.

A solder paste mixer helps achieve the right quality and efficient production. Until now, colleagues mixed the solder paste by hand before use, during which unevenly mixed spots remain in the paste even with the greatest care. The mixing machine eliminates this problem. It rotates the jar persistently with a planetary motion, thus ensuring a homogeneous consistency of the paste.



The machine also has another advantage. Solder paste must be stored in the refrigerator and taken out at least 4 hours before use to get up to ambient temperature while unopened because moisture must not get inside it. Since the machine mixes it unopened and the friction of the small balls in the paste generates heat, the paste can heat up under suitable conditions, and people don't have to wait 4 hours.

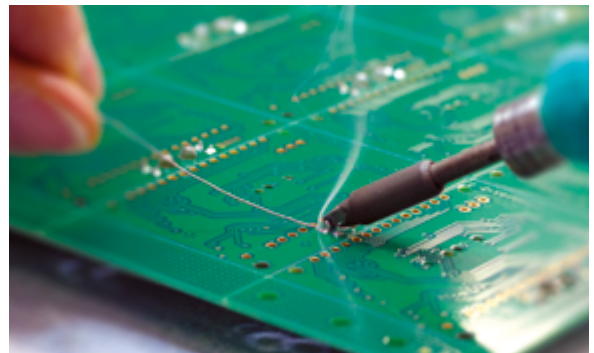


Our R&D department previously observed that even though we use no-clean fluxes, the surface resistance of devices with high input impedance is still insufficient. Ultrasonic cleaning takes care of that. It removes soldering residues from the surface of PCBs by using the appropriate cleaning liquid.



Most of the components used are of standard MSL 3 sensitivity level. This type of component can be used for a maximum of 168 hours after opening the package at room temperature and humidity. After that, the amount of water vapor in the plastic part must be reduced again and, if necessary, sealed airtight until the next use. This requires continuous work, attention, and production planning.

The newly purchased drying cabinet can store moisture-sensitive parts in a suitable environment below 5% RH, ensuring they dry out again. So, we take them out, use them, and put the rest back until the next time.



New Additions to the PiloTREK W-200 80 GHz Radar Level Transmitter Family



DR. ATTILA AGOSTON
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It has been almost a year since the integrated **PiloTREK WP-200** models of NIVELCO's 80 GHz radar level transmitters were launched. These IP66/IP68-rated devices are excellent for general-purpose industrial use, primarily in water processing. As a result of continuous development, the selection was expanded with PTFE and integrated PVDF versions for oil and chemical industry applications. The WP-200 family is due to receive its explosion-proof certificate soon.

The new 80 GHz radar level transmitter family will welcome the compact **PiloTREK WE-200** series and its accessories. As usual from NIVELCO, the compact housing with a gland that supports custom wiring will also be available in this product line in plastic (PBT), aluminum, and stainless steel (1.4571).



PiloTREK WES-214-4

The compact version with a 1" or 1½" antenna and process connection will still be available. The selection of antennas will also receive the addition of the 2½" (Ø75 mm) antenna, which supports a measuring distance of up to 30 m (98.4 ft). This version will be available in integrated and cased compact devices. The 2½" (Ø75 mm) version will see its primary use in bulk solids measurement due to its higher antenna gain. Regardless, the maximum measuring distance



PiloTREK WES-212-4

achievable in practice depends heavily on the measured medium's dielectric constant, grain size, and coning angle. The 80 GHz technology is better at measuring granules with a larger particle size due to the short wavelength of microwaves.

Out of the compact models, the **PiloTREK WEP-200** with a plastic housing and a cased antenna is the first to be launched on the market, which combines the plastic compact case with the well-proven cased RF antenna of the integrated WP-200 design. This cost-effective combination permits the use of built-in dot matrix LCD (SAP-300) and push buttons on IP67 models with compact housing. All other parameters regarding applications are the same as the integrated versions.

This will be followed almost immediately by the **PiloTREK WES-200** family, sporting an aluminum housing and a stainless steel (1.4571) antenna. Due to the stainless steel antenna, these devices can handle a much wider range of process pressure and temperature. The currently planned pressure range is 1...25 bar (-14.5...+362.6 psi) [-1...3 bar [-14.5... 43.5 psi] for integrated variant) and the temperature range is -40...+180 °C (-40...+356 °F) for high-temperature version (-40...+80 °C [-40...+176 °F] for integrated variant).

In addition to expanding the model range of the PiloTREK W-200, we can also boast of innovations in terms of functions. One of the most important will be the integrated Bluetooth® interface, with the associated configuration application called **EView Mobile**, which will be available for Android and iOS. Another new function for the compact versions will be the optional RS485 Modbus interface instead of the 4...20 mA/HART® analog output. Since this is a 4-wire system, it will be able to operate from an 8 V supply voltage, which is excellent for battery-operated applications. Of course, other products, like the **MicroTREK HT-700**, will also have the Modbus and Bluetooth® options.



Our medium-term development goals include the broader support of isolated installations in a 2–3-year time frame. There are plans to integrate long-distance wireless data transmission (e.g., GSM, Lora, etc.) into the PiloTREK W-200 level transmitter, augmented with an integrated battery management function, an optional external or built-in battery, and a solar panel.

ADVANCED 80 GHz RADAR



PiloTREK W-200

ANYTHING GOES...

NIVELCO Process Control
 PiloTREK WPA-220-4
 Supply: 12...36 V DC
 Output: 4...20 mA + HART
 Amb. temp.: -30...+60 °C
 Med. temp.: -30...+90 °C
 CE
 MADE IN EU

vol. 7



NIVELCO Co.
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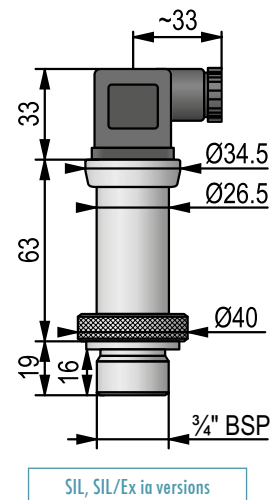
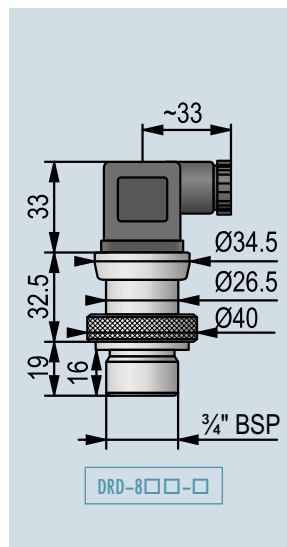
This time we present three more hydrostatic pressure transmitters designed to perform level measurement tasks in tanks. The big advantage of all of them is that the instrument can be screwed into the process connection by hand, and using a wrench to install them is unnecessary. The measuring stub must be at the bottom of the tank or in the lower part of the sidewall. We present a variant equipped with a stainless steel sensor, one with a ceramic sensor, and a completely chemical-resistant one.



We would like to introduce the pressure transmitter with a stainless steel flush diaphragm, mainly used in low-pressure systems and for level measurement.

The default process connection: 3/4" BSP. The device's standard sensor seal is FKM (Viton®), but an EPDM seal (ethylene-propylene-diene-monomer) is available if the composition of

For conditions requiring a higher degree of mechanical protection, a 4-pole M12x1 electrical connection is available, which provides IP67 protection. The IP68 version, equipped with a cable and a capillary tube, is excellent for humid or flooded environments.



Intrinsically safe (ATEX II 1G Ex ia IIC T4 Ga; ATEX II 1D Ex ia IIIC T135°C Da) and SIL 2-compliant versions of the product family's devices are available on request. The device can be fitted with a plug-in display (PLK-501-2) or a 1 PNP switch output (PLK-501-3) display. Depending on the installation position, the facing direction of the display can be changed by rotating.

NIPRESS D-600

Our second instrument is very similar to the previous one, but instead of a stainless steel membrane, it is equipped with a flush diagram ceramic sensor.



The default process connection is $\frac{3}{4}$ " BSP, but a PVDF version is also available if required, which is more resistant to chemicals.

If there is a concern that the medium may corrode the ceramic sensor, we can provide an additional PTFE coating for safe and long-term operation.

The device's standard sensor seal is FKM, but an optional EPDM or NBR (*nitrile rubber*) seal is available, depending on the composition of the measured medium. Regarding measurement ranges, the device can be ordered with a ceramic sensor up to a maximum pressure of 25 bar (362.6 psi), but the series has 40 and 60 bar (580 and 870 psi) pressure versions, but these are made with a stainless steel sensor. The standard model's accuracy is 0.5%, and the PTFE-coated sensor version is 1%.

The output versions, electrical connections, and optional displays mentioned in the previous instrument are also available for this device, as are the intrinsically safe versions.

NIPRESS D-700

Our third instrument is very similar to the previously mentioned D-600 device, but it has a few features that make it the wildcard of chemical applications. Its default process connection is $1\frac{1}{2}$ " BSP, and of course, it is also available in PVDF, and even the instrument's housing can be made of plastic. It is an excellent solution for applications where the medium can come into contact with the instrument from the inside and outside in the form of vapor near the tank



(e.g., hydrochloric acid). In such cases, even the smallest metal surface would begin to corrode almost immediately. If the vapor of the medium can also be present around the tank, an instrument equipped with an IP68 capillary tube extended cable is recommended.

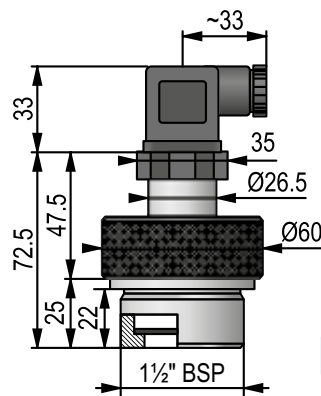
The PTFE-coated ceramic sensor is also available for this device to further enhance chemical protection.

The device's standard sensor seal is FKM, but it can also be ordered with an EPDM seal (*ethylene-propylene-diene-monomer*). For chemically aggressive environments, we recommend an FFKM seal.

Regarding measurement ranges, the standard maximum pressure is 20 bar (290 psi), but some versions can measure in the extreme low-pressure ranges of 40 or 60 mbar (0.58 and 0.87 psi). Its standard accuracy is 0.25% above 0.6 bar (8.7 psi), 0.5% below, and 1% for a PTFE-coated sensor.

The wildcard combination:

- PTFE-coated ceramic flush diaphragm,
- PVDF process connection and housing,
- FFKM seal,
- wired electrical connection and an IP68 capillary tube.



DRF-7□□-□ (PVDF version)

The output versions, electrical connections, and optional displays mentioned in the previous instrument are also available here, as are the intrinsically safe versions.

Here, in Iran...

Iran is the third-largest source of oil in the world and the second-largest source of natural gas. It has taken first place as the world's oil and gas resources. It is a land rich in natural resources such as oil and gas, plaster, cement, salt, and everything mankind needs to prosper.

This region created huge refineries and power plants to mine and refine these resources, turning Iran into a petrochemical industry hub in the Middle East, Asia, and even the world.



Iranian gas refinery

For example, in south Iran, a series of refineries have been built in several locations over the years. The area of these sites is almost as big as a small country.

The next example worth mentioning is Iran's huge expansion of cement factories. Cement is a crucial component in the construction industry, it is the second most valuable mineral in Iran, discovered in half of Iran's provinces, and numerous treatment factories have been built there. The cities of Qazvin, Abyek, Saveh, Tabriz, and Isfahan are the flagships of the cement industry in Iran.



AMIR SHARIFI
Managing Director

Deghat Gostar Tajhiz Eng. Co.
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Iran has a huge potential for big industries. All these industries require various automation equipment and precision tools. The silos, tanks, distillation towers, transmission lines, machines, steam boilers, and various industrial structures are only a small drop in the huge ocean of Iran's capacity to absorb automation equipment and precision instruments.



The Karkheh dam

Another significant industry in Iran is dam building. A simple search on the internet will reveal that the dam-building industry has flourished in Iran, so much so that Iran is known as the land of dams!

The largest of these dams is the Karkheh earthen dam, with a crown length of 3,030 m (9,940 ft) and a height of 127 m (416 ft). It is the largest dam in the history of Iran in terms of volume. This dam has a reservoir with a volume of 7.3 billion m³ (258 billion ft³),



Water treatment in Tehran



which is the largest artificial lake in Iran. It is not just an ordinary dam but a huge power plant. Experts say the dam produces 934 million kWh of electric energy annually. In the wake of these developments, the water and sewage industries and treatment plants have seen significant improvements, opening up huge capacities for precision instruments, industrial automation, and level measurement equipment.

NIVELCO Product Overview brochure in Farsi language



For over a decade, Deghat Gostar Tajhiz has operated as the exclusive distributor of NIVELCO in Iran. Interactions with NIVELCO have always been large-scale, and there has been extensive cooperation in various sales platforms, from advertising, digital marketing, and marketing to sales stages. For example, NIVELCO has a Product Overview for its equipment, in which all the necessary information about level gauges, transmitters, switches, and other equipment is included, and digital and hard copies are available

to all dealers around the world. The Product Overview was translated into Farsi (*Persian*) by the Deghat Gostar Tajhiz Engineering Company in Iran. It was printed by NIVELCO and provided to the Iranian representatives.

Another publication by NIVELCO was a book for technical and sales engineers entitled Guide to Industrial Level Metering. It is a vastly useful book for those interested in the profession and technical sales of precision level-measuring instruments. The book details the most basic solutions throughout history, measuring the water level of aqueducts, and most modern methods of level measurement, like radars, ultrasonic, magnetic, and capacitive level transmitters, are carefully and scientifically examined. The book is being translated into Farsi by the Deghat Gostar Tajhiz Engineering Company, so Iran's experts and engineers can read it in their native language.



The company's managing director, Mr. Amir Sharifi, along with the managers, experts, and other employees, intends to develop business relations between the two countries and integrate NIVELCO products into the vast market of Iran. With the right management strategy, suitable personnel, NIVELCO's high-quality equipment, and professional after-sales support, it is possible to take the lead and increase the presence of NIVELCO's precision equipment in Iran.

The team of Mr. Sharifi believes that the Daghat Gostar Tajhiz engineering company has the potential to reach these goals.

30 years of ESCO Argentina S.A.

ESCO Argentina S.A. sells devices from world-class manufacturers for industrial automation and instrumentation tasks. They have been representing NIVELCO in the Argentinian market since January 2018, selling level-measuring devices, handling commercial distribution, and professional installation.

ESCO Argentina S.A. has been successfully representing several international automation manufacturing companies domestically since 1992, and the range of

NIVELCO products complements the portfolio of these companies ideally.

ESCO celebrated its 30th anniversary last year. The company offers integrated automation and process control solutions, representing international companies that sell valves and field instruments.

The comprehensive knowledge and experience of their professional team enable them to extend the sale of NIVELCO products with engineering and construction services. ESCO Argentina's experience keeps growing every year in the key market segments: oil and gas, refineries, cellulose and paper, chemical industry, petrochemicals, energy production, food and beverage, water, and wastewater treatment.

A special party

Thirty years as one of the most important suppliers of process instrumentation, valves, engineering, and services for Argentina and South America is an amazing achievement that it's worth a special party to celebrate among friends and family, and so we did it!



LIC. NATALIA TARANDO
Sales & Marketing Assistant

ESCO Argentina S.A.
ntarando@escoarg.com.ar

Our strength is our people

We are proud of our expanding team, which always provides our customers with the perfect solution for automation and instrumentation. Their knowledge and experience allow ESCO Argentina S.A. to support their products with engineering and implementation services at the main markets.

That is why we invited our national subsidiaries and distributors, our team operation in Uruguay, ESCO Sudamérica, and our operation in Houston, SUDESCO CORP., to thank everyone who contributed to the success of our first 30 years of Grupo ESCO!

Grupo ESCO, ESCO team

Thanks, NIVELCO, for joining us and being part of our history. Afterward, some of our partners presented their greetings from around the world, and of course, NIVELCO was part of them with their best wishes.



We hope that our cooperation with NIVELCO will be more successful and advantageous for both parties, as it has been over the past five years.

Another reason to celebrate is our new offices. To continue with this expansion, ESCO Argentina S.A. has moved to a new building in Vicente López, with more than 700 m² (7,534 ft²) of offices, distributed over 4 floors, and inaugurated the C.I.S.E. (Engineering and Services Center) with additional 400 m² (4,305 ft²) to improve the integration and logistics of our products.

And there is more to come...

We want to thank our partners for their participation and hope that the successful and fruitful cooperation will continue in the coming years.

Packaging Endurance

Interview with senior packaging specialist Gáborné 'Maja' Dékány



BENJAMIN SZÖLLÖS
Marketing Consultant

NIVELCO Co.
benji@nivelco.com

– **When did you contact NIVELCO, and how did you become an employee of our company?**

– I joined NIVELCO on March 9, 1993. Before that, I worked at Tungsram. They laid me off in the second wave of downsizing. A dear colleague of mine (*Judit Bossányi*) had already been working in the sales department. She said they were looking for a packer. This is how my 30-year career at the company began.



– **How do you remember the beginnings? What is your job at the company?**

– NIVELCO moved to its current location, on Dugonics Street, around that time. I was the first worker who only did the packaging. We tried to find the best and safest way of packaging with the development team (*Tamás Adler*). For a long time, I was the sole packer with 2 warehousemen.

– **What changes have you experienced in your working conditions over the years (from where to where)?**

– Over the years, production increased, and we produced more and more goods. Computerized records, orders, packaging instructions, and labeling were

introduced to the warehouse. This is where I got to know computers. Soon we outgrew the warehouse and moved into a bigger, nicer building. Thirty years is a very long time. I have outlasted several warehouse workers. I got new colleagues, but my independence could always be preserved.

– **Why did you decide to remain our loyal employee for such a long time?**

– I like to work here. I have lost many dear colleagues, but life goes on. I have been working as a pensioner for 10 years.

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

– Our move into the new warehouse was memorable. We put the entire packaging on a new foundation. It's also good to remember boat trips and summer picnics.



– **Could you tell us about yourself in a few words? What activities do you like to do in your free time?**

– I have three grandchildren and three great-grandchildren. I like plants, and I like gardening. We have a small vacation home in Balatonkenese, where I spend a lot of time with my family. I think I made the right decision to remain at NIVELCO for such a long time.

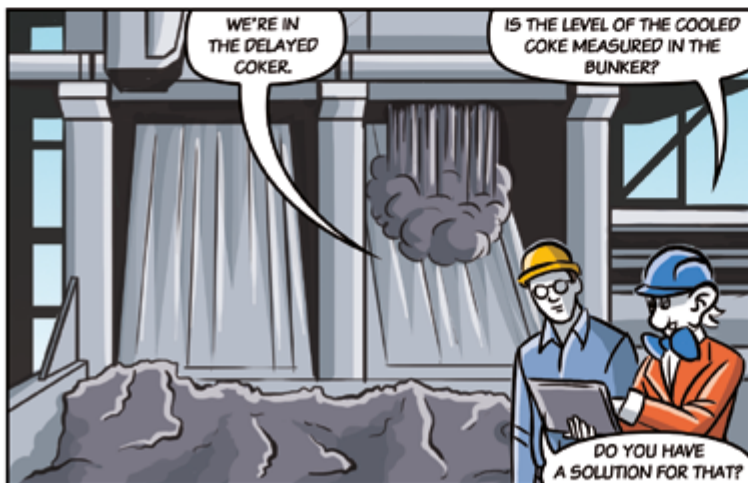
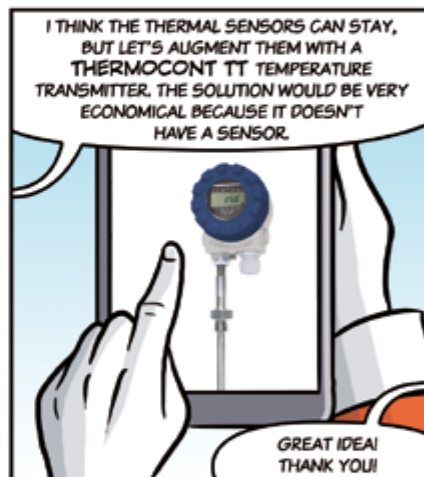
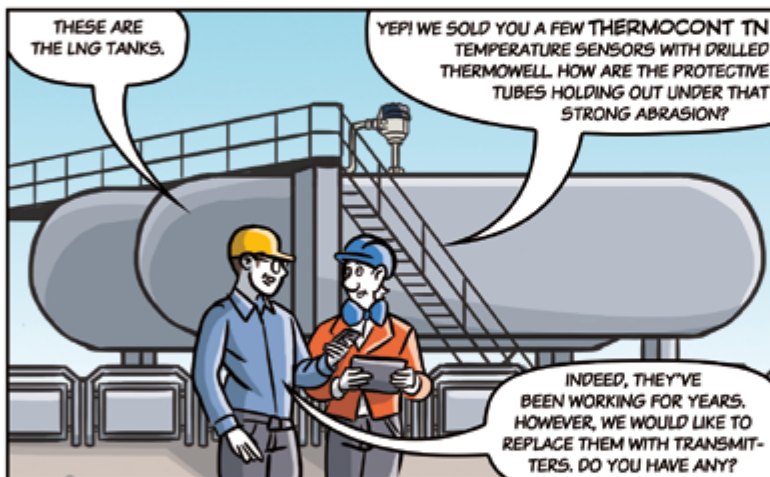
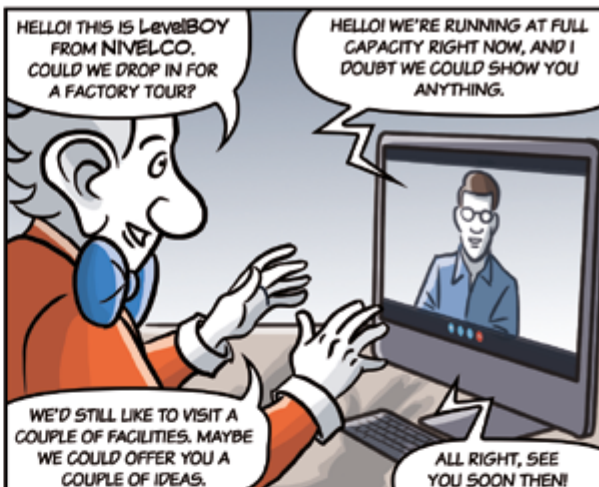
LevelBOY, the Level Measurement Expert

Refining a Refinery



STORY BY ANDRÁS KÁLMÁN
Technical Consultant

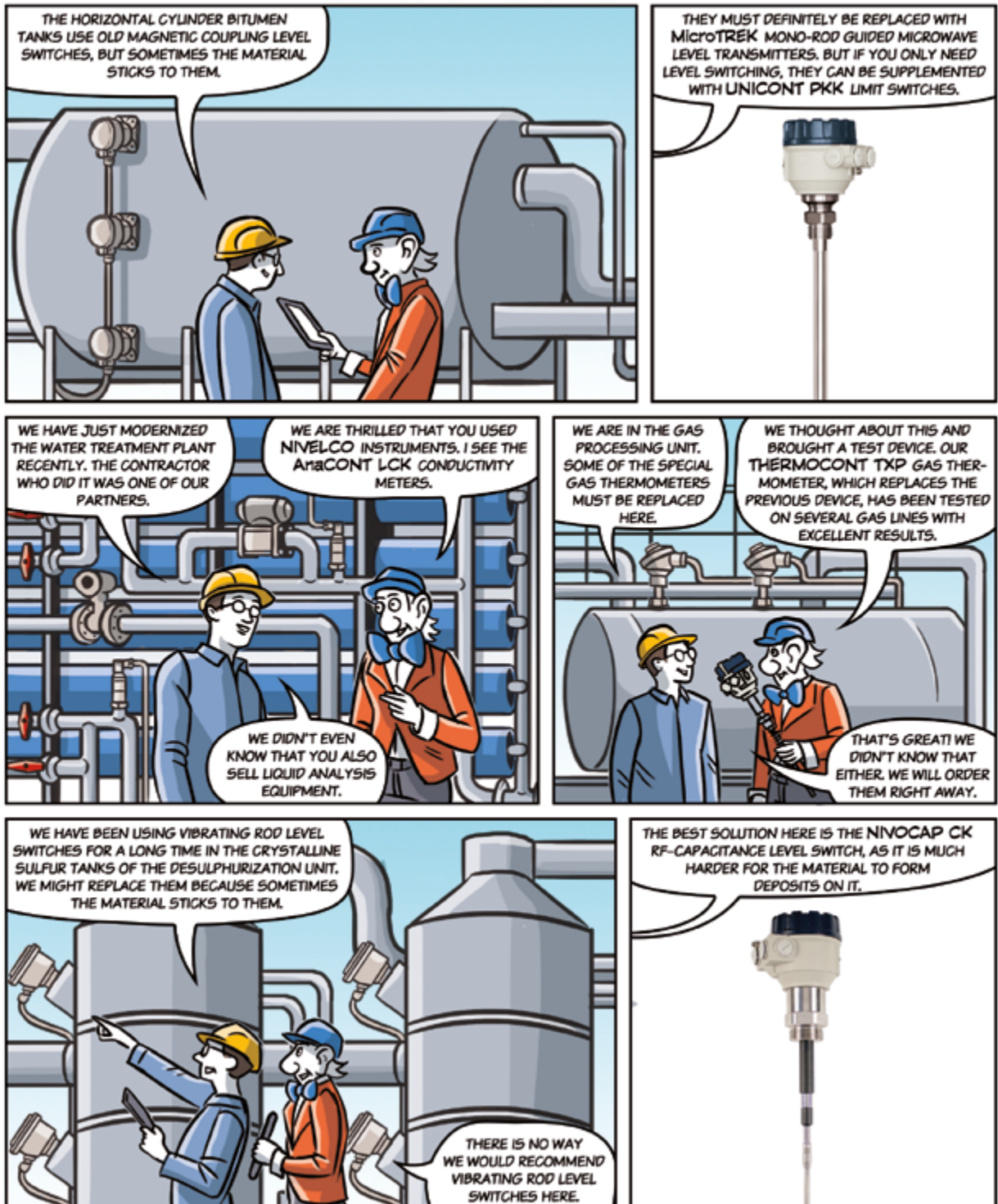
NIVELCO Co.
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ART BY PÉTER SZEENI
Marketing Engineer

NIVELCO Co.
pszebeni@nivelco.com



THESE HUGE ONES ARE THE TANKS OF THE GASOLINE AND DIESEL BLENDING PLANT. THE CURRENT RADAR LEVEL GAUGES WORK FINE HERE, SO WE WON'T REPLACE THEM.

HOW DO YOU SOLVE THE HEAT COMPENSATION TO $+15^{\circ}\text{C}$ ($+59^{\circ}\text{F}$)?

THE RADARS HAVE A BUILT-IN THERMOMETER, SO THIS SHOULD WORK.

IT DOESN'T ALWAYS GIVE THE RIGHT RESULT. YOU SHOULD USE A MULTI-POINT THERMOPPOINT TEMPERATURE TRANSMITTER IN THE TANKS IN A FLEXIBLE MEASURING TUBE DESIGN, WHICH IS SUITABLE FOR MEASURING THE TEMPERATURE OF LIQUIDS COLUMNS UP TO 50 m (164 Ft.).



TO DETERMINE THE COMPENSATED LEVEL, THESE TEMPERATURE VALUES MUST BE COMBINED WITH THE LEVEL MEASUREMENT DATA IN A WAY THAT ONLY THE TEMPERATURE VALUES OF THE POINTS IN THE LIQUID ARE TAKEN INTO ACCOUNT, AND THOSE IN THE AIR ARE EXCLUDED.

THANK YOU VERY MUCH FOR THE GREAT IDEA! WE'LL THINK ABOUT IT.

WE HOPE THAT WE CAN CONTRIBUTE TO SAFE FUEL PRODUCTION TECHNOLOGY WITH OUR INSTRUMENTS.

THANK YOU, WE WILL CONTACT NIVELCO FOR THE NEXT MAJOR MAINTENANCE AS WELL.

BASED ON OUR CURRENT EXPERIENCE, WE BELIEVE THAT YOUR PROFESSIONALS WOULD GREATLY BENEFIT FROM TRAINING WHERE WE EXPLAIN THE APPLICABILITY OF NIVELCO INSTRUMENTS IN THE OIL INDUSTRY IN DETAIL.

IT'S AN EXCELLENT IDEA! SIGN ME UP!

NOW WE WILL DEFINITELY ALWAYS HAVE FUEL.

YOU KNOW WHAT? I'D RATHER DRIVE A HYBRID!

The sidelines of creating liquid pleasure



PHILIP MCGOVERN

Sales Director

Multiplex Engineering Ltd.

phil@multiplex-eng.com

Multiplex Engineering Ltd. takes pride in the supply of customized solutions. We strive to source the ideal equipment for the customer and then send our own engineers to commission this solution on site.

Ultimately we can follow this through with a maintenance schedule to guarantee best performance on any solution provided, to maximize the value of the investment over its lifetime on our customer's site.

Multiplex Engineering has represented NIVELCO in Ireland for over 17 years and supplies its products to many industries in Ireland. One such example is whiskey production.

Irish cream liqueurs represent the natural fusion of two of Ireland's finest products – great Irish whiskey and superb quality rich dairy cream. Irish people have been combining their cream and whiskey in various ways for many years, but it was only in 1974 that technology caught up with tradition, and the means became available to offer this unique drink to the rest of the world. This technological development was the greatest innovation in the alcoholic beverage industry in the last century, and it hit a niche, in particular, with young female consumers looking for a low-alcohol, delicious-tasting product.

In four short decades, Irish cream liqueur has established itself as the No. 1 seller within the liqueur category worldwide and as a staple seasonal favorite for families around the globe.

One such company in Ireland which has reached a global market is Terra Spirits and Liqueurs. From their rural manufacturing site close to fresh dairy sources, Terra has built a reputation for manufacturing premium Irish whiskey blended with cream. Terra also manufactures vodka and gin products for an ever-expanding export market. Multiplex Engineering has provided instrumentation and calibration services to this company for many years.

In 2016, we installed a **MicroTREK** guided wave radar for a storage vessel that required accurate measurement for the blending process. A number of options were considered;

① **Hydrostatic level**, this would not work due to changes in density as different ingredients were added during the blending process.

② **Load cells, weight measurement**. This would not work due to fixed pipe installation, zeroing issues, and volumetric measurement was required.

③ **Ultrasonic level**, this would not work due to turbulence during filling and CIP cleaning. Vapors from product and temperature changes would have an effect also. A small mixer in the vessel would also create turbulence.

The right method: NIVELCO MicroTREK guided micro-wave level transmitter!



Terra process tanks with MicroTREK radars

Multiplex supplied a model **MicroTREK HBX** to trial with excellent measurement results. The MicroTREK had a TriClamp connection and an FEP-coated stainless-steel rope.

As high accuracy was required and the bottom of the vessel was dished, we carried out a linearization measurement table. The tank was filled with process water going through a certified flowmeter, and volume strapping was applied at specific levels using the **EView2 HART®** configuration software.

To avoid the rope sensor moving during agitation/blending, we devised a stainless-steel anchor fitted at the bottom of the tank and hooked the rope sensor in a stationary position.

Terra expanded their production facility, and as a result of the trials, we have supplied 10 intrinsically safe MicroTREK radars with ATEX certification for their process vessels. The vessels contain up to 55,000 liters (14,529 gallons), and we achieved a measurement accuracy of within 100 liters (26.4 gallons). Optimum process repeatability, quality, and cost efficiency were achieved using the MicroTREKs.

PiloTREK W-200 – selected applications

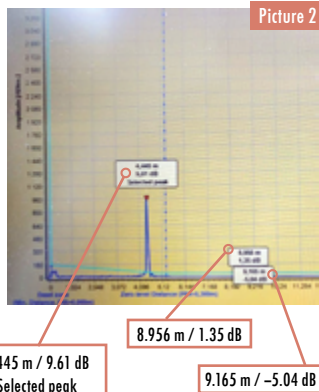


KAREL ŠEVČÍK
Sales Engineer

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Picture 1



Picture 2

Microwaves are ubiquitous in today's technology, especially in telecommunications, military and medical technology, as well as in the home and industry.

Microwave level measurement is commonly used in industrial applications to monitor and control the level of materials such as liquids, powders, and granules in tanks, silos, and other vessels.

The basic principle behind microwave level measurement is the reflection of microwaves off the surface of the measured material. The speed of propagation of millimeter-waves signals in the air, gases, and vacuum is almost constant regardless of temperature

and medium pressure, so the measured distance does not depend on the physical parameters of the intermediate medium.

A microwave transmitter emits a low-power microwave signal, which travels through the container and comes into contact with the material's surface. The signal is then reflected back to a receiver, which measures the time taken for the signal to travel to and from the material. The distance between the material surface and the sensor can be calculated from the measured time, which in turn gives the level of the material in the container.



Picture 3

NIVELCO's latest non-contact microwave level transmitter, the **PiloTREK W-200**, operates with a frequency of 80 GHz, in line with the recent trend in the industry. Higher frequency signals have a shorter wavelength, which allows for more accurate measurements and better resolution. The PiloTREK is typically used in water and wastewater treatment for level measurement in various applications such as pits, tanks, containers, and pump stations. This article will explore using PiloTREK for level measurement in a pump station and a sludge pit.

A wastewater pump station plays a crucial role in collecting and transporting wastewater from residential, commercial, and industrial areas to a treatment plant. Wastewater pump stations are typically located in low-lying areas where gravity cannot move the sewage to the treatment plant. The pump station contains pumps, pipes, valves, and controls that collect and transport the wastewater to the treatment plant, providing challenges for level measurement.

The challenges are apparent in *Picture 1*. The pump station is deep and narrow, with pipes mounted horizontally and vertically along with cables and chains. Additionally, constant level maintenance by pumps in a 1...2 m (3.3... 6.6 ft) range causes waving and foaming. Under these circumstances, the most reasonable option for level measurement would be a submersible hydrostatic level sensor, which can ignore many negative factors such as obstacles, waves, and foam. However, a hydrostatic sensor would be in continuous contact with the wastewater, which can lead to different sorts of problems. Non-contact measurement was preferred, and NIVELCO PiloTREK was offered.



Picture 4

The measurement results of the PiloTREK can be seen in *Picture 2*. The chart shows the number, strength, and position of all received signals. The one reflected signal means that the PiloTREK ignored reflections from obstacles, undoubtedly thanks to its low total beam angle of only 7°. The strength of the selected signal, measured by amplitude, indicates that the waves and foam did not have much effect. Nonetheless, it is important to note that all foams are not the same, so the positive result of this application does not necessarily translate into positive results on any application where foam is present.

Sludge generally refers to a semi-solid or thick, muddy, and often viscous mixture of water and various solid materials such as organic matter, sewage, industrial waste, or other contaminants. Before disposal, sludge is stored and treated in so-called sludge pits. The treatment is done by aerobic digestion, which involves using oxygen to promote the growth of aerobic microorganisms that consume the organic matter in the sludge as a food source and convert it into simpler compounds such as carbon dioxide, water, and other stable compounds. Providing oxygen for microorganisms involves pumping air through a network of pipes or diffusers placed at the bottom of the pit, creating small air bubbles that rise through the sludge. Air bubbles create foam on the surface of the sludge, and since the pumping is done regularly, the foam changes its consistency, sometimes turning into a thick, heavy layer or floating islands of foam, which pose a challenge for level measurement.

Pictures 3, 4 and 5 show PiloTREK installed on a console above a rectangular hole in the cover of a small sludge pit at the local water treatment facility. Such installation is not by the instruction manual, but before any changes in the installation were suggested, a test was conducted, including the time when aeration pumps were on.

The test result was successful despite the non-standard installation. The signal level was much lower than in the first application example (*picture 2*). The reason for the weaker signal was the dense layer of foam that formed during the aeration process.

The measurement's effectiveness depends on the foam's nature and structure. The dense, fatty foam forms a mostly even surface. If there is even 1 cm² (0.155 in²) of flat surface – and in the absence of

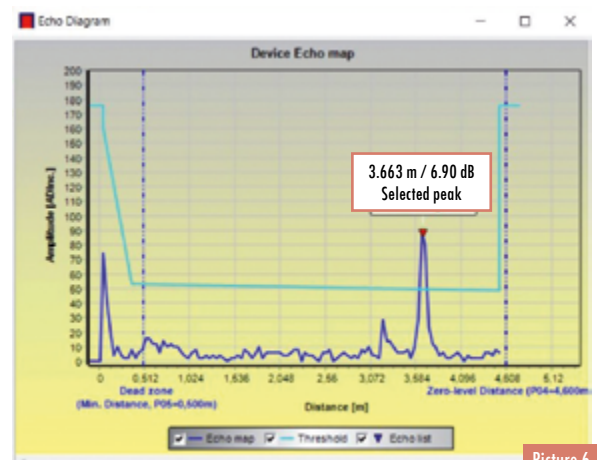
flow, there usually is – then the radar can track it. Note, the radar measures the top of the foam, not the level of the liquid.

On the other hand, a light, bubbly foam layer, where the bubble size is in the order of 2...3 mm (0.08...0.12"), cannot be tracked by the radar at all. The reason is that the size of the bubble causes interfering signal cancellation or scatters the signal so much that it no longer reaches the device. Of course, if the foam is not contiguous and has a hole of at least 1 cm² where the water is visible, it can be tracked. The only question is whether the hole is stable enough.

The lesson from this test is that a weak reflected signal does not necessarily mean unreliable measurement. As long as the strength of the reflected signal is greater than any other signal, the measurement can be perfectly reliable. In addition, the PiloTREK W-200's software allows users to adjust the device for the current working conditions. **Please always consult NIVELCO in such cases.**



Picture 5



Picture 6

Exploring new territories with the PiloTREK W-200

Level measurement in a vinasse tank in the Győr distillery



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The newest product of NIVELCO's product range is the **PiloTREK W-200** 80 GHz microwave level transmitter family. It has been on the market for less than a year but is already facing several interesting challenges.



Győri Szeszgyár és Finomító Zrt. is one of the largest food and beverage manufacturing companies in Hungary, where molasses (a by-product of sugar production, thick sugary syrup) is processed during alcohol production, from which, after the sugar is extracted, a so-called vinasse, containing valuable substances and trace elements, remains, which is in the form of organic fertilizer is sold. Vinasse is concentrated during production and delivered to customers with a dry matter content of 45%.

The two most important areas of its use are: applied to the soil as an organic fertilizer and as a raw material for biogas power plants. Vinasse is a brownish-colored substance with a characteristic odor and a slightly acidic chemical effect.

Its components are:

- dry matter content of 40...45% by weight,
- crude protein content of 25...30% by weight,
- inorganic material of approximately 50%
- organic matter of approximately 50%. Vinasse's pH varies in the 5.9...5.4 range.

The finished vinasse at +65...+80 °C (+149...+176 °F) is stored in a tank, the height of which is ~8.5 m (~27.8 ft). There is a very large vapor cloud above the medium, which is also highly oxidizing.

Until now, hydrostatic measurement was used for this medium, but due to siltation, this measurement method was severely limited. Fortunately, there is a hole cut out on the tank where the vinasse vapor evaporates, and the **PiloTREK WPA-224-4** microwave level transmitter was installed there. After commissioning in December, the device performed well, it was not affected by the harsh conditions, and everyone was satisfied.

On the other hand, during the cold weather in January, the user faced a new difficulty. Due to the cold, dense vinasse drops appeared every 5-7 days on the conical end of the device, which refused to drip off, thus interfering with the measurement.

The user developed two solutions. In one case, he blew air onto the tip continuously. Then he surrounded the emitting part with a perforated pneumatic tube, then installed knife nozzles around the emitter, with variable blowing strength and intermittent control. Unfortunately, neither method could prevent the accumulation of droplets after a while.

Then he came up with the idea that saved the day. He sprayed the conical surface with water-repellent silicone, and it finally solved the problem. Experience gained successfully.



PiloTREK W-200 in vinasse tank

As the example shows, commercially available silicone and nanotech coatings can solve precipitation problems during the measurement of many substances with very unpleasant properties.

NIVELCO Instruments in an Iron-Casting Plant



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The SATURN S.A. Alba Iulia iron foundry in Romania was founded in 1972, started production in 1975, and is one of Romania's most important foundries producing cast iron parts.



The German company Buderus Edelstahl GmbH designed, built, and installed the technological processes. The machine lines were also imported from Germany, and the production technology of cast parts is based on German know-how.

The company is currently a privately held joint stock company, the majority owner of which is the Italian C.I.M.U. s.r.l. Cinisello Balsamo (MI).

The company's main activity is producing cast iron parts for heavy industry, up to 12 m (39.3 ft) and 35 t (38.58 US ton). 90% of production is exported to European markets.

Last year, many investments were made to improve the production process, and NIVELCO Tehnica Măsurării, the Romanian subsidiary, participated in the process.

The task was to measure the level of molding sand in storage and technological tanks. Molding sand is a mixture of quartz sand and self-hardening furan resin using 85...90% regenerated sand. Its dielectric constant (*specific gravity*) is around 2.5...3.5. For the application, we recommended the cable probe version of the new **MicroTREK HT-700** family of guided microwave level transmitters, connected to a PLC analog card, on which levels are displayed, alarms are generated, and the production process is controlled. The offer and the conclusion of the contract were preceded by a one-month test in the storage tank, with a test device installed and programmed by us.



Of course, the testing was successful, and the customer was satisfied with the results and ordered the devices. The temperature of the sand in the storage tanks, the ambient temperature, and the temperature in the technological tanks do not reach +90 °C (+194 °F), so we chose the base model.

The automation system for the tanks was created by one of our customers, the system integrator company CRYSTAL Group from Alba Iulia.

Devices ordered for the project

- Two **MicroTREK HTN-710-4** level transmitters for the storage tanks, with a 10 m (32.8 ft) cable probe and a **SAP-300** display module for configuration.
- For the technological tanks, five **MicroTREK HTN-702-4** level transmitters with 2 m (6.56 ft) cable probe.

The system has worked flawlessly since the devices were connected, programmed, and commissioned.



EchoTREK level transmitters in the chemical industry

Car care products and thinners from Börzsöny



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The Tolmács site of Nógrádi Vegyipari Zrt already had a chemical plant in the 1950s under the name Erdőkémia. The company is currently one of the most important chemical manufacturers, organic solvent processing, and recycling companies in Hungary, which is best known for its Forest brand car care (*windshield washer and coolant*) and printing products and thinners.

In 2021, the company's management decided to respond to the increased demand for its products by reconstructing the existing tank park and increasing

its storage capacity. Within the framework of the project, the renovation of the recovery basins of Tank Park #36 was realized, as well as the replacing most of the old storage tanks. The tanks were installed in early 2022. Afterward, a new demand arose on the company's part: they would also like to continuously monitor the level of the stored media. To address this, Nógrádi Vegyipari Zrt. approached the professionals of NIVELCO Co. to provide instruments suitable for continuous level measurement in twelve new, single-walled, 7.5 m (24.6 ft) high, stainless steel, vertical cylindrical tanks to store various chemicals, including

the finished windshield washer concentrate and raw materials in them. They also wanted to find a solution to protect against overfilling.

The task was very complex, as it was necessary to monitor the level of the various chemical chemicals with a typified and compatible measuring method. Meeting the strict ATEX explosion-proof requirements and measurement accuracy were also important factors. All of this, of course, relatively cost-effectively.



NIVOPOINT magnetic tracking level switch and EchoTREK compact ultrasonic level transmitter in chemical tanks

Considering the above aspects, NIVELCO's **EchoTREK SEA-344-8 Ex** ultrasonic level transmitter was chosen for level measurement. The device could easily be mounted on the flanged connection on the tank, and it also complies with the Zone 0 explosion-proof classification required by the solvent environment. The device can be programmed and checked on the one hand using a pluggable **SAP-200** display unit on the tank or via **HART®** communication conveniently from the control room below.

Another task was detecting the tanks' upper fail-safe level and the system control's emergency shutdown at 90% and 95% filling. The solution was provided by the **NIVOPOINT MRA-211-7 Ex** magnetic tracking level switch with two switching points.

We installed one of each device in each tank, i.e., 12 units in total. The display part (*considering the explosion-proof environment*) was solved with 4 **Multi-**

CONT PEW-24A-5 type universal display and signal processing units. It is also possible to configure the level transmitters on the tank with the help of the devices installed in the control room since the signals of the transmitters are collected in a **HART®** multidrop system.

The use of **MultiCONT** devices also seems to be an optimal choice because, if later they want to monitor level changes on a computer, and store the measurement data of the tank fleet, then thanks to the RS485 outputs, data can easily be provided for, e.g., the **NIVISION** measurement data collection and display software.

The entire instrumentation project of the tank park has been completed, and the specialists of **Nógrádi Vegyipari Zrt.** are using the new **NIVELCO** instruments with satisfaction.



PVC dust measurement with EasyTREK SCD

PVC dust measurement in the "bravest" Hungarian city



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The world's leading cable manufacturer is the Milan-based Prysmian Group, which markets its products under the brand names Prysmian, General Cable, and Draka. The company group is present in 50 countries with 104 factories and employs 28,000 people. One of its factories is in Balassagyarmat,



which is called the "bravest Hungarian city". The product range of the cable factory includes a wide selection of different energy cables and wires. In addition to high-current cables, low- and medium-voltage insulated cables, and bare overhead lines are produced at this site, but a particularly important



activity is the production of PVC mixtures, which also serves the needs of its partner companies that sell raw materials.

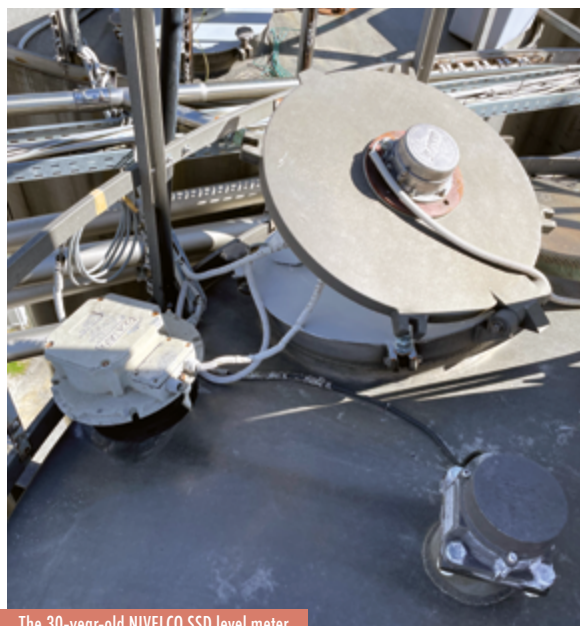
The raw material of cable sheaths is PVC, obtained in the form of powder and used to produce different types of cables. PVC powder and other raw materials arrive in special containers transported by trucks equipped with hydraulic lifts. From these, they are put into silos using a pneumatic system.



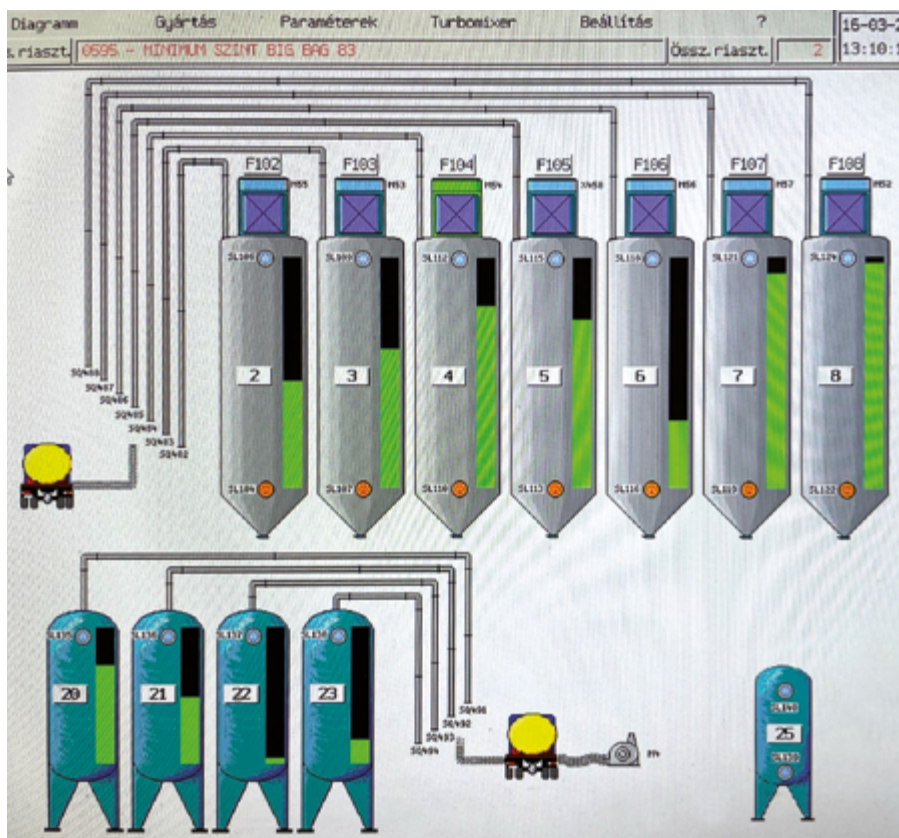
There are many silos on the site, including eight 15 m (49.2 ft) high storage units where the raw materials are kept. From the point of view of inventory management and logistics, it is very important to monitor the amount of different powders continuously.

The company wanted to replace the old, obsolete NIVELCO SSD level gauges with newer, modern ones. Since they were satisfied with the 30-year-old equipment, they approached NIVELCO Co. with the task. Three of the eight silos store PVC dust, which poses a dust explosion risk, so the instruments installed there had to meet the Ex requirements stipulated in the strict standard. Accordingly, they chose the **EasyTREK SCD-31J-8 Ex** ultrasonic level transmitter for all three silos, as these devices have the appropriate certification. They store kaolin in one of the other five silos and stone dust of different grain sizes (*fractions*) in the remaining four. Several measurement methods could have been considered for these silos. The suitable dielectric constant of the media would have allowed the use of the **MicroTREK HTN** guided transmitter – but the customer wanted level transmitters with the same operating principle.

Since these materials are not classified as explosive, the more cost-effective **EasyTREK SCD-31J-4** types were installed. This time, NIVELCO undertook not only to produce the level transmitters but also to install them, do the necessary cabling, and connect the devices to the PLC with the involvement of a subcontractor. The customer can now monitor the results of the ultrasonic level measurement through computer process control display and data archiving software that they were using before this investment, saving a considerable amount of money.



The 30-year-old NIVELCO SSD level meter



NIVELCO helps to save energy and the environment



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MicroTREK HT-700 Ex in LPG tank

Due to the unprecedented Russian aggression against Ukraine, huge imbalances have arisen in the market of energy resources, especially natural gas. The price of natural gas, which has become the basic energy resource in many industries in recent years, has skyrocketed. In addition, there was uncertainty about the continuity of supplies, especially as governments decided to protect individual customers and industries of strategic importance. For this reason, several companies have decided to resume using LPG tanks, heating oil tanks, and even coal tanks.

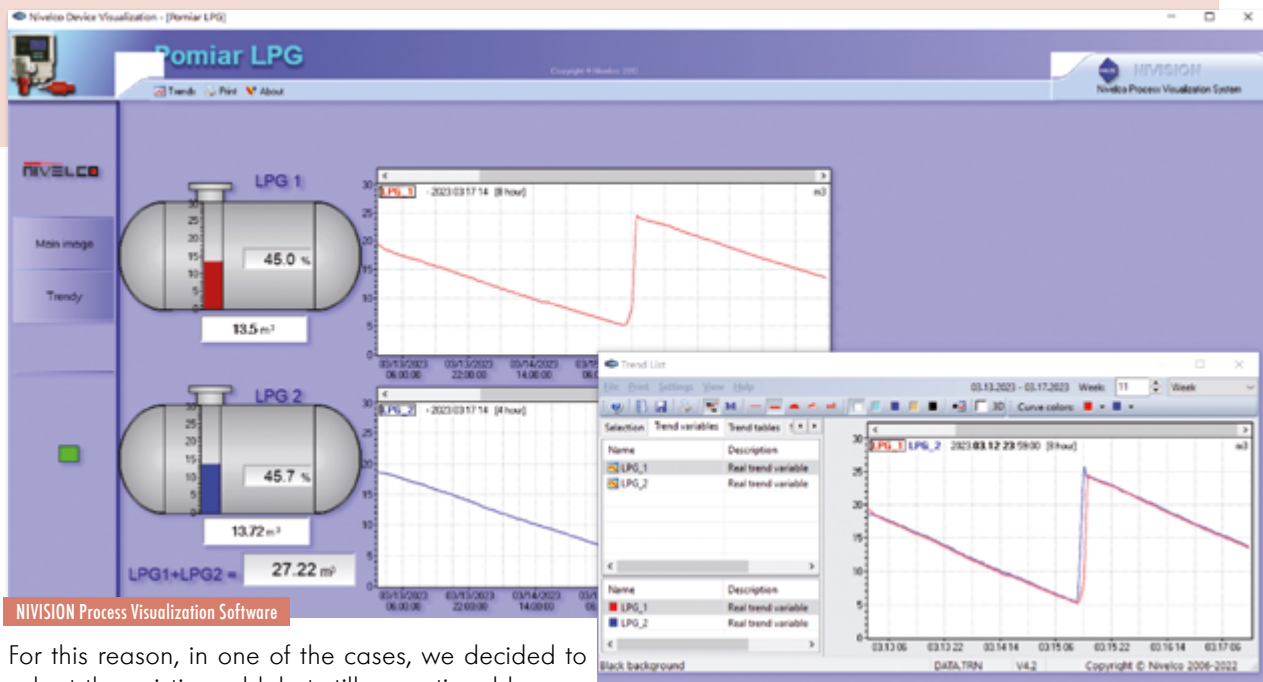
Additionally, they started monitoring deliveries of fuels and consumption, detecting unauthorized use, and using unreasonable amounts beyond a sustainable level to optimize operations.



The situation has created a great opportunity for NIVELCO-Poland to offer solutions to these problems with our instruments for LPG usage in the industry. Liquefied petroleum gas (*LPG* or *LP gas*) is a fuel gas which contains a flammable mixture of hydrocarbon gases, specifically propane, propylene, butylene, isobutane and n-butane. LPG is used as a fuel gas in heating appliances, cooking equipment, and vehicles. While addressing customer needs, we encountered a lot of issues, like the lack of proper process connections, which were very difficult and costly to overcome, as all the tanks are monitored by the Office of Technical Inspection (*UDT*), an institution that regulates the safe operation of technical equipment in Poland.

NIVOTRACK MTL mounted on bypass measuring tube





For this reason, in one of the cases, we decided to adopt the existing, old, but still operational bypass indicators to work with our NIVOTRACK magnetostrictive level transmitters. Of course, after checking the technical feasibility of this solution and getting a spare float from the customer to properly calibrate the three NIVOTRACK MTL-531-7 Ex devices and the MultiCONT PRC-24A-5 Ex multichannel process controller. After installing the equipment, the system worked without any issues.

We started cooperating with a few tank manufacturers and designers to deliver turnkey solutions covering all mechanical and electrical works, on-site calibration and commissioning and providing end-users the software tools for detailed monitoring of LPG deliveries and consumption using our well-known NIVISION process visualization software. We had no problem fitting our devices into brand-new tanks and tanks with the proper process connection.

The typical installation consisted of 2 or 3 LPG horizontal cylinder tanks of diameter 2.5...3 m (8.2...9.8 ft) and lengths up to 10 m (32.8 ft). The customers wanted to know how much gas they had at their disposal to plan production and maintain an economical supply policy. To make it easier for the customer to read the indications, the level was converted to volume (m^3 , ft^3). The primary indicated value was volume percentage. NIVELCO instruments performed the calculations. For example, at a certain plant, two MicroTREK guided microwave transmitters with coaxial probes, a MultiCONT multichannel process controller, and an UNICONT PGK intrinsically safe isolator were used to perform the tasks. The Micro-

TREK HTA-736-8 Ex transmitters with a $\varnothing 28$ mm ($\varnothing 1.1$ ") with a 3.54 m (11.6 ft) long coaxial probe was used. The values measured by the transmitters are sent via HART® communication to the MultiCONT PRW-22A-5 Ex controller and display mounted next to the tanks in the control room. Then the data is sent via Modbus TCP and read in remote locations by a



server with NIVISION installed on the system to provide access to multiple clients where needed. The current values and trends can be displayed to all the plant manager gives the right.

Thanks to NIVELCO measuring equipment, the client achieved the planned purposes. Saving money by buying cheaper LPG gas. They know how much gas is left in the tanks at any time, and they can order a tanker when necessary.

Methanol measurement with NIVOFLIP

Industrial furnace production, Budapest



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A popular product in NIVELCO's product range is the **NIVOFLIP** bypass level indicator family. Typically, the oil and gas industry is the main field of use, but sometimes we come across quite surprising and unique fields of application.

Industrial furnaces are special heating devices that fulfill the precise temperature control and homogeneity required for various industrial and technological processes. They provide heat for these processes and can operate under air or controlled gas atmospheres.

In some technologies, the dosing of liquids essential for the operation of the furnaces is regulated with gas-blanketed tanks. That is, gas is pushed into the top of the liquid tank, and the pressure of the gas bubble and nozzles control the injected clay flow.

The greatest advantage of the special technological solution lies in that the nitrogen cushion dispenser ensures the reliable dosing of methanol in small quantities, with high precision, at a fixed pressure, without a motor or moving parts. This equipment eliminates the serious measurement inaccuracy problems experienced during the mechanical (*pump*) dosing of methanol in amounts between 2...20 l/h (0.53...5.28 gal/h), and thus the resulting loss of production. The specific device consists of several methanol

tanks with automatic switching, above which there is a nitrogen cushion. The level of the tanks is monitored with the **NIVOFLIP** bypass level indicator. The immediate and easy-to-evaluate visual data with the magnetic flaps is very practical due to the small tank sizes.

The filling is carried out with diaphragm pumps, and the emptying, i.e., the lower-level switching, is monitored with **NIVOSWITCH RCM-400** intrinsically safe vibrating fork level switches. They can maintain the pressure, i.e., the pressure of the nitrogen cushion on the surface of the methanol, thanks to the precise operation of the **NIPRESS DRC-200** pressure transmitters. The entire industrial furnace is controlled by a PLC, for which the methanol level signal in the tank is transmitted by the **NIVOTRACK MTL-500** magnetostrictive level transmitter that can be coupled with the **NIVOFLIP**.



Methanol dispenser

As part of a pilot project, our partner installed several such furnace systems, which have been operating flawlessly ever since.

NIVOFLIP

Bypass Liquid Level Indicators & Magnetic Coupling Limit Switches



FEATURES

- Operation without power supply
- Clearly visible display
- Stainless steel bypass chamber
- Error indication
- Optional MAK-100 / MAK-200 strap-on level switches
- Optional magnetostrictive level transmitter
- Aluminum or stainless steel lamella housing
- Bypass measuring chamber version without indicator
- Accuracy: ± 10 mm (± 0.39 ")
- Titanium float
- High-temperature version
- Explosion-proof version
- 5 years warranty





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NIVELCO RACERS AMONG THE WORLD'S TOP TWENTY!

In the middle of March, at the time of writing this article, the competition season is far from over, and we have already garnered great successes. The Szöllős siblings finished the alpine ski world championship, held between February 4–19, 2023, in Courchevel and Méribel, France, with great results. The location was named Trois Vallées – Three Valleys – the world's largest contiguous piste system with 600 km of ski slopes and 157 ski lifts.

The women's competitions were held in Méribel, while the men's were held in Courchevel, making the situation difficult for us. The women's team lived almost an hour away from the men, which caused several logistical problems during the competition. The weather graced the world's best skiers, although there was an unusually low amount of snow on the slopes this year. During the 2 weeks, spectators and competitors could enjoy the uninterrupted sunshine.

The world championship kicked off with the number that is most dear to us, but it also happens to be the hardest and most complicated. Noa Szöllős, a young competitor of the NIVELCO Racing Team, celebrated her 20th birthday on February 3. Three days later, she got the prestigious 17th place in the super combined of the adult league.

The number mentioned above consists of downhill and slalom, for which only a few can qualify in the world championship, as it requires complex skills. Therefore, only the competitors that are among the most successful in both fast and technical numbers can start.





The next day, the Szöllős boys – considered seasoned in this competition – took to the starting line, and both managed to outperform their results two years earlier.

Barnabás Szöllős finished in the outstanding 11th place, earning valuable World Cup ranking points. This is the number in which Barnabás got 6th place at the 2022 Winter Olympics.

Benjamin Szöllős improved multiple places after the fast number in the combined and finished in 19th place racing in the slalom. All three racers fulfilled their wish to be among the top 20 at the Alpine World Championship.

All in all, the whole team showed the world that competitors from a non-Alpine country can work their way into the world's best skiers. The icing on the cake is that this is a family team where everyone contributes to making their mutual dream come true.

NOA

– The world championships this year have given me a huge opportunity to train with and race against the best in the world. The training days were priceless and irreplaceable and helped me much later in the season. The races were also extremely important, showing me where I stand and where I need to improve the most. I'm satisfied with

my performance in the Alpine combined, and I was also happy with my GS run even though I sadly couldn't finish it all the way down, but all in all, I learned a lot, and I feel more ready now to push myself further in the next season.

BENJI

– Looking back on the world championships, I'm very satisfied with my results and preparation during the last year. My goal was to be in my best shape for the world championships, and winning the giant slalom qualification race proves that I reached this goal. Unfortunately,





I made a costly mistake at the giant slalom finals, which prevented me from comparing myself to the best in the world. Proving my form, I was on the way to qualifying myself easily for the slalom finals, but another mistake prevented me from finishing the final qualification.

BARNI

– After the Olympic games, the next biggest events are the world championships. They were held in Courchevel with blues skies and perfect conditions this year. It was an amazing experience. I enjoyed all the races. My best result was P11 in Alpine Combined, and I also had some good runs in the other races.



Next season there won't be any big events, so all the focus will be on World Cup races, trying to make it in the top 30 and score my first points. I didn't have big expectations for the speed disciplines as I don't consider myself a speed racer, but I'm happy that I could archive some good placements also at those events.



This World Championship was a glorious crescendo to celebrate the 20th anniversary of the NIVELCO Racing Team. If somebody asked me in 2003 (the year Noa was born) how far I could go on my own in alpine skiing as a Hungarian competitor, I would not have thought, not even in my wildest dreams.



Our competitors have been around the world. They successfully participated in many prominent international age-group competitions, and all three of them participated and won medals at the European Youth Olympic Festival (EYOF). In fact, they are among the best in the adult field. They have competed in several European and World Cup competitions and world championships, and let's not forget the 2022 Winter Olympic Games, where Barnabás finished sixth.

What will the next ten years bring? How far can we go on this path we have trodden so far? We will continue to tell you about it in detail in the NIVELCO Magazine.

Level

We know all about liquids.

Flow

Distance

Weight

Pressure

pH

Volume

DO

Temperature

Mass



SIL



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