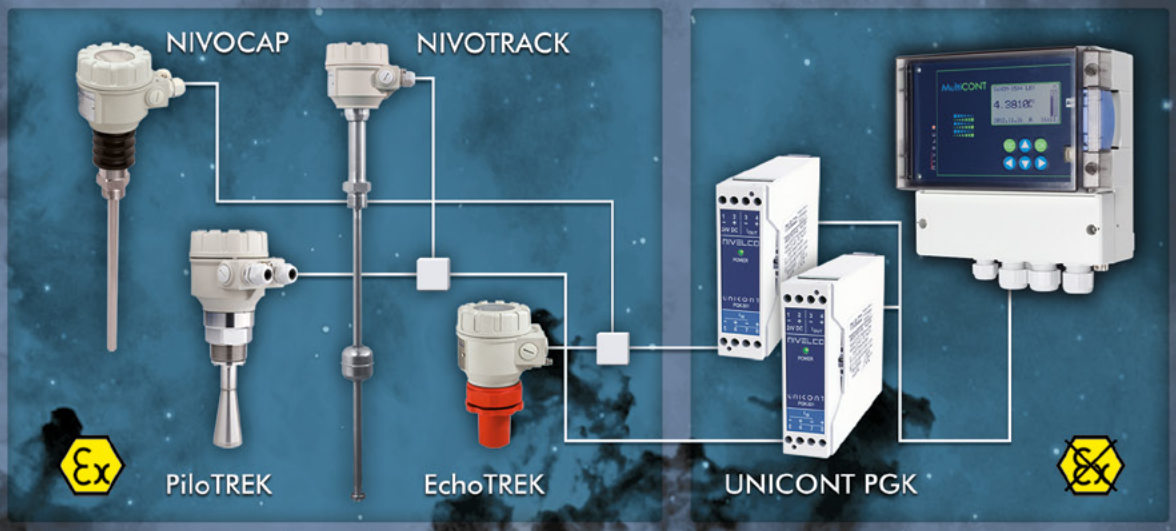
NIVELCO

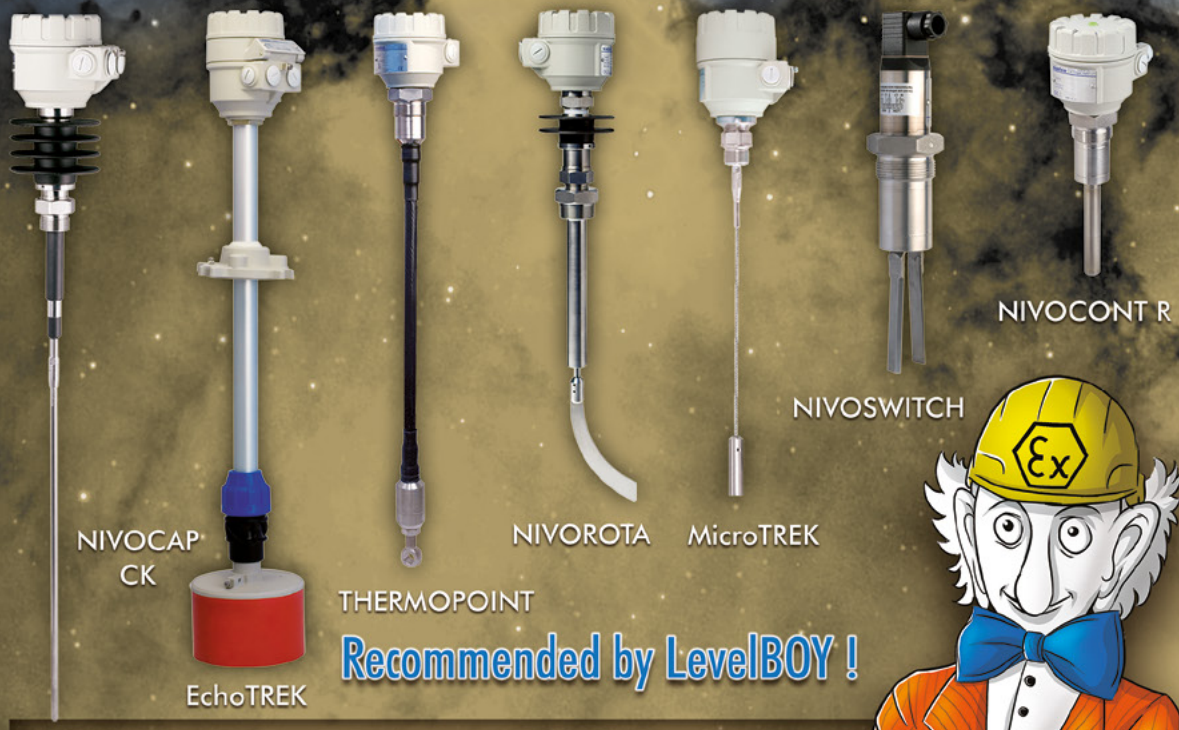
2015/1

Magazine

NIVELCO an instrumentation expert for instrinsically safe



. . . and Dust-Ex environments!



Recommended by LevelBOY !

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NIVELCO Magazine 2015/1

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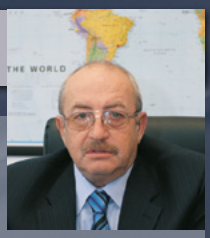
Introduction



Esteemed Partners!

Welcome to our readers in the occasion of publishing the newest, 2015/1 issue of our ***NIVELCO Magazine****! With constantly growing production capacity and launching new products our company is looking forward to the following years with the same dynamism. We hope that similarly to the past years 2015 will also bring growth in the life of* ***NIVELCO****.*

This year we celebrate the 20th anniversary of ***NIVELCO-Poland Sp. z.o.o.*** *Since 1995 the company is dynamically expanding and increasing its market share year by year and nowadays* ***NIVELCO Poland*** *is well known all over the country with respectable sales. In the columns of our Magazine you can read more details about our oldest and most successful subsidiary company.*

The ***PiloTREK*** *burst radar level transmitter family has come to another milestone. In the 'Product News' section you can read more about the new parabolic antenna design which will be launched soon. This new antenna type opens new perspectives within those applications where the non-contact microwave principle is required.*

In this issue a new column is introduce which describes the installation and usage of ***NIVELCO*** *instruments in a form of a short comic.*

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

Tamás Szőllős
President (CEO)

Donated by NIVELCO

Charity support from NIVELCO

Thanks to the positive economic results of the recent years **NIVELCO** has been in the lucky situation that the company can continue supporting charity organizations. We can proudly state that this is a tradition in the life of the company and in the 2013 and 2014 years the financial envelope has been increased which we could offer to charity purposes.

Our regular readers are surely aware that **NIVELCO** is an official sponsor of the Hungarian Paralympic Team. This is published the back cover of not only the **NIVELCO** Magazine, but other marketing materials such as our Product Overview brochure or the complete Product Catalogue. Recently we have signed a new four-year sponsorship contract with the Hungarian Paralympic Association, helping to support a successful Olympic participation in the XXIII Winter Olympic Games in 2018. Along with the financial support **NIVELCO Racing Team** also provides personal assistance for the racers helping their trainings with advices. This way I want to express my congratulations to the team's successful results.

In addition to the sport organizations we also focus on institutions taking care of children, hospital emergency departments and health institutions in order to improve their possibilities to purchase new equipments.

So both years, also in 2013 and 2014 we gave donations to the "Szent Erzsébet" Child Foundation. We also provided financial aid too in both years to the "Lifebelt for Children 2002" Foundation. Our contribution was used in a special school for purchasing a reading device specially designed for visually impaired people.

In 2014 we supported the foundation of the "Jahn Ferenc South-pest" hospital with a greater amount of donation which was used to buy of a special laparoscopic instrument.

It is a pleasure for us that we can contribute the operation and support the activities of these foundations. We are confident that continuing the traditions we can help even more organizations in the future.

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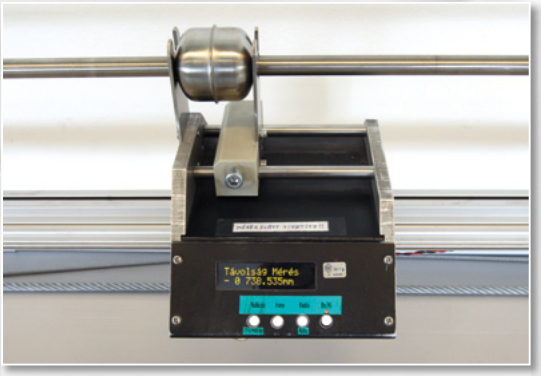
New measuring bench at NIVELCO

High precision measuring bench in the Quality Control Department

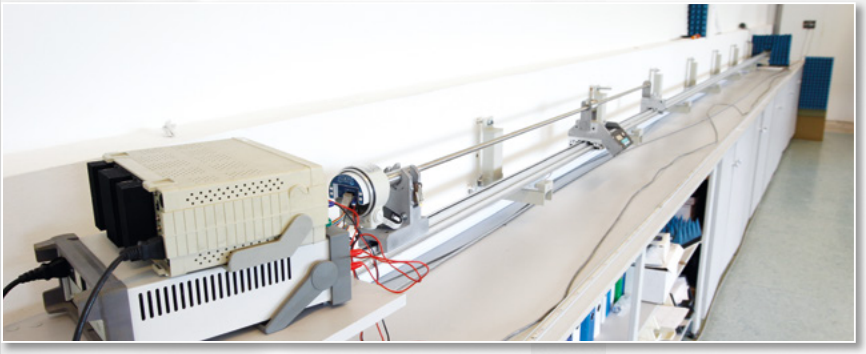
Since 2010 **NIVELCO** provides 3-year full warranty sending the message to the world concerning our confidence about the quality of our products and about our determination of improving our standing among the manufacturers of industrial instrumentation. The supervision of each and every product made by the Quality Control Department and the self-developed testing devices contributed to the presently offered high quality.

In order to make the work of the Quality Control Department more efficient we decided we establish our own certified measurement authentication station. With the help of this device **NIVELCO** is authorized to make the verification procedures in our headquarters.



The probe of the device can be moved in a rail-track, the measurement is based on the principle of the linear position and distance measurement. There is a rail in the full length of the measuring bench and magnetic tape is located inside the rail. The measuring device has an impulse sensor at the bottom and this part can be moved in the rail track by hand. The device is battery powered and the measured distance can be read directly from the built-in display.

The length of the measuring bench is 20 m (65 feet) with the resolution of 0.005 mm (0.2 mil).



In cooperation with the Hungarian Trade Licensing Office Metrology Authority we can perform certified measurements in accordance to the **HE 54-2000** (automatic tank level measurement probe) and the **HE 55-2000** (automatic tank level transmitter) regulations.

This new horizontal measuring bench is beneficial for us and also for the customers. The delivery time of the instruments which required time-consuming process to bring them to an external measurement laboratory decreased significantly. With the use of the new device this process is significantly shorter and less expensive. Furthermore this high-precision measurement equipment is available any time for our developer engineers to use it for deep tests for the instruments under development. The development of the measuring bench was performed indoors since only we know exactly what can serve our own demands the best.

During the measurements it is very important to keep the measuring bench and the measured in constant temperature and make continuous temperature compensation, which is automatically performed by the measuring probe. In order to help this we improved the cooling / heating system of the Quality Control Department are provided thermal protection for the windows to avoid the thermal effects caused by the sunshine.

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Revamped Quality Control Department

Changes in order to improve the quality

In accordance to the wide selection of instruments manufactured by **NIVELCO** and the constantly increasing production volume it was necessary to expand and create new structure at the quality control department. This way the coordination of the workflow and material flow between the production and quality control department became more fluent, as well as the operation of the complete department become more organized and more efficient.

Behind the high-quality **NIVELCO** products there is a skilled, dedicated team working at the quality control department following a well-regulated quality control system. This system is responsible for monitoring the manufacturing processes and the product quality as well it provides that the relevant requirements are always met.

The multi-step monitoring process covers the inspection of the raw materials and components received from our suppliers, the measuring of the semi-final products in several assembly phases, and finally the complete supervision of each and every product, checking all the relevant parameters of quality of the finished products.

In order to satisfy the increased demands for the product quality inspections a new test room has been established besides the existing quality control area. Here the supervision of the selected manufacturing processes takes place along with checking the assembled mechanical parts and the finished products for example the level switches.

The already existing quality control room has been completely revamped to be more suitable for the non-contact level transmitters or those special inspections which requires special equipments such as the high-precision units which are calibrated by a horizontal measuring bench.

The renovation concerned the electrical system of the laboratory, the doors and windows have been replaced and complete interior painting was done. The heating and air conditioning system was also renewed to provide the necessary environmental conditions for the tests. The height of the room was increased which contributed to the easier feasibility of the measurements.

To make the product transfer easier between the production and the quality control department a new product conveyor belt has established. In addition the measuring benches used to check the ultrasonic level transmitter devices and the test equipments of the guided microwave and the pulse burst radars have been also renewed and improved.

Revamped Quality Control Department

A high-precision measuring equipment has been also established in the laboratory with the purpose of being allowed to verify the **NIVOTRACK** magnetostrictive level transmitters in a cooperation with the Hungarian Trade License Office.

We are pleased to announce that our goal has been achieved and we received the certification for operating an Authentication Laboratory. This certification provides the possibility that the HTLO is allowed to perform verification procedure of the **NIVOTRACK** instruments in our own authentication laboratory with our cooperation which contributes to the faster and more flexible production process.

Overall, we can say that the conditions at the quality control department improved so much with the changes and the modernized infrastructure. This resulted in a noticeable improvement in the quality indicators and contributes to ensure the standard high-quality for the **NIVELCO** products.

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Veni, Vidi, Vici

NIVELCO Racing Team

Noa Szóllős said goodbye to the kid age group with a fantastic season! She stood on the podium in all the 23 races she participated and her performance is 17 victories! She has also won all three Austrian province cup series in the 2014/15 season. This way she has achieved Champion titles both in the regional and in the provincial championships, besides she won the Queen of the Mountain 2015 title. In addition she defended her Hungarian Championship title and won many other competitions!

Besides her hard work on the trainings the team of expert coaches at Ski Mittel Schule Murau and her brothers also played a great role on these successes when they had opportunity to train together.

In the next year a big challenge is waiting for her when she will participate in the World Championship as a member of the Hungarian National team in the children age group and she has to compete among international racers.

Before the World Championship another long summer preparation is waiting for her. The main part of the preparation will be the trainings as a member of the Cso-Ko tennis team and Pattanj SE acrobatics team. In addition to the dry-land workouts she has to pass in the Hungarian school exams, so in the end of the year she will receive both the Austrian and the Hungarian school reports.

Veni, Vidi, Vici

The ski season started with really bad luck for **Barnabás Szőllős**. After the hard work in the summer full of trainings he suffered a forearm fracture in a gym workout in mid-October.

With the help of a quick surgery and thanks to the doctors he could stand again on the snow only after two weeks, but he could start the intensive trainings only after Christmas.

The expectations against him were so huge so he started the trainings as soon as he can, risking further possible injuries. This way he succeeded to qualify to the EYOF (European Youth Olympic Festival) held in Liechtenstein. He reached the admirable 28th place among the 110 competitors as the best Hungarian racer. Here he was the youngest racer among the competitors.

Only two weeks later he participated in the adults World Championship in Vail, Colorado in the United States also as the youngest racer.
The next important stop of the race calendar was the Hungarian Championship where he achieved 2nd position after his elder brother in the U21 age group despite he is only 16 years old.

The series of the highlighted races ended in Norway at the Junior World Championship 2015 which was held in the city of Hafjell. The best result of the year for Barnabás was achieved in Montenegro where he stood on the podium for the first time on an international adult race organized by the International Ski Federation (FIS).

Here at the Montenegro Championship only a Serbian racer was able to enter the podium between the Szőllős brothers since Benjamin won the Championship title and Barnabás achieved the third position.

Veni, Vidi, Vici

Benjamin Szőllős also achieved remarkable successes during the 2014/15 season. The participated on several international FIS competitions and reached the TOP15 for 15 times and finished in the TOP3 for 5 times. He won all the three competitions of the Hungarian Championship in the U21 age group and reached second place among the adult racers.

After the summer hard work he was able to train in excellent conditions in the glaciers of Austria and Italy. In addition to the school trainings a private coach, Markus Erhardt coordinated his work to prepare for the start of the season. It was a great help for him that his younger brother joined to the adult age group and they could train together. The healthy rivalry between them had a very good effect on their performance. Benjamin achieved first position for the first time in an international FIS adult competition on the 12th of January in 2015. He won the SES (Small European Ski) Nations Cup which was held in Predeal, Romania where his victory was achieved thanks to his wonderful performance in the second race. All the three competitions he reached podium positions so the trophies had to be sent home as a separate shipment. The most highlighted event of the season was the adults World Championship in the United States. Benjamin could participate in the qualifications of his favourite competition where the first 25 racers could enter the final out of the 110 racers.

After the first race he finished in the 31st place and in the end he had really bad luck since he achieved the 26th position. This way he fell behind to get into the final with only one position, only with 13 hundredths of a second.

After a couple of days he could find comfort in the domestic U21 and the adult Championships held in Austria. In the U21 age group his only rival was his brother, Barnabás. So Benjamin won all the three competitions and increased the number of his Hungarian Championship titles to 11. In the adults competition he had also a really good chance for the victory but a 29 years old Croatian racer was able to beat him. This way Benjamin won a second place at the adult race besides the U21 champion titles.
The next event was the Junior World Championship in Norway where the Szőllős brothers achieved the best possible Hungarian results. At the end of the season in the Montenegro Championship Benjamin reached two podium positions which was his second victory on an international FIS adult competition.

NIVELCO congratulate for the remarkable results and wish good luck for the future!

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Professional Career Building Day

Supporting the technical education in Hungary

Year by year our company is supporting the Hungarian educational institutions. We could say it's a tradition that we contribute to the education of the new generation with financial support, instruments or valuable knowledge as much as possible.

In one of the previous issues of the **NIVELCO** Magazine we published an article about the provided technical support for the modernization of the level measurement instruments at Óbuda University's Measurements laboratory. These units are continuously used by the students for laboratory lessons. Besides Óbuda University our company cooperates with several domestic universities in scientific researches in the field of level measurement technologies. We believe that all the similar, medium-sized innovative companies like **NIVELCO** should invest into the domestic education since it is our greatest interest to bring up a generation of well-trained specialists who are already familiar with our instruments.

These are the reasons why we have gladly accepted the opportunity when **NIVELCO** – as a dedicated supporter of the Hungarian technical education – was asked to participate in the Professional Career-building Day held by Bolyai János Technical High School in the end of January. On this event several leading companies of Hungary gave a lecture about engineering, including the mysteries of the electronics industry allowing the students to obtain a comprehensive picture of what are the benefits of working with technical sciences. Students could be confirmed directly by the engineers coming from the industry that the profession they have learn offers a challenging and successful career for the future.

With the help of the **NIVELCO** demo-bus, our "exhibition on wheels" provided the opportunity present working instruments to the students. We received special attention during the presentations and several questions were raised from the simplest to the challenging technical questions. We hope we gave proper answers and we would like to say thanks for the invitation!

Before the Career-building Day some students had the opportunity to met **NIVELCO** and its industrial measurement instruments. A small group visited our headquarters in Budapest in November where they got insight into the production of our instruments.

After a short overview presentation describing the operation principles of our products we invited the students for a short factory visit.

It was a pleasure to see that the students watched workflows with great interest and could see the already-learned procedures and techniques in the real life.

We hope we were able to find the common voice to motivate the youngsters to stay in the technical field when they continue studying in the higher education. Our cooperation does not end here because the teachers of the school have already informed us that more and more classes would visit our production department in the future.

We are confident that – with the support of **NIVELCO** – the coming generation will be also full of creative and hard-working people with technical interest since they will be the key to the future success of **NIVELCO**!

Balázs Csibráki
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Interview with NIVELCO's retired Production Director

János Kirády, NIVELCO's ex production manager

What is your story concerning NIVELCO?

Actually this is a really interesting story how I started to work at **NIVELCO** in the 1st of October 2001. I had the honour to known Tamás Szőllős, the owner of the company for many so years as we worked together in the EMG (Factory of Electronic Measuring Devices) Budapest in the late 1960s and the early 1970s. After the short cooperation ended we kept the good relationship, despite our future careers formed quite differently. The story of Mr. Szőllős is well known, and after I'm graduated at the University of Technology and Economics (at the Faculty of Economic Engineering) I found my place in the trading area. Many years later when we met again Tamás mentioned that he is looking for company who could operate the canteen at **NIVELCO**. My son won this entrustment, since he started his business in this direction at that time. I was with him during the discussions about the details, when unexpectedly Tamás Szőllős asked me, „Would you like to work at **NIVELCO** as the director of the Production Department?" Of course my answer was yes.

How do you recall the beginnings?

The phrase is true that every beginning is hard and I experienced this personally. Despite that I have worked previously in the technical field for more than 20 years I was not sure that Mr. Szőllős was the braver offering me the position or me when I accepted this job after spending several years in the trading area. Then after the first affright, I was suddenly confronted by the responsibility of controlling the work of nearly 60 people, and I only had to concentrate to solve the tasks ahead of us.

In what positions did you work in the past almost 15 years?

From the beginning my task was to provide the proper conditions needed for continuous operation of the manufacturing department. Meeting demands of the high-quality assembly work and the compliance with deadlines have always been exciting challenges. I've been doing my work until the end of August 2012, when (at the age of 70) I gave this leading responsibility to Tibor Sári, a much younger ambitious new colleague. Since that time I'm dealing with the user feedbacks and complaints related to the use of our devices.

What lays behind NIVELCO's success?

The secret of **NIVELCO**'s success is primarily the product range which is designed and continuously improved along a well-structured policy and the high-quality instruments (with 3-year warranty) are available for the users with quite short delivery time (average 3 weeks). It is also very beneficial to our customers that most of our products are customized for specific user needs which have similar short delivery times.

What do you think what is the key to NIVELCO's future success?

The company should continue the well-tried business policy by widening the product range and carry on building the distribution network, especially the subsidiary companies. It is very important that the growing number of new colleagues feel the same loyalty and attitude as the seniors who have several decades of work experience which contributed to the successes of **NIVELCO**.

What was the most memorable period for you over the past almost 15 years at NIVELCO?

I couldn't emphasise anything among the events of the previous years. Day by day everybody has been through such experiences which made us forget the good and the not so good memories of the previous days. Then I suddenly realized that I am the employee of **NIVELCO** for 14 years.

Interview with NIVELCO's Head of Procurement

Piroska Bessenyei, NIVELCO's Head of Procurement

What is your story concerning NIVELCO?

In 1992 I started my own business primarily dealing with trading electronics parts and I was looking for new customers. That's how I found **NIVELCO Process Control**, first for a small deal, and later our successful cooperation made my venture as an exclusive supplier. When the current headquarters in Újpest, Budapest was established I also moved with **NIVELCO** renting office space in the **NIVELCO** Trade Center for my business which has been improved to a limited company under the name of **NIVELCOMP TRADE.** My exclusive supplier contract has been valid until 2005, and then I joined officially **NIVELCO Process Control Co.**

How do you recall the beginnings?

The beginning was a very exciting and challenging period for me. In 1992 as an entrepreneur who is just starting the business it was not really easy to get electrical components suitable for industrial usage. Since I have been working previously in this segment, fortunately I had well-established foreign business partners who helped me a lot. At that time **NIVELCO** was significantly smaller then nowadays, and as a family-run business we did not faced with complicated decision-making system so all task and problems always could be resolved simply and quickly. This period of time was a real sense of achievement for me.

What lays behind NIVELCO's success?

In my opinion the success of **NIVELCO** is originated from the owners who are continuously improving the business spending a lot of financial efforts growing the company. The business policy is always based on rational, achievable plans. The employees are appreciated which means safety to work for **NIVELCO** and everybody can feel friendly working atmosphere within the company.

What do you think what is the key to NIVELCO's future success?

I see the future in the continuous development and in finding rational goals. I think the good age combination of the employees has quite a big role in achieving these objectives. Between the age of 20 and 70 you can find all age groups at **NIVELCO** and the juniors and seniors create together very efficient working teams in all departments.

What was the most memorable period for you over the past more than 20 years at NIVELCO?

Making business with Chinese electronic suppliers was a very interesting challenge for me. It was a new market with many unknown factors. The quality was not known for sure, we had to pay in advance, with the risk that we never receive the ordered components. The delivery was also an exciting issue because in a single shipment the differences in the shipping costs were hundred thousands in Hungarian Forints. The delivery times also varied in a wide range. The coordination of all of these unknown factors caused me many sleepless nights in the beginnings. I became more and more experienced with every shipments and almost 2 years should be passed until I felt safe all the details of these risky transactions.

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20th Anniversary of NIVELCO-POLAND

Story of NIVELCO in Poland

Human memory is irretentive but some important moments in life could be recalled easily even after many years of time. In fact **NIVELCO** story began back in 1991 when my wife Irena and I were working for old "communistic" conglomerate METALCHEM, manufacturer of level and flow sensors. Due to loosing of enormous market of the former Soviet Union for their product there was needed to fill this gap and find new, innovative products for the Polish market. For me the first time touch with **NIVELCO** was in cold and snowy day in November when I was waiting impatiently for METALCHEM's management who visited **NIVELCO** at Budapest and they were expected to conclude cooperation contract and bring some samples before POL-EKO 1991 trade fair.

Finally we've got them – first **NIVOSONAR U-140** and **UE-100** units (the predecessors of well-known **EchoTREK**) – just one night before the exhibition started but we were still able to familiarize ourselves with that modern technology of those days. Fairs unlike nowadays were enormous success with more than 300 registered visitors, hungry of knowledge about modern instrumentations, especially about the ultrasonic level transmitters. Three years of successful cooperation, METALCHEM went to bankruptcy and the idea of establishing first foreign operations of **NIVELCO** arisen. Then **NIVELCO-POLAND** was established as a joint-venture company in the 1st of April 1995 which was followed by 20 successful years in the history of **NIVELCO** in Poland.

Since the very beginning the team of three employees of **NIVELCO-POLAND** was very committed and motivated to sign our presence in the fast changing industry of Poland.

For the whole team the first successful applications were very important like the one in a melaphire quarry where we delivered and commissioned ultrasonic level metering systems on silos as well as control system to optimize operations of melaphire crushers. Melaphire is a quite common material in Poland, a little bit reddish several mm diameter stones.

Its main use is for under railroads and one of layer in asphalt roads. We can say now with satisfaction that the delivered system served many years to the customer to run his production efficiently.

20th Anniversary of NIVELCO-POLAND

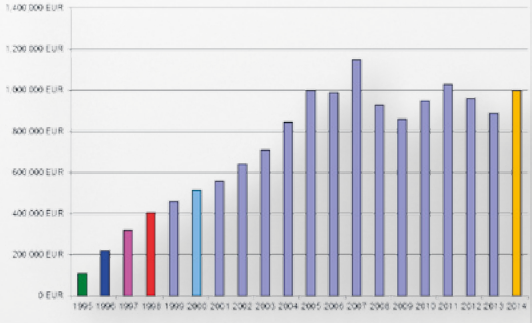
Important part of our job was to spread **NIVELCO** name on our market, to serve this task properly we participated in several fairs, seminars and similar events. We organized trainings for our customers and partners both in home using our workshop and on the field with real industrial installations: tanks, silos, hoppers etc.

Solid and honest work of our team led to better and better results which finally resulted in becoming one of the best among **NIVELCO**'s international distributors. We are very proud that in this honest and requiring competition we won six times and today we can proudly show our partners respectful collection of diplomas for being the best distributor.

20th Anniversary of NIVELCO-POLAND

Our way was always build long lasting relationships with our customers and partners having in mind our first slogan – "With **NIVELCO** you know how much you have" and second "Every customer, satisfied customer". This kind of attitude is necessary when facing with a fast changing industry which requires highest quality products at reasonable price to be able to ensure high quality assurance and efficiency in industrial production processes.

In the passing years our team has risen from three to ten highly qualified employees who serve our customers to solve a wide range of problems concerning proper selection, installation and commission of delivered level measurement instruments. In those years the **NIVELCO-POLAND** company has grown steadily reaching nice results.



During those 20 years of activity our team gain tremendous experience by selection, installation and commissioning of several thousands of different types of level transmitters and big part of them most modern based on ultrasonic, microwave or pulse radar technology.

In the field our specialists encountered very demanding flow and level measurement applications in various branches of the industry with different sort of substances under broad spectrum of conditions. Thanks to that **NIVELCO-POLAND** became esteemed partner for most serious industrial plants in Poland and we were asked for help to solve problematic applications given up by our competitors. Our technical seminars, on-road demo bus exhibitions, fairs booths always attract the attention of technical specialists.

Of course crisis 2008/2009 strongly impacted our performance but every crisis is a challenge and every challenge is both threat and opportunity as there are demands for more efficient and cheaper solutions.

It was also a chance for team of **NIVELCO-POLAND** specialists to find new fields of applications, to go out from the well-known paths and the same partners and customers and look for new. Sometimes thanks to that we could provide some inspiration to our esteemed

Mother company and it always was a big satisfaction to see that ideas and customer's needs turned into standard products. I believe we were able to use those chances well so after the recovery of the national economy we were able to recover too, achieving equally good sales volume.

For that reason and continuous support of **NIVELCO** headquarter and thanks to our **NIVELCO**-POLAND's "dream team" we can look ahead with optimism serving our customers with continuously improved and innovated **NIVELCO**'s products as well as other interesting products like ISOIL ISOMAG flowmeters and many others representing highest industrial standards.

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LevelBOY... Our Profession is Your Level

Comics for technical people / An instrument replacement

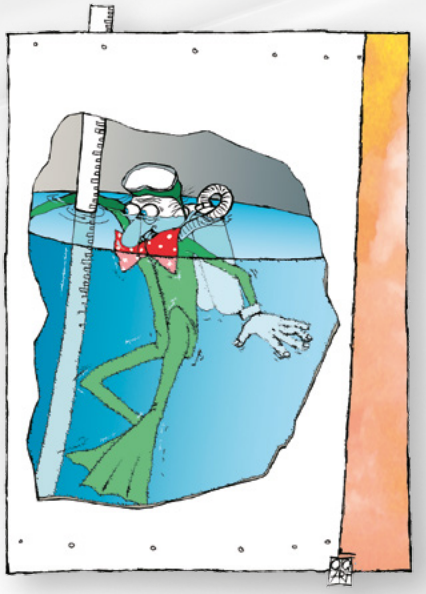
With our great cartoon series 15 years ago we presented that there are some

"SMARTER WAY OF DOING IT"
in the field of level measurements.

Now it's time to introduce to our readers "HOW SMART WE DO IT".

Since any similar comic has not very common in the technical field, therefore now we try to present the technical tasks to our readers in such a way.
In the first episode **NIVELCO**'s new figure, called LevelBOY will guide you through a process of instrument replacement. We would like to continue the comic series with newer issues as well, and we hope that LevelBOY will be at least as successful as the old cartoons.

„SMARTER WAY OF DOING IT"



"HOW SMART WE DO IT"

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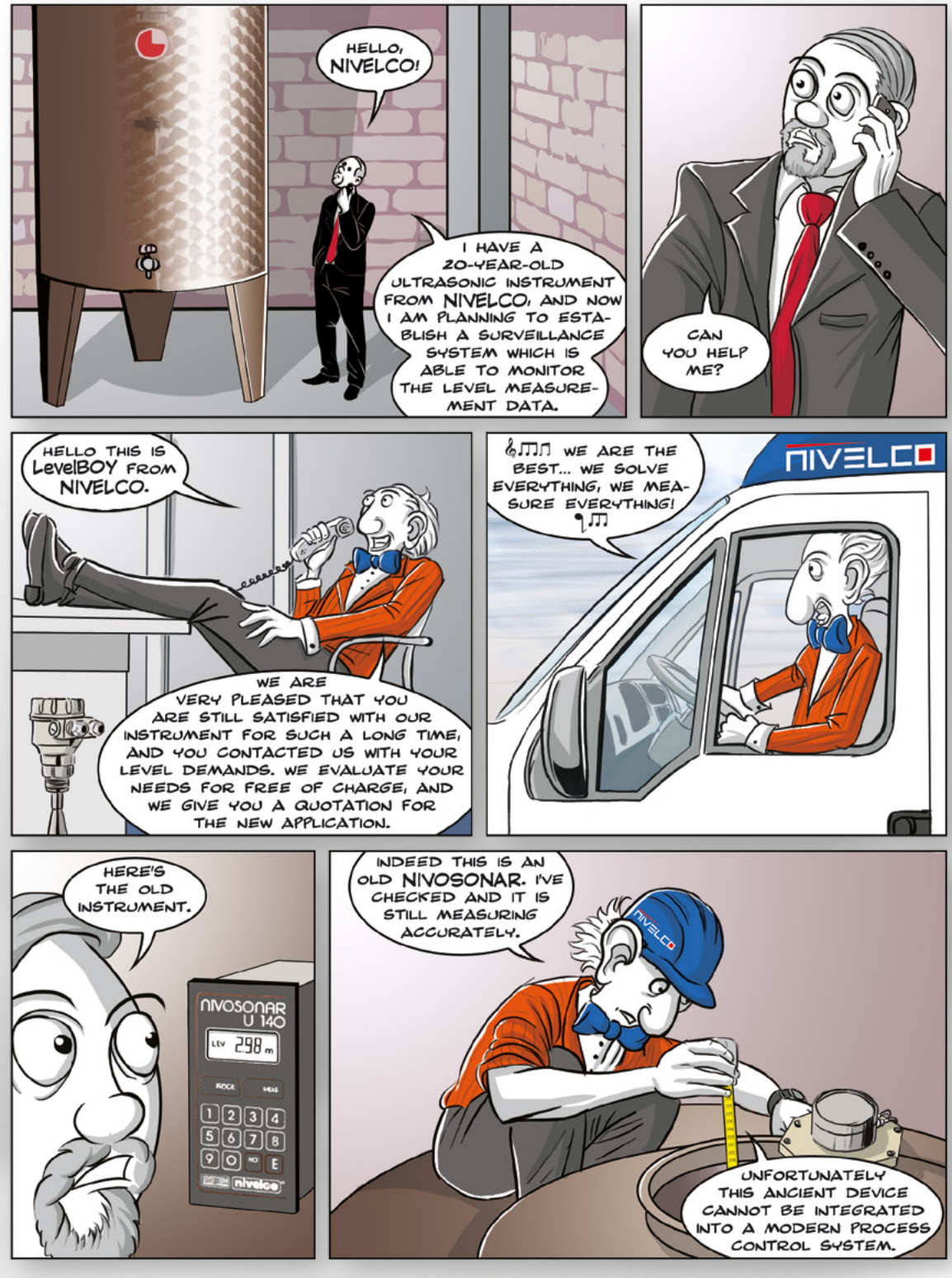
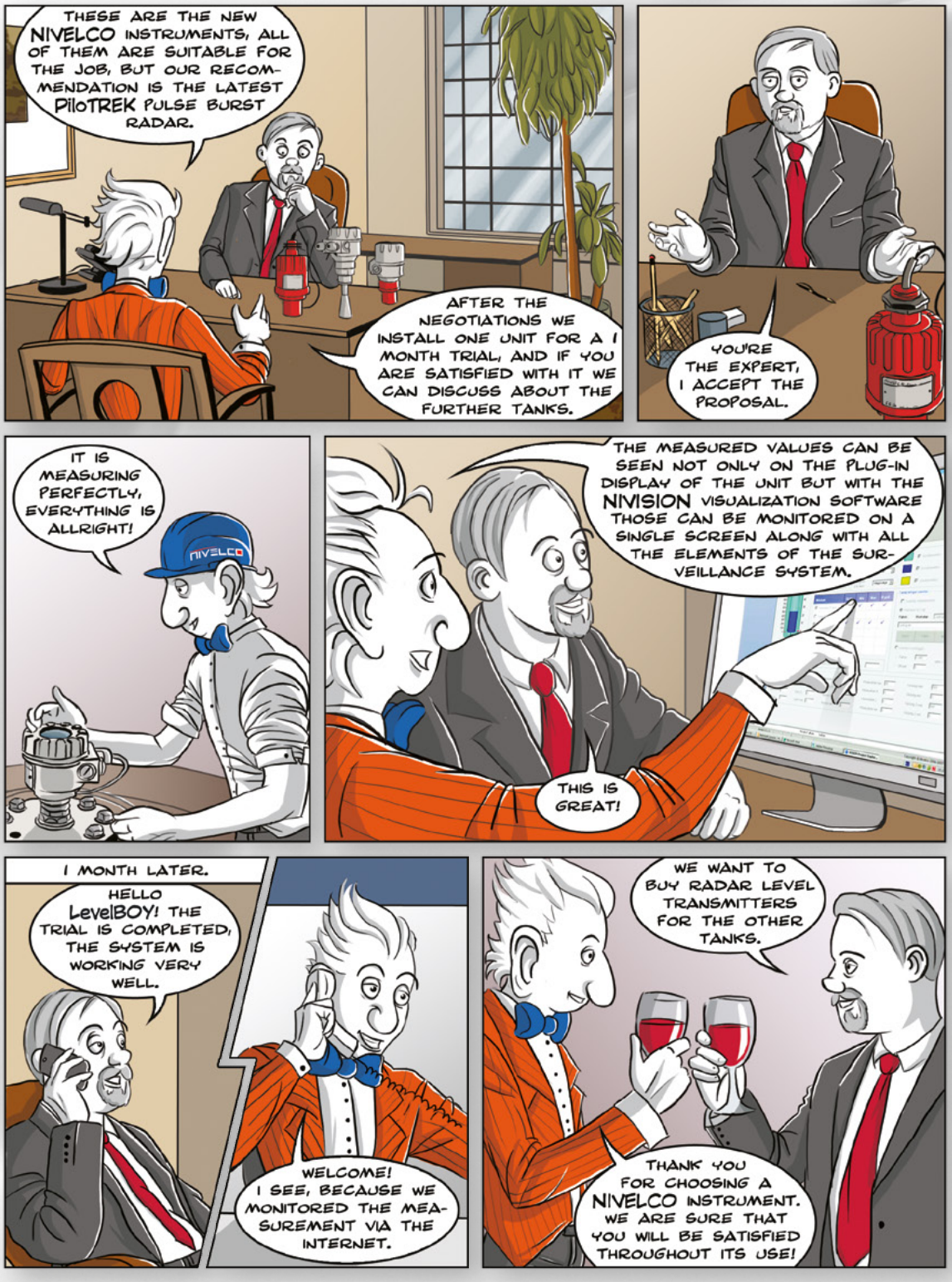
LevelBOY... Our Profession is Your Level



LevelBOY... Our Profession is Your Level



About non-contact level metering

Do we know all about non-contact level metering?

Of course not, but we all think what we know about the technologies used for this intriguing way of level metering is sufficient. Wrong. The intent of this write-up is to shed light on some little details providing a better overview for those lost in the vast offering of producers of noncontact level meters.

Not everybody is aware that ultrasonic the first of the non-contact solutions has been around and used for level metering for as long as about 50 years. Radar, the other well known technology was introduced much later, a good 30 years ago only, almost at the same time as laser has become the third non-contact technology to be used to level metering.

Since ultrasonic came as the first non-contact technology introduced to level metering, and for at the beginning it was believed to be omnipotent, the producers (including **NIVELCO** back in the early 1980's) have recommended it to almost all of applications.

Actually, it was suggested to applications non-pressurized and having not too high temperature. Even foam was not considered as a repellent! Over the time we needed to learn a lot and use huge self restraint in order to position ultrasonic to where it belongs, where it is the best even today.

Almost the same has happened to radar as it appeared on the scene. People do not necessarily learn from mistakes committed earlier. The early radars were suggested to applications ultrasonic was not capable of handling such as foamy surface, and most of the time they failed.

Application disasters involving plastic tanks containing liquids of low dielectric constants were also reported frequently. Today's radars are better, but not omnipotent at all.

Laser when introduced, was suggested to be the ultimate technology making all the other non-contact ones obsolete. Nevertheless it has failed at the easiest of applications: measuring simple clear surfaced liquids, also water! Why?

The extreme narrow focusing of the laser beam believed to be its biggest advantage besides its high accuracy made it difficult for the return beam to hit the tiny surface of laser diode.

Even the slightest waves, ripples deterred the beam resulting in no return signal reported. By today, laser has been reduced to a minor player in level, it's almost sole application segment retained is selected bulk solid applications.

Not long after the market debut of ultrasonic distance metering the idea to introduce it to level metering was born. A simple mathematical formula that is the subtraction is to be used only to make a distance meter to read level. That is what the early R&D engineers have thought. Wrong, absolutely wrong. Level metering is much more than simply measuring distance and to subtract the measured value from the height of the vessel. There are so many factors to be counted with when calculating level to provide a reliable metering in a real-life application. That time there was no hope for bringing about a well performing level meter until the invention of the microprocessor and of on-board data storage facilities. That has become reality in the middle to late 1980's only.

About non-contact level metering

Almost at the time ultrasonic were introduced to level metering came another idea, that was applying this technology to distance metering of an object from a point in space. With that, the proximity transmitter was "invented".
This task is much simpler to perform than level metering, but do not think that the missing subtraction makes up for all the difference! The proximity transmitters made today are excellent small devices and low cost at that.

They are made by a lot of producer's small and big also with good sounding names. These normally tiny and cute devices are performing excellently for what they were designed, that is factory automation.
On the other hand they are usually inapplicable to level metering, even if they are marketed by some of the not so serious producers to be capable of doing it. If your client is perplexed by finding a very low cost device advertised as a perfect level meter, it is not his fault. It is the result of the not so honest marketing strategy of a company trying to obtain a slice of the level cake.

Real good ultrasonic level meters are relatively costly no matter that they are produced by **NIVELCO** or by one of our honest competitors.

Mind you, some of these little transmitters are really capable of measuring level in basic, very simple applications. We would not recommend using them nevertheless, since after the happy hour of commissioning they may serve with surprise and disillusionment on the long run. A change in the production technology, in the medium or in the ambiance may make these low cost transmitters to fail.

If a transmitter is too low cost, or is looking a bit "different" than most level transmitters on the market, then you can rightly suggest your client to take a second look. Why? These producers usually try to upgrade their standard proximity transmitters simply by fitting up the plastic bodied product with a nice 1" or 2" stainless steel process connection to make them seem more process control oriented thus appeal to the unsuspecting client. Usually, they do not bother to make hardware improvements, but sometimes little software changes only in their attempt to adopt the little transmitters to the serious task of level metering.
The leading non-contact technology of our days is the radar. The offering is enormous, selection is not easy. Almost all the level metering radars in the market look respectable and indeed are made for the purpose. The problem lies in their specifications, features and quality.

There are a lot of low cost units – mostly Far-East made – offering acceptable or good specifications but not meeting them at all. You can be sure however, that there is at least one, sometimes more specification points a low cost radar may not meet.

To the top of this comes interference sensitivity and reliability. Unluckily these two may not come noticed at the start-up but later only after the purchase was done.

About non-contact level metering

There is another puzzling thing on the other end of the spectrum. Your client may rightly ask why some of the radars are so highly priced? Are they so much better than the rest of them? Yes and no is the answer. These high cost units may offer specifications you do not need such as extreme accuracy in the tune of 1 mm or even better or very high pressure and temperature ratings.

The price difference in the radar market is much bigger than in the ultrasonic one. When trying to select a model you need to look for what you exactly need. Another thing is, some of the producers have elected to start marketing radars to market segments where ultrasonic is a perfect solution, for example to the water/wastewater market.

We do not say radar is always overkill for this market, but most of the time it is. On the other hand there is something the ultrasonic transmitter does better, that is focusing. Radars have much wider beam, providing for troublesome application in tighter shafts, wet wells, weirs and flumes. No doubt radars will cannibalise a bit of the ultrasonic applications, but the fringes only. Ultrasonic will stay forever, well almost. The third of the non-contact technologies the laser, puzzles Market Analysts just as well us.

Not because we are not among their producers, but because we do not see a great future for this unique technology.

The idea to bring them to level was great, they theoretically are "perfect" level transmitters, but the snag is that theoretically only. Their catch point and ultimate advantage is their extreme accuracy, but are we interested in sub-millimetre accuracies? Well, sometimes yes, but mostly not. Their problems with ripples and waves of the liquid medium and with the dark coloured dusting of solids are unresolved to this day. Their producers are trying and trying, the product has been improved over the last 30 years but it is far from being perfect to this day.

Are Radars and Ultrasonic perfect? Not at all. They are however far better than laser for the majority of the market. They are King and Queen of level metering and will stay in a competetive marriage forever...

One more thing. The forecast for market growth of Ultrasonic Level Meters is 5 to 7 % annually, depending on the analyst, the same for radar is 7 to 10 %. No growth is forecast for laser. Agreed.

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FISCHER handheld instruments for Corrosion Protection

Hot-Dip Galvanisation as Corrosion Protection

NIVELCO Process Control Co. as the exclusive Hungarian distributor of **FISCHER GmbH** would like to invite our readers for short review about handheld coating thickness measurement instruments which can be used for corrosion protection. For protection against the elements, exposed steel parts require an anti-corrosion coating such as hot-dip galvanisation. To this end, a new directive for CE labelling of steel products and their corrosion protection will become effective in 2014. Product liability will be significantly tightened and manufacturers will be obligated to verify the thickness of the hot-dip galvanisation.

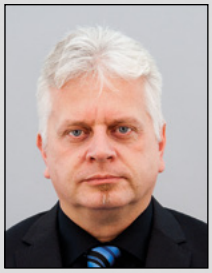
Life is about to change for manufacturers of metal and steel structures. Beginning in 2014, a new CE labelling standard for steel products and their corrosion protection will shift product liability – i.e. the burden of proof for documenting coating thickness measurements – to the providers of the coating systems. For many in this field, only the most user-friendly and cost-effective measurement technologies will come under consideration.

The **FISCHER MP0/MP0R** product family meets precisely these needs and requirements. Due to their compact design and simple four-button handling, these instruments are flexible in on-site applications and require no costly user training. The two displays allow for easy reading in various operational positions. Visual and acoustic signals inform the user when the measurement is complete. The hard metal probe tips are a special feature that guarantees significantly longer lifetime, even on rough surfaces. Measurement results can be easily transferred to a computer for evaluation, recording and storage using the convenient **FISCHER DataCenter** software.

Solutions are also available for more demanding requirements, for example the measurement of hot-dip galvanised coatings underneath a layer of paint. Specifically for this purpose, FISCHER has developed the **FDX13H** probe.

Used in combination with the FMP instruments, it can determine the thickness of both the zinc and paint coatings in one "duplex measurement" step; the readings are displayed separately. FISCHER has thereby succeeded in greatly simplifying for the user an extremely complicated metrology procedure, simultaneously presenting the results of two different physical measurement principles in one easy operation.

Whether the compact and cost-effective **MP0/MP0R** gauges or the powerful FMP models with exchangeable probes, FISCHER has the right high-precision instrument for determining the thickness of hot-dip galvanised coatings. Your local FISCHER representative will be happy to answer any questions you may have.



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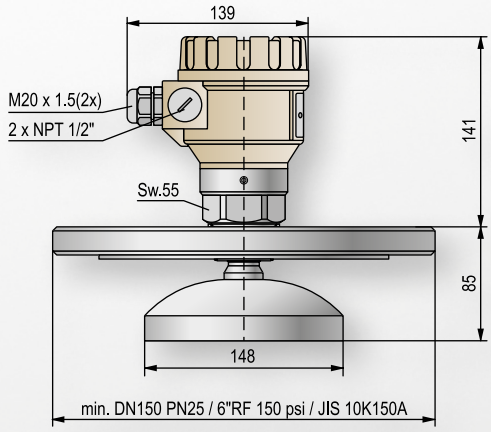
New type in the PiloTREK W-100 level transmitter family

Pulse Burst Radar with parabolic antenna

With its existing three antenna sizes: DN 40 (1 ½"), DN50 (2") and DN80 (3"), **NIVELCO**'s **PiloTREK 100** series 2-wire Pulse Burst Radar level transmitters cover a fair ground in the field of non-contact microwave level metering.
The new DN150 (6") parabolic antenna type is going to be launched soon which will open new areas and opportunities for reliable level measurement of various liquids.



The parabolic antenna design is not a novelty, it was originally conceived for the use of level metering of bulk solids long time ago.
The evolution of a liquid aimed parabolic antenna reaches back to a few years only. As producers were trying to cover more and more challenging liquid applications, the original parabolic design featuring very high gain was adapted to their liquid oriented radars as well by implementing changes in the antenna design and by using a selection of materials different than the ones used in the solids oriented units.
Parabolic antenna design is suitable for the challenges of the materials with low (ε_r) dielectric constant, as well as substances which tend to steam or foam and the surface is waving or vortexing. These applications are the greatest enemies of the microwave level measurements. **NIVELCO**'s primary aim of designing a parabolic antenna was to provide the most reliable measurement solution to even the most challenging applications.

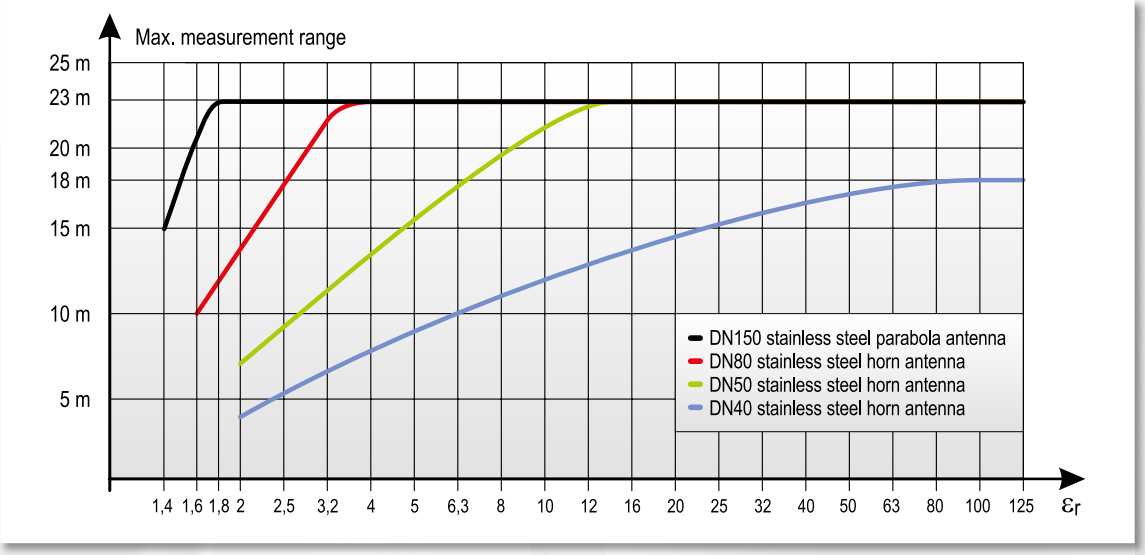
The DN150 (6") diameter parabolic antenna is manufactured from 1.4571 (316Ti) stainless steel and this antenna type can be ordered only with flanges made from steel or plastic in accordance to ISO/DIN, ANSI and JIS standards.
The housing of the head unit can be selected from the 3 well known versions:

- Fibre-glass reinforced plastic (PBT)
- Paint coated die-cast aluminium (EN AC 4200)
- Stainless steel (1.4571 / 316Ti)

With the standard HART output the **PiloTREK** Pulse Burst Radars can be used in HART multidrop loops with the help of the **MultiCONT** multichannel process controller or can be used in system with a PC with our **UNICOMM** HART-USB/RS485 modem. The operation of the level transmitters is exactly the same as the other types described in details in the previous issues of the **NIVELCO** Magazine. With the help of the **SAP-300** plug-in display a simplified full-parameter programming can be accomplished, the parameters of measurement and output can be set using the text-based menu system.

The large LCD dot-matrix display displays the measured values in numerical and bar graph form. The Echo Map feature helps to detect false reflections and aids the optimization of the measurement configuration.

New type in the PiloTREK W-100 level transmitter family



The reliable measurement is provided by the background mapping software-feature and the other advanced signal processing algorithms of the **PiloTREK** which are based on **NIVELCO**'s 30 years of experience with non-contact level measurement making the instruments an excellent choice for applications simple and challenging alike.
On the list of the advantages compared to the horn antenna versions we have to emphasize not only the higher gain but the narrower cone of sensing.
Our parabolic antenna has around 10-12 dB better gain compared to the DN80 (3") horn antenna version with a 6 degree sensing cone, which is comparable with the sensing cone of the best of ultrasonics, such as **NIVELCO**'s Sensonic range of transducers.

These features are really beneficial for example in those applications where tall but narrow tanks should be measured with high accuracy.

The maximal measurement range is still 23 meter (75 feet) just as for all members of the **PiloTREK W-100** level transmitter family. On the above "max. measurement range vs. ε_r" diagram the advantages of the new parabolic dish over its cone based counterparts can be clearly seen.

Using a dish equipped **PiloTREK**, you shall be at advantage when applying it to mediums with low dielectric constant. Due to its high gain a considerably higher measuring range could be achieved especially if we count with not the ideal, reference conditions, but with the circumstances of a real industrial environment where there are many factors which mean real challenges to the accurate non-contact level measurement.

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Open-channel flow measurements with EasyTREK – USA

Trade Waste Flow Meter for Brewery

A new startup Craft brewery contacted **Aqua Technology Group** to provide a trade waste interceptor flow meter solution for their new brewery.

Like other startup brewery operations, they faced the challenge of not knowing the exact flow requirements and the uncertainty of production scaling. **NIVELCO** representatives from Aqua Technology Group worked with the owner to provide a comprehensive flow and monitoring solution with the reliability and accuracy of **NIVELCO** instruments.

92% of brewing ingredients are wasted. Most of the waste is spent grain. By far the most common use of spent brewers grain is as animal feed. Wastewater from a brewery may be discharged into city sewer system after the wastewater has undergone some treatment.

The brewery must be completed to obtain Council approval to discharge trade waste to sewer. It is the responsibility of the brewery to obtain this approval.

The city required 5% or better accuracy throughout a wide range of flows while the brewery owners wanted little maintenance and no chance of blockage.

Flow measurement in the brewery and beverage industry is a common application that can be accurately measured with the **NIVELCO** ultrasonic level transmitters and primary flow devices such as flumes.

- **Ultrasonic Flow Measurement and Process Monitoring**

NIVELCO representative **Aqua Technology Group** provided a new ultrasonic flow meter and level measurement solution using the reliable **EasyTREK SPA-39N-4** type ultrasonic level transmitters with the **MultiCONT** universal display and controller. A 4 inch Palmer-Bowlus flume with approach section was provided as the primary flow device. The system was setup and calibrated to read LPM (Liter pro minute) and display a separate totalizer for both the brewery and the city sewer utility. The data is logged internally in the **NIVELCO** flow meter system and made available to the city when required. The **MultiCONT** was also provided with expansion capabilities so the brewery can add pH, DO and other monitoring parameters to the **MultiCONT** controller and process control system as they scale.

- **Expansion and Flexibility**

Count on **NIVELCO** to provide a customer centric and scalable solution for flow measurement, pH, DO and all your beverage process applications.

Open-channel flow measurements with EasyTREK – USA

Effluent Flow Measurement for dual v-notch weir

The City of Lebanon is located in Southwest Ohio and serves a population of just over 20,000 residents. The Water and Wastewater Division provides Sewer Collection and Treatment for the city and surrounding communities. Thanks to the **Aqua Technology Group,** they are now equipped with reliability and accuracy of **NIVELCO** instruments.

Wastewater treatment plant effluent flow measurement is a common application that can be accurately measured with the **NIVELCO** ultrasonic level transmitters. However, this application was different in that it had two v-notch weirs in parallel to handle the flow requirements.

Ultrasonic Flow and Level Transmitter

The wastewater operations for the City of Lebanon, Ohio had an existing flow meter that had failed after just two years of operation. Operations also reported that the flow meter on the effluent never matched what they were receiving on the input. The operators found that the ultrasonic level sensor of the 2 part Magnetrol/STI flow meter was not staying level and becoming prone to failures. They needed a reliable way to measure flow going across both v-notch weirs and add flow pacing to the other process controls.

V-Notch Weir Flow Measurement

Therefore, in the field of public utilities new **EasyTREK** ultrasonic level transmitters with the **MultiCONT** universal display and controller was provided for the flow meter and level measurement.
The IP68 rated **EasyTREK SPA-38N-4** integrated ultrasonic level transmitters are installed to a console above the basin. The units use HART digital communication to connect in multidrop loop to the **MultiCONT** multichannel process controller. The **MultiCONT** is able to provide remote programming and display measurement results.

The specialist of **Aqua Technology Group** adjust the instrument's calibration to read the flow across both v-notch weirs and send the data back to the central SCADA system along with using the additional output of the **MultiCONT** to flow pace UV disinfection and their effluent wastewater sampler.

The complete measuring system proved to be an excellent solution, since it performs highly reliable operation, and high accuracy measurement solution.

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NIVOTRACK level transmitters in the diary factory – Slovakia

NIVELCO level transmitters in the sheep dairying

Microwell spol s.r.o. was founded in May 1992. Since that time the company has been dealing with measuring and process control engineering. The corporate activities got broadened by adding manufacturing, installation, application and marketing of industrial and non-industrial electronic equipments – especially air conditioning and industrial dehumidifiers –, engineering and consulting activities in the related areas into our company portfolio.
The cooperation with **NIVELCO** started in 1992 so the successful business relationship between the two companies is more than 20 years old. Our headquarters is located in the town of Vágsellye (Šala), only 135 km far from Budapest, Hungary. This small distance between us certainly served a huge role that we became one of the first European distributors of **NIVELCO**. It's a special pleasure for us that from Slovakia – a small country with only 5 million inhabitants – we won the most successful distributor title for 8 times in the annual **NIVELCO** sales contest, leaving behind the representatives of much larger countries.
NIVELCO instruments can be applied in all areas of industrial manufacturing and agricultural production. One of our partners in the agricultural field use entrusted Microwell to create a continuous measurement system which is able to provide accurate information about the yield of sheep milk. The demanded system needed to be able to monitor the milking of each sheep and determine the total quantity of milk obtained.

Basic requirements for the device were the following:

- possibility of measuring milking of at least 20 sheep at the same time
- the minimum volume to be measured is 1.5 liter (50 oz) for each sheep
- at least 1 mm (0.04") resolution
- the device should be portable
- the measurement data should be evaluated and graphically displayed on the PC

The established measurement system allow the customer to find out how the milking of each sheep changes depending on different seasons, respectively on different

ways of feeding and also to find out which breeds of sheep are the most profitable for the specific site from the point of maximizing milk quantity.
For this application the experts of **Microwell** designed a system for automatic measurement and result evaluation, which can measure the milking of 24 sheep simultaneously. The system consists of a measurement device and evaluation software of measurement output data. The measurement device stores the expressed milk in transparent plastic cylinders, where **NIVOTRACK MTA-506-3** type magnetostrictive level transmitters are used for accurate milk level measurement. The measuring system includes a total of 24 **NIVOTRACK** devices that automatically start measuring, measure the desired values and automatically end the measurement.
Thanks to the very high resolution (up to 0.1 mm) the units measure the milk level with high accuracy and high reliability and subsequently transmit data to the evaluation program for further processing. The evaluation device consists of I/O modules, PC and the measured data processing software customized to the customer requirements.

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Level control in hazardous area using EasyTREK

Measuring highly flammable liquids in Brazil

NIVELCO's representative in Brazil, **NIVETEC Instrumentação e Controle** recently won an instrumentation project in the petrochemical industry.
The high requirements about reliability and the hazardous environment needed very precise instrument selection. From the wide range of liquid type level measurement instruments from **NIVELCO**'s product range the intrinsically safe approved **EasyTREK SP-300** series with IP68 rated plastic housing provided the most suitable choice for the level measurement task.
The level transmitters are installed in Macaé, which is located in the coast of the Atlantic Ocean, near Rio de Janeiro. Our customer needed a complete level monitoring system of the tanks providing possibility to control the input and output batch of the stored products automatically. First of all we requested the list of chemical products that were planned to be stored in the tanks. The products are: Toluene, Alcohol, Acetates, Turpentine, Varnish remover, all are highly flammable media.
The measurement task was to continuously monitor the level in 10 pcs outside lying cylindrical tanks where the highly flammable liquids are stored. The tanks are grouped in two groups, one 5-tank group is placed on the ground level, and the other 5-tank group is placed on top of the first 5 tanks. The tanks are made from carbon steel, the length of the tanks is 6 m (20 ft) and the diameter is about 2.5 m (8.2 ft).

The supplied ultrasonic level transmitters were the **EasyTREK SPB-370-8 Ex** with PVDF housing having 4-20 mA + HART output. Prior to the installation two important questions should be answered really carefully. The first thing to be considered is the dead-zone of the **EasyTREK** transmitters which is 0.35 m (1.15 ft) in case of the **SP□–37□** type.

We suggested the customer to create a stand-off pipe with a length equal to the dead-zone of the transmitters to meet the requirements written in the user's manual of the **EasyTREK** which provides drawings for proper mounting and offer recommended values for the diameter of the stand-off pipe suitable for a specific height.
The second problem to be solved was the question of volume calculation. Unfortunately we had considerable volume differences when using the built-in tank dimension formula for the horizontal cylindrical tank. Therefore we had to choose another solution and filled the linearization table of the **EasyTREK** with the help of a calibration chart provided by the manufacturer of the tanks. The chart contains the level values assigned to the proper volume data. Using the 32-point linearization the demanded accurate volume calculation has been achieved.
All the **EasyTREK** transmitters' analogue 4-20 mA output signals are sent to a central PLC that monitors whether the tank was stocked with the right amount of chemical products. All the measurement data is monitored on a supervisory screen as well as the level charts of inputs and outputs of the chemical products of each tank that are continuously logged.

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PiloTREK in the field all around the world

Success stories from Brazil and France using PiloTREK Pulse Burst Radars

NIVELCO achieved a great success by developing its own K-band Pulse Burst Radar level transmitter, the **PiloTREK** W-100 series and became one of the few companies in the world disposing this advanced non-contact level measurement technology. The 25 GHz non-contact **PiloTREK W-100** transmitters were introduced in the end of 2013 any many new versions appeared since the product launch. T

hanks to our successful distributors all over the world, – like **NIVETEC** from Brazil and **C2Plus** from France – our readers can be convinced that we can count on the **PiloTREK** series in level measurement tasks of liquids, masses, emulsions and other chemicals. In the following two product references we offer to read about two short success stories, where **PiloTREK** transmitters were installed in food industry applications.

Vegetable fat storage tanks are measured with PiloTREK transmitters in Brazil

JBS is a global leader in animal protein processing, owner of beef, pork and lamb, poultry and leather processing plants, in addition to feedlots. It also operates in the segments of cleaning and hygiene products, collagen, can making, casings, biodiesel, vegetable, recycling and transport. Headquartered in Sao Paulo and foothold in 22 different countries, the company has more than 185,000 employees in production platforms and sales offices.

The **PiloTREK** level transmitters provide highly reliable level measurement in the city of Lins in Sao Paulo state, where 16 cylindrical tanks with 16 m (52.5 ft) height need to be measured with high accuracy. The storage tanks – which are equipped with **PiloTREK WGP-140-4** type Pulse Burst Radars with PP encapsulated DN40 (1 ½") antenna – contain water based emulsion of vegetable fats. The process temperature inside the tanks is 60 °C (140 °F) and the level never goes under 25%.

Duck slaughterhouse in France use integrated type PiloTREK

One of the biggest duck slaughterhouses in the western region of France process and produces more than 25,000 tonnes duck meat in a year. Before going to the waste water plant, all liquid state process waste goes to a huge outside pre-basin, which is continuously agitated to keep the wastewater homogeneous. There is a lot of fat, foam and fume on the surface to be measured, so the ideal choice was the non-contact microwave level measurement offered by **NIVELCO**'s **PiloTREK W-100** series. The integrated, IP68 rated type **PiloTREK WPP-140-4** Pulse Burst Radar level transmitter controls the level of the basin with high reliability. From this pre basin the wastewater is sent to the water treatment plant.

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Level measurement in Activated Sludge Basin

EasyTREK ultrasonic level transmitters in the water industry

The ever-growing demand of the effluent wastewater treatment requires continuous improvements in the treatment technologies. In 2012 the South-Pest wastewater treatment plant of **Budapest Sewage Works** established a new IFAS (Integrated Fixed-Film Activated Sludge) treatment technology called Organica FCR (Food-Chain Reactor).

The main characteristic of this new technology is that on the surface of the activated sludge basins there are vegetation planted utilizing a fixed-bed bio-film that grows on root structures. These plant roots are growing deep into the biological reactors. The primary role of the plants root system is providing large living space to microorganisms which are decomposing organic materials and for even higher-level organisms. Besides the plants as a natural bio-film carrier there are artificial bio-film carriers too and the water level in the activated sludge basin is significantly raised. In accordance to the above described the hydraulic conditions of the biological purification stage are dramatically changed due to the raised water level and the water swelling effect of the bio-film carriers. This way the water level control of the activated sludge basins has became necessary to be able to transfer the proper water amount to the biological stage in accordance to the actual biological treatment capacity.

The water level control is done with a motorized floodgate in the drainage of the activated sludge basins. The level control is based on the water level in the launder channel of the pre-settling pool so the level transmitter unit has been installed about one meter (3.3 feet) above the channel using an long armed mounting bracket.

The water level is continuously measured by an **EasyTREK SPA-360-4** type integrated ultrasonic level transmitter. The analogue (4-20 mA) output signal of the instrument transmitted to the PLC controlling the biological purification stage. The PLC controls the activated sludge basins floodgates on the basis of the measured level values. The ultrasonic level transmitter ensures the adequate water supply for the FCR (Food-Chain Reactor) technology flawlessly since the installation.

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Level and temperature measurement system in Romania

THERMOPOINT TMH and EasyTREK SCD transmitters in grain silos

For almost 10 years, since its foundation the primary goal for **NIVELCO Tehnica Masurarii** subsidiary company is to satisfy the costumer needs and to earn their trust by continuously following the constantly improving level measurement technologies and providing suitable solutions for the market requirements.

All of this cannot be achieved without high level professional work, without establishing honest relationships with the partners and without providing the best measurement solutions required by the applications. To achieve our goals we have to keep up with many competitors and this is assured by the high-quality products with very good price / performance ratio manufactured by **NIVELCO**.
In the recent years, the real challenge to us was to continue the improvement and growth of our company in this rapidly changing market environment. The successful results are represented by awards, several references and most importantly the confidence of our customers which can be measured in the increased number of enquiries and direct requests.

All over in Romania there are many **NIVELCO** products installed in various industrial and agricultural applications, mostly as important components of an existing complex instrumentation system, but in many cases **NIVELCO** units are able to create a complete system. The following case study is an example from those agricultural applications where full instrumentation was built with **NIVELCO** devices and **NIVISION** software.

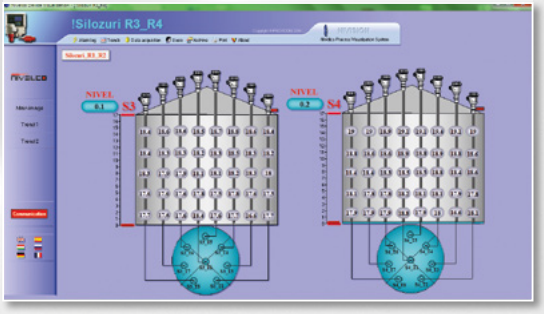
Thanks to the technical level we provide for this project the customer chose the **NIVELCO**'s solution despite the offers of our well-known competitors and some other lower priced offers.

Level and temperature measurement system in Romania

Our customer the **AVIMIX APA S.R.L.** company in Bucharest uses a Danish technology to establish grain drying and storage systems and one of these facilities is located really close to the Hungarian border in the town of Szaniszló. The task was to provide complete level and temperature measurement system for four grain silos. In addition to the continuous measurements local display in the central control room and the display of the measured data in an office computer was also required along with data-logging.

According to the size of the silos the following devices were installed:

- **THERMOPOINT TMH-55D-8 Ex** 28 units
- **THERMOPOINT TMH-55G-8 Ex** 4 units
- **EasyTREK SCD-33J-8 Ex** 4 units
- **MultiCONT PRW-2MA-1** 3 units
- **NIPOWER PPK-331-1** 2 units
- **JAD-4520** (ADAM adapter) 1 unit
- **NIVISION** software



Designing of the cable-architecture and the cable routes for the proper communication was also the part of our task. Since the commissioning was done by the customer the delivered devices needed to be pre-configured and labelled according to the cable-architecture design.

After the installation of the measurement system there was an intensive one month testing period while all the silos were filled with grains and the logged measurement data were investigated much more frequently than the planned. The end-user was very satisfied with the operation of the system and the representatives of the Danish supplier of silo system were spoken also admiringly about the provided complex measurement solution.

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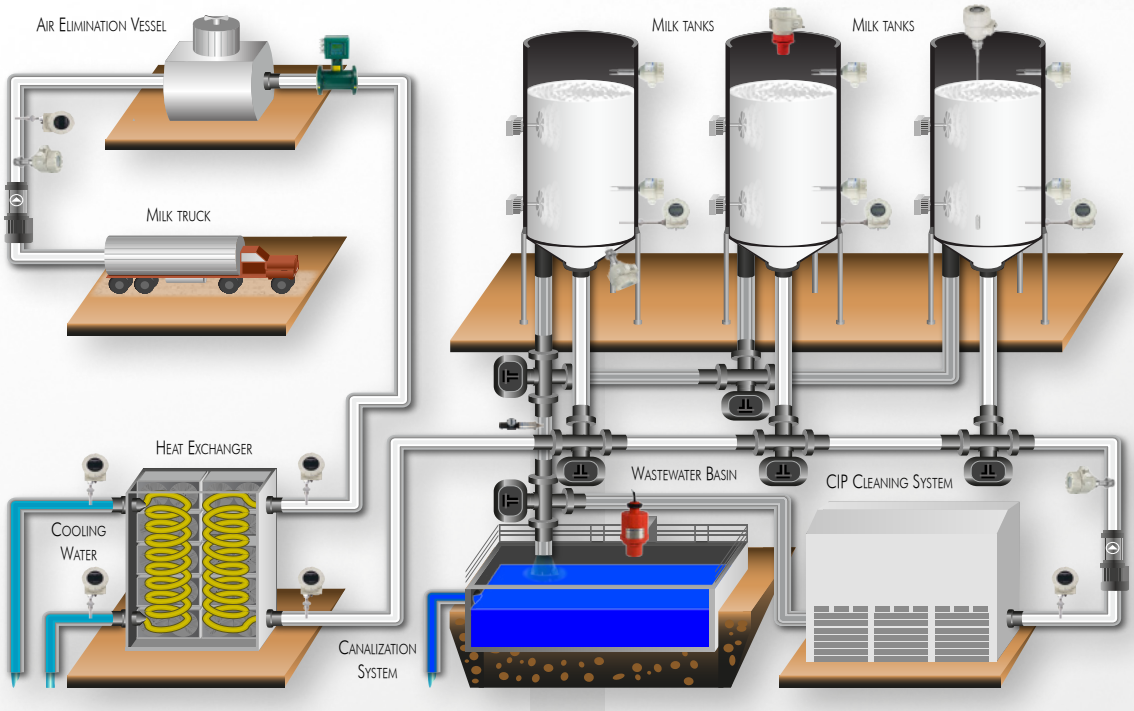
Milk reception instrumentation flowchart



The dairy farms deliver the expressed milk to milk processing facilities. The milk receptions receive the delivered milk in the processing facility. The milk reception measures many parameters of milk (such as volume, temperature, pressure, fat content, etc.).

The main engineering units of the milk reception:

- Milk transfer pump
- Air elimination vessel
- Heat exchanger: the input milk should be cooled to +4°C (+39.2 °F)
- Milk storage tanks

Recommended instruments:

Measuring parameters of received milk:

- Volume measurement: with ISOIL **ISOMAG MS-2500** flanged sensor and **ML-210** converter units (with 0.2 % accuracy). The air eliminator vessel removes air content to provide proper laminar flow.
- Pressure measurement is done with **NIVOPRESS DTE-591** hydrostatic level transmitter
- **THERMOCONT TTJ-521** transmitter is recommended for continuous temperature measurement

Heat exchanger instruments:

- Pressure measurement is done with **NIVOPRESS DTE-591** hydrostatic level transmitter
- **THERMOCONT TTJ-521** transmitter is recommended for continuous temperature measurement

Milk storage tanks instruments:

Level transmitters:

- Bottom pressure transmitter: **NIVOPRESS DTE-551**
- Ultrasonic level transmitter: **EchoTREK SEA-362**
- Guided Wave Radar: **MicroTREK HTS-460**

Level switches for high/low level indication:

- **NIVOSWITCH RFM-401**, or
- **NIVOSWITCH RCM-401** mini compact type

Temperature meters:

- **THERMOCONT TTJ-521** with optional head position

After emptying the milk storage tanks those must be cleaned in accordance to the hygienic standards of the CIP process (see the relevant flowchart in one of the previous **NIVELCO** Magazine).

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