

NIVELCO 

2014/2

*Magazine*



# NIVELCO an instrumentation expert



PiloTREK – Pulse Burst Radar transmitter family



*A Tradition of Quality Since 1939*

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# NIVELCO an instrumentation expert



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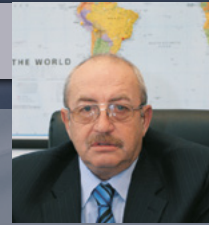
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## Introduction



*Esteemed Partners!*

*This new issue is the 10<sup>th</sup> issue of our NIVELCO Magazine.*

*The 4-year period between 2010 and 2014 have covered in these issues with lots of news including company news, new developments, happenings of the beginnings, eminent anniversaries and successful application stories from all over the world.*

*In the columns of our Magazine many (but not all) employees have been introduced who are with us from the very beginning and the new leaders who will drive NIVELCO to the further development in the coming years.*

*Fortunately this year is not without an important anniversary since our Czech subsidiary company, NIVELCO Bohemia s.r.o. celebrates its 10<sup>th</sup> anniversary in 2014.*

*Our **Application Handbook**, launched in April was a great success and now the second edition is in print.*

*The new application stories submitted by our successful distributors can be read also in the Applications section of this Magazine.*

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

Tamás Szöllős  
President (CEO)

## Modernizations at NIVELCO

### Expanding the manufacturing capacity

The entire production department moved to its current location before the Christmas holiday in 1999. This was a great achievement at that time when the previously separated and segmented manufacturing activities could take place in a common hall. This facilitated the optimal coordination of the manufacturing processes, moreover the modern work organization resulted a great improvement in the production quality. Despite that the production hall was continuously modernized in the last 15 years and the utilized area was growing and growing, the increased manufacturing demands especially in the last few years cannot be serviced efficiently any more within the available space.

In accordance to **NIVELCO**'s philosophy we are strive to make the complete manufacturing activity in only one place at the Budapest headquarters and keep the entire production process in one hand and under permanent control. By the way this resulted that **NIVELCO** was the first company among the level instrumentation manufacturers who offered 3-year full warranty for all product ranges. In order to continuously provide job for almost 200 people and give enough space for the increased tasks we had to make a brave step in 2014. The investment was realized after a one-year long design and preparation process. The main problem of the construction project was that the new floor should be built over a continuously operating production hall without interacting the workflow, and the usual production quality of **NIVELCO** should be ensured all the time. Finally the only suitable time period for this construction work was the 2-week summer shutdown which was the last week of July, and the first week of August in this year. So in 2014 the work was in full swing during the usual 2-week summer shutdown at **NIVELCO** despite that all employees indeed spent the well-deserved summer holiday.



The production hall was not loud because the CNC machines assembled the **NIVELCO** housings but because the noise of the construction work, expanding the manufacturing capacity.

Already in the last week before the summer shutdown dozens of machines, elements of scaffolding and huge truck cranes occupied the inner parking places in front of the production hall, indicating that something extraordinary will be happening. A serious construction work started which was a minimal obstacle in the production activity of **NIVELCO** as much as possible.



It took only 20 days to finish the lightweight building. The contractors continuously faced with heavy raining and summer storms during the two weeks and they worked in three shift work to be able to meet the planned deadline. When the employees returned from the well-deserved holiday there were almost no signs of the construction.

## Modernizations at NIVELCO

The expanding was demanded primarily by the increased orders of the **PiloTREK W-100** series Pulse Burst Radar level transmitter family which needs large space for the tests during the assembling and the quality control tests. In the framework of the production expansion a new floor with 500 m<sup>2</sup> (600 yd<sup>2</sup>) area has been established where the semi-finished electronic product assembly workstations, the electronic assembly workstations requiring finishing works, the pick & place machine, the wave solder machine and the electronic components store room moved to. In addition the new floor hosts place for the test and fine tuning workstation of the ultrasonic sensor production along with a cold and hot climate chamber. A new stairway and an elevator provide easy access to the first floor however only a minimal amount of material needs to be moved between the two floors thanks to the well-designed work organization. The freed space on the ground floor allowed moving the work stations closer which previously were placed farther because the lack of free space. In addition, the currently unused approximately 10% plus space provides room for further expansion. The modernization project concerned not only the newly built floor but the entire production department. The manufacturing preparation, the mechanical assembly workstations and also in the quality control department laboratories there had been significant changes since nearly two thousand square meter (2400 yd<sup>2</sup>) were renovated.



Thus we can say now that after fifteen years the total area of the production department has been modernized within the framework of a large-scale modernization where modern heating and air conditioning system were installed. Thanks to the new windows, doors and wall structure the energy utilization of the building improved so much. Modern lighting system and natural light makes the workplaces even more comfortable, in order to increase the green space a roof garden was established. The other aspect of the successful investment is that **NIVELCO** was able to finance the entire project from own resources entrusting a professional design and construction general contractor for the realization of the complete construction work.



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## New Financial Director at NIVELCO

### Introducing Gábor Merkel, NIVELCO's new Financial Director

*"Try to live your life to be unnoticed where you are and to be missed so much when you leave."*

*(John Lennon)*

Within a corporate organization the operation of the financial department is quite similar to the above quotation because it is unnoticeable if every employees receive the salaries in time, the audits and tax audits completes without any problem and the law changes are properly applied on time. But if there is any problem occurred with the financing it has significant effect on the entire company. The financial management of the **NIVELCO Group** is a really complex task requiring constantly up-to-date professional knowledge, determined attitude and complex way of thinking. Basically these aspects were the main attractions for me when I applied for the financial director position last fall. My predecessor, Lászlóné Kun (Maya), decided to retire after 21 years and upon her recommendation Mr. Szöllös chosen me for this responsible task.

In 2002 I graduated as an economist in the Leadership and Management major at Corvinus University of Budapest, and then after my graduation I started my career at an international audit firm. In my work I had possibility to learn the operation and audit the largest companies of Hungary working in all kinds of economical sector. During my previous job I took an active role in establishing a regional office in the city of Győr, and I have gained extensive management experiences.

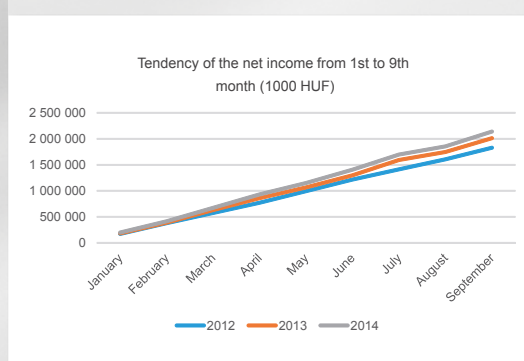
In the meantime I also obtained the Hungarian and International audit qualifications and got an insight into the filed of financial advisory services, treasury activities thanks to my friends. With my wife and my three sons (4, 1, 1 year-old) we live in a family house in Kistarcsa (in the agglomeration of Budapest), and I spend my little free time with sports like small pitch (five-a-side) football or running.

I officially joined **NIVELCO** on the 1<sup>st</sup> of April and in the first months Maya helped me to get familiar with the company and the tasks waiting for me. Then on the 1<sup>st</sup> of September I received the leadership of the finance department. I consider myself as a lucky man since I took over a well-established, professionally organized financial department from my predecessor. In the learning of months I received great support from her, as she shared all her experiences and I can still count on her assist. My primary goal is that the financial department continues its operation in accordance to the usual **NIVELCO** standard under my control and we should find the appropriate solutions to the current challenges, thereby helping **NIVELCO** in achieving further successes. I try to do my best in order to meet the following three requirements, which are applied successfully for long time by my predecessor, Maya:

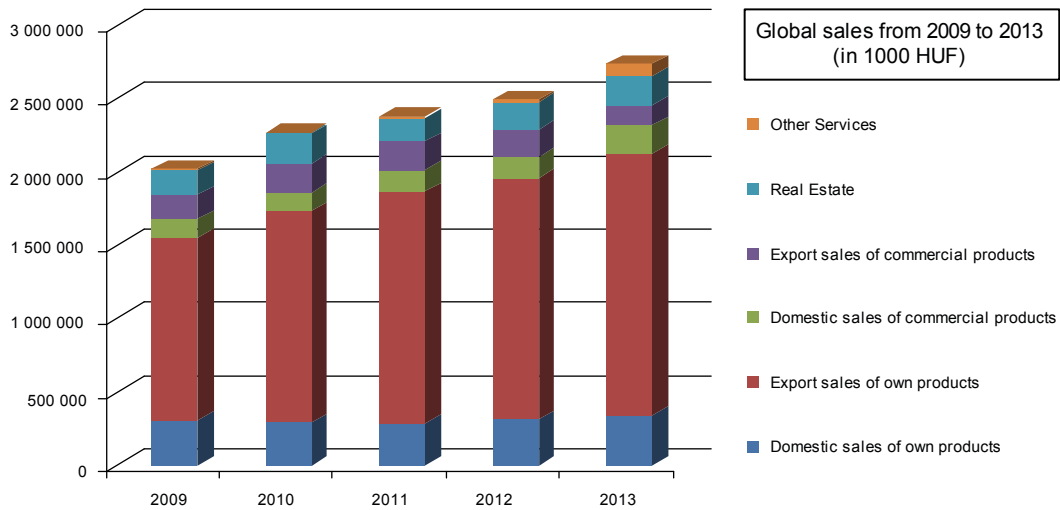
- Compliance with the expectations of the Owner (Szöllös Family)
- Compliance with the expectations of the relevant legislation (especially the tax rules)
- Compliance with the expectations of ourselves ("to be able to look into the mirror every night without the slightest misgiving")

## Tendency of the financial figures at NIVELCO from 2013 to 2014

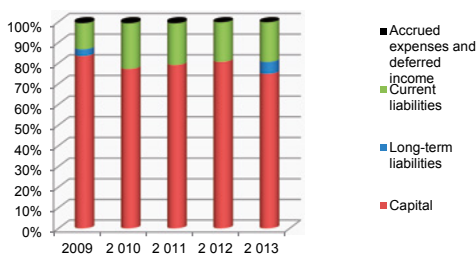
The development progress of our company group has continued in 2013 which is well-reflected in the revenue and in the profitability. In 2013 the revenue of **NIVELCO Process Control Co.** increased by 10% compared to the previous year. In this progression domestic and export partners both played the major role by successfully maintain or even increase their orders in addition to the found of significant new customers. These new customers actively contributed that **NIVELCO** could take part in several large-scale instrumentation projects as a supplier, which has substantially increased the sales volume.



## Tendency of the financial figures at NIVELCO from 2013 to 2014



The required equity for the operations of the company is mainly ensured from own resources for many years. As a result of the purposeful and effective management the available capital continuously exceeded 70% ratio within the resources, despite the growing total assets. The main reason for the high ratio of equity is that the owners usually reinvested the majority of the incomes into the company, considered as retained earnings for a subsequent investment, or financing the expansion of the production capacity.



This increase is partly resulted by the favourable tendency of the USD / EUR exchange rate, and most of the growth was realized as a consequence of the increased sales volumes. By the end of the year we expect to surpass the 3 billion HUF turnover which can be considered as a remarkable milestone in the life of NIVELCO. Hopefully this tendency will not stop and it will continue similarly dynamically growing also in 2015.

The Company's financial situation is rock solid, the excellent professionals and conservative business policy provides an appropriate basis for further growth.

Another important event of the year is the development of the #3 building in the summer months, which has been expanded with a new floor adding 500 m<sup>2</sup> (600 yd<sup>2</sup>) new production area over the existing ground floor.

The value of the investment is almost 0.5 million EUR, which is added to the purchase price of the newly installed manufacturing equipments.

The project was fully financed by the own resources of NIVELCO, the positive operating cash flow provided sufficient resources to cover all the expenses associated with the investment. The production on the new production floor will begin in November.



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## NIVELCO Racing Team

The remarkable successes of the last season gave positive impulses for the young racers of NIVELCO Racing Team to make the summer training even harder!

Thanks to the rainy spring season the Austrian glaciers were in excellent condition all the summer waiting for the snow and ski lovers.



**NIVELCO Racing Team** had opportunity to train in winter circumstances on the best slopes of Carinthia Land (the southernmost Austrian state). The Mölltaler glacier with its 3122 meter (10250 feet) height above sea level and with complex snow-cannon system provides uniquely perfect training possibility even in the hottest summer days.



Of course only with skiing you cannot obtain perfect condition which lasts for the complete winter season so the well-proved training equipments were used also this summer. Cycling, tennis, and wakeboarding were also the part of the preparation for this year's summer program.





## NIVELCO Racing Team



The team members are facing with a long and exhausting season. **Noa Szöllős** (2003) will start her last season in the U12 age-group as a racer of Ski Mittel Schule Murau. Her goal in the season is to win the regional and the provincial Styria Cup along with defending again her Hungarian Championship title.



**Barnabás Szöllős** (1998) can race again in the same age group with his elder brother **Benjamin Szöllős** (1996). They will represent Hungary both in the Youth World Championship (held in Hafjell, Norway) and in the adults World Championship in Vail, Colorado in the United States.



They train together in the Waidhofen Ski School in Austria. A big task is waiting for **Barnabas** to follow his brother and achieve remarkable results on the European Youth Olympic Festival which is held in every two years for the U18 age group.



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## Skier with visual impairment supported by NIVELCO

### Zsolt Balogh, the visually impaired ski racer

Zsolt Balogh, the member of the Hungarian Paralympic Team, is the only visually impaired skier whose Paralympic preparations have been supported by **NIVELCO** in the last three seasons.

I have learned to ski in Switzerland at the age of twelve in a ten-day skiing camp with the company of several young Hungarians, where I was very fortunate because one ski coach trained one visually impaired student. Here I learned the basics in a few days, and among the participants I proved to be the best in the competition organized in the end of the camp. Then in the following years I have went in for sports regularly, especially the tandem bicycle or skating since 2007.



In December 2010 I realized that the few days of skiing per year as a hobby is not enough for me and I want to do sports at a higher level. For a blind person it is not really easy, in fact for the first time seems rather an impossible mission. For the skiing, biking or the skating, I always need a dedicated helper who should be motivated just like me. In case of skiing, the helper's task is to move in front of me along with a microphone and saying the instructions and keeping me on the track by verbal navigation. My helper should be able to ski very well but also should have experience and good sense of controlling and must do the training sessions as well participate in competitions.



In January 2011 I had the opportunity to spend a ski weekend with a team of Hungarian visually impaired young people in Austria. This occasion have strengthened me and confirmed that my present level of ski knowledge provides good chance if try myself in an international competition. Then in January 2011 I joined to the Hungarian Paralympic Team. I wanted to be the first visually impaired para-ski-racer of Hungary, and I've succeeded, but unfortunately I am still the only one without any followers.

Finally when the trainings started I had the opportunity to experience that I am capable for outstanding performance and achieve good results as a visually impaired athlete. Attila Fábíán, my coach helps me from the beginning to prepare, he has been the coach of Gyöngyi Dani who is formerly known as a wheelchair fencer winning two silver medals in the Paralympic Games in 2012. Until recently Attila Fábíán was also my leader in the ski slopes. Our main goal for the first season was to earn the required amount of points for the World Cup qualification.



## Skier with visual impairment supported by NIVELCO

In the 2012-2013 season due to our persistent work we succeeded to achieve remarkable results in international competitions:

- November 2012, Landgraaf – Netherlands, Ipcas slalom races: 7<sup>th</sup> place on 1<sup>st</sup> race, 10<sup>th</sup> place on 2<sup>nd</sup> race
- January 2013, Rinn – Austria, Ipcas point rewarded slalom races: silver medal on the 1<sup>st</sup> race, 4<sup>th</sup> place on the 4<sup>th</sup> races



After many difficulties we could travel to Spain for the World Championship in February 2013, and we tried to do our best. Here we realized that the international racers are much better prepared than the domestic para-athletes. In addition to this the weather conditions, the terrains and the really heavy tracks did not make our job easier. Nevertheless we returned with a lot of useful experiences and continued the training. Our next goal was the participation on the 2014 Winter Paralympic Games in Sochi.



After the competition in Spain a long-cherished plan has become reality that Attila Fabian supports my development only as a coach. From the spring of 2013 we found a new leader, Bence Bocsi. Now we are working together for a year and we have experienced the beauty and difficulties of the common work. We had plenty of time to get adjusted to one another and constantly achieve even better results.

We were really disappointed that we could not achieve the qualification, so we can not travel to Sochi for the Winter Olympic Games. Instead we participated in six races at the end of March in Italy and France where we were quite successful and finished several competitions with podium places.

Skiing is a pretty expensive sport, but I can even experience it without seeing anything and I can feel the freedom to enjoy this sport. NIVELCO's long-term and predictable support of the last few years is truly a great help since the foreign, mainly Austrian and Italian training camps and competition entries as well the travelling are very expensive. Despite that the scarcity of our budget means a significant limit in our chances at an international competition, I am confident that our efforts will be crowned with success in the near future. This is the reason why I would like to express my thanks to NIVELCO, our biggest supporter, for the help of the last three seasons!

## Hungarian Deaf Ski Team

### Supported by NIVELCO Process Control

The Hungarian Deaf Ski Team was founded three years ago to the initiation of **Melinda Tulcsik**, deaf athlete. The team members deal with the preparation to ski races, conditioning training, skiing training and technical training and also deals with competitions. During the last ski season, **Nóra Szarvas**, a high school deaf student joined the team's work. Our team members regularly participate on the **Deaf Ski Europe Cup** which is an international tournament organized in different European Alpine countries especially for deaf athletes. In this series **Melinda Tulcsik** took several remarkable places (rank 1-3.) since 2012 in the adult category. Nesselwang, Germany hosted the **1st World Deaf Alpine Skiing Championship** in 2013, where Melinda finished in the first third.

Her best result was achieved in March this year, in the French Morzine, where she reached her best result and won bronze medal among the adult category in Super Combination (a speed event where the result comes from the combination of Super G and Slalom requiring high technical capacity. We were very happy because **Melinda Tulcsik** has been qualified for the 18<sup>th</sup> Winter Deaf Olympics based on her great results. The competition will be held in March 2015 in the Siberian Khanty-Mansiysk. Melinda is also very active during the summer season. In addition to the specific fitness training she regularly participates in amateur mountain bike, running or swimming events and competitions.



**Nóra Szarvas** started her first racing season in 2014. On the **Deaf Ski Europa Cup** she achieved the results expected from her as a junior. In particular, she performed better and better during every competition in the speed events. She has also performed her best results in the French Morzine where she was ranked fourth place in every event.



## Hungarian Deaf Ski Team



Both **Melinda** and **Nóra** are highly motivated, hard-working athletes. **Dr. Katalin Egri** ski coach coordinates and helps the Hungarian Deaf Ski Team's work and also the preparation of the athletes. The specific strength training and coordination training is supervised and carried out with the help of **Tamás Attila Kovács**, who was a former coach for elite Hungarian ski racers. This is a special task to perform since they don't "speak" the sign language used among the deaf skiers; therefore a specific communication has been designed between the coaches and the athletes to exchange the necessary information. Both athletes and coaches are committed to carry on with the hard work and contribution for the next racing season. It is very difficult to bear the costs of the expenses for the preparation and competition seasons, but despite this fact, it has been mostly solved until today at our own charge. Our Team's first and only permanent sponsor is **NIVELCO** and the Szöllős Family. The team received many opportunities from them to use their **NIVELCO**-cottage located in Austria free of charge for the occasion of trainings and/or competitions.



The whole Szöllős Family – young and old – as one helps and assists the girl's ski technical development both in theory and practice, on the ski slopes or in other workshop settings, where e.g. they learn how to maintain skies from Péter Szöllős and his two skier children Benjamin and Barnabás. All the experience that Péter Szöllős has gained and his practical advices in racing are particularly useful and are important help to our Team. This kind of support is very important for our Team, as it indirectly increases the possibilities and the quality of training sessions held on snow and also the number of competition opportunities. The Hungarian Deaf Ski Team's activities are available on Facebook and are regularly up-dated with reports and pictures.

## 10 years of NIVELCO Bohemia

### An anniversary year in the life of the Czech subsidiary company of NIVELCO

NIVELCO Bohemia is the exclusive distributor of NIVELCO products in Czech Republic. The company was formed on December 2004 by the management of NIVELCO Hungary that owns 100% share.

We started out with only 5 employees including 3 salesmen. Our headquarters have always been Brno, which is the second largest city in Czech Republic.

Thanks to the economic expansion in the Czech Republic having our economy risen 1,5% annually on average between 2004-2007 and with great deal of commitment, effort and hard work of our colleagues, we managed to increase market share of our company dramatically.

During these years, sales were continuously increasing and NIVELCO became a well respected brand among the Czech industrial users.

Unfortunately, it was the fall of 2008 when we and the rest of the world started to feel the impact of real estate bubble that burst in the USA.

Economic activity dropped almost instantly and credit, basic element of growth, disappeared.

The Czech economy was not hit as hard as economies in the other countries, but the deep and slow recession was inevitable.

This period was the most challenging and it was accompanied with big personal changes in our company that were result of those extraordinary conditions.

Luckily, the capital needed to run our daily operations was provided by our mother company and with this help we managed to survive these hard times.

The period after the crisis could be described as learning from mistakes and adapting to actual business cycle.

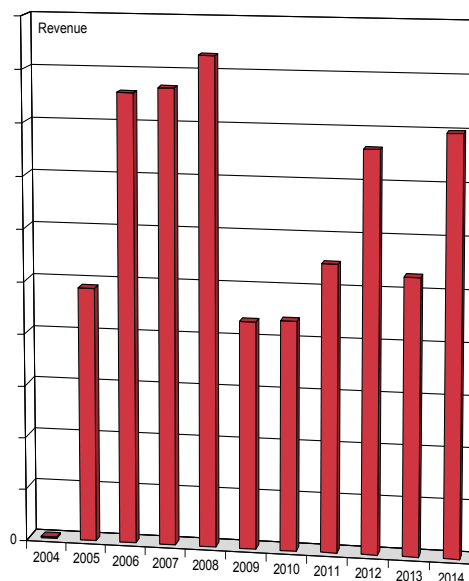
Despite the decreased sales we decided to invest into our team and expand it by one salesman (total 4) and one technician colleague (total 2).

On the other hand now we can say that we have set up a very well-trained and hard-working team.



Family Sales Meeting – 2013

Economy, however, didn't do well and lot of companies tried to recover from the shock of the crisis, which was reflected on their cancelled purchases.



Sales Figures

## 10 years of NIVELCO Bohemia



In the last almost 3 years we managed to lead the company into growth although the sales were quite fluctuating.

Economic state is not in such a good shape as before the crisis but business expands slowly step by step and our average turnover is at the pre-crisis level.

Knowing the numbers of the 2014 third quarter we will close this year certainly with a very nice result since the number of the orders increased by 77% compared to the same period of the last year.

We are committed and continue the hard work in order to maintain this positive trend and keeping **NIVELCO** Bohemia as an important player in the Czech level instrumentation market in the coming years.

This year we successfully achieved our financial and business targets. The key of the further growth is the stable team and our serious commitment.

December 2014 will be our 10<sup>th</sup> anniversary.

We faced with probably the worst crisis of our century and yet we stand strong.

Hereby, I would like to thank to my colleagues from **NIVELCO** Bohemia for their hard work, our colleagues from mother company for their great support and of course to all of our devoted customers who built business relationship with us in the last 10 years.



**Vojtěch Samec**  
Managing Director  
**NIVELCO Bohemia s.r.o.**  
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## A trip to Europe, Hungary

### Winning the first prize on NIVELCO' sales incentive program

NIVELCO USA announced an exciting and rewarding sales incentive program for their representatives in June of 2013. This program included a grand prize of a one week all expenses trip to Europe, Hungary. Other prizes included merchandise, cash and gift cards depending on the sales achievement. The winner of the 2013 sales incentive program was **Cancoppas Ltd**, Lester Alexander for winning a major order in Canada for a wide range of NIVELCO technologies and products.



**Lester Alexander** and his wife visited to Budapest on the middle of September for a week period. Their accommodation was in the center of the city and they participated in several interesting programs eg. Parliament Tour, Dinner Cruise on the Danube with buffet dinner and traditional Hungarian live music and in one occasion, they were in one of Budapest most famous baths. Lester participated in a factory visit too at **NIVELCO Process Control Co.** headquarters in Budapest. According to Lester's travelog they had a great holiday in Budapest. We asked Lester to tell about the most remarkable instrumentation project facilitating to win the first prize on the sales incentive program. The instrumentation project was a mid-size one and the application was level measurement of asphalt.

#### The applied instruments are the following:

- **PiloTREK WJS-18N-4** Pulse Burst Radar with WAP14N antenna enclosure (3 pcs.)
- **EasyTREK SPA-38N-H** integrated ultrasonic transmitter with relay output (2 pcs.)
- **EasyTREK SPB-38N-4** integrated ultrasonic transmitter with PVDF transducer (1 pc.)



- **MultiCONT PRW-21E-1** controller (1 pc.)
- **UNICONT PJK-102-4** univ. interface module (1 pc.)
- **NIVOCAP CHA-206-2** capacitance level transmitter (4 pcs.)
- **NIVOCAP CMG-106-1** RF capacitance level switch (3 pcs.)

"I became aware this new target during one of my routine sales calls at a Municipal Waste Water Treatment Plant. I noticed a medium size silo from a distance away, while touring the north section of the Waste Water Plant. Upon my cold call at the facility manufacturing building envelope products, I was informed that the company will be going through a plant upgrade and all the engineering will be done in the USA, the planned/design will be based on similar design done at other US facility. I contacted the US office and was put in contact with the project manager. I met with the Project Manager to discuss the project and present our product portfolio. I was told that the specifications are being designed based on previous projects in the USA. I was sent drawings and equipment list with the project closing three weeks later, however, the specifications were written around a well-known German manufacturer's products. My good relationship with the local contractor and the end-user, the project manager allowed me to convince them to have a good look at the NIVELCO products as a viable alternative to any other brands. Finally the project manager had okayed the use of NIVELCO for this project."



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## Interview with NIVELCO's retired senior technical consultant

### András Kálmán, NIVELCO's ex senior technical consultant

#### ■ How did you get to know Mr. Tamás Szöllős and what is your story concerning NIVELCO?

I have met Tamás Szöllős in the Faculty of Electrical Engineering at Budapest University of Technology since we were in the same grade and student group between 1960 and 1965. After my graduation I started my career at the largest domestic engineering company (called VILATI) dealing with process automation products. The Szöllős brothers – András, the economist and Tamás, the engineer – were able to lead the family venture (called Szöllős Automatika) forward, after the early death of their father and designed / manufactured a series of industrial controllers for special applications. During these years – despite I was quite young – I became lead engineer in the design and development department at the VILATI Company, so I had possibility to entrust an outside company for design and manufacturing for special projects. Of course Tamás was willing to accept the cooperation so those days many power supply devices and controlling electronics were designed and manufactured by the **Szöllős Automatika** for VILATI. Later on I started my own business and continued the cooperation with the Szöllős brothers in manufacturing electronic equipments for industrial usage.

When **NIVELCO Process Control Co.** was founded in 1982 I worked as an associate employee in the field of pre- and after-sales. The tasks such as technical consulting, writing technical documentation, user's and programming manuals or brochures and on-site instrument installations were really important, but the primary marketing activity was finding new customers and providing technical information for them. Of course in those times **NIVELCO** was able to focus only for the domestic market. Officially I joined **NIVELCO** in 1989 as a marketing / sales engineer.

#### ■ How do you recall the beginnings?

All the tasks which are required for the successful sales were completed by a small sales team with 3-4 people. The main tasks were market building, searching for new customers, making offers, technical consulting, sometimes on-site installations and we were responsible for all the paper-based materials such as datasheets, brochures, manuals, price list, etc...

#### ■ In what positions did you work in the past 25 years?

Independently from the different titles basically I worked in the same field during the few decades which was spent with writing pre- and after sales technical documentation, writing offers, market building activity and holding technical presentations for the customers. As the head of the domestic sales I was actively working in the establishment of the domestic area representative network which strategy is still very successful not only in Hungary, but also in the foreign countries where **NIVELCO** has a subsidiary company. Now as a retired senior technical consultant I use my decades of experience helping the development, the sales or the marketing departments, where my knowledge is needed.

#### ■ What lays behind NIVELCO's success?

- The management always reacted for the new market demands in time
- Innovative development strategy
- Systematic market building activity in the export markets establishing global distribution network

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

In my opinion the key of the future success for **NIVELCO** is the continuous development of the level measurement products by launching more new types, enhancing the existing products and improve the reliability.

#### ■ What was the most memorable period for you over the past 25 years at NIVELCO?

The most memorable period was the second half of the 90's for me. In those years we hold product presentations for the customers in every month in all the big cities, in the largest factories of Hungary. We travelled throughout the country with instrumentation demo boards and with the newest developments.



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## Interview with NIVELCO's senior technical consultant

### Ferenc Kuszto, NIVELCO's senior technical consultant

#### ■ How did you get to know Mr. Tamás Szöllős and what is your story concerning NIVELCO?

I have known Tamás Szöllős and his brother since we were juniors at the Budapest University of Technology and we've had really good relationship. After my graduation we continued in separate ways and I found a job in the Food Industry Design Institute while the Szöllős brothers worked in the family venture. When they started to design level measurement equipments they needed a design engineer for the on-site installations.

Tamás asked me to cooperate with **Szöllős Automatika** as a delegated plant design engineer and we worked together for many years. In this period I get known all the manufactured instruments and it was not a big surprise for me when I was asked to join **NIVELCO**. It was in 1989 when I started to work in **NIVELCO** as a sales support technical consultant to help the sales activity.

#### ■ How do you recall the beginnings?

In the beginnings the company structure was not developed as nowadays so our small sales team was responsible for all the tasks required for the successful sales activity. We created the brochures, user's manuals, provided technical consulting, made the offers, visited the customers, performed on-site installations and handled the first database software, called the 'Value', the predecessor of the future Customer relationship management software.

#### ■ In what positions did you work in the past 25 years?

Basically my position has not changed during this remarkably long period since I was working as a technical consultant, writing numberless offers, actively taking part in the market building activity and visiting many customers a thousand of times. I also hold product demonstration presentations for the customers and took part in the domestic exhibitions with **NIVELCO**.

When the area representative network has been established my activity reduced to the Budapest headquarters and now I am an honoured senior half-time technical consultant and a half-time retired.

#### ■ What lays behind NIVELCO's success?

Two things have to be listed here. First is that the company recognised very early that the domestic market is very important but not enough for the further continuous increasing in the turnover so **NIVELCO** needed to open for the export markets. This primary step was done by building a global distribution network and establishing subsidiary companies. The second thing is the independent development department which guarantees the utilization of the new innovative manufacturing technologies. The result is the continuous renewal of the products by keeping up with the new engineering trends of the ever-changing world.

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

The key of the present success of **NIVELCO** is the wide product range lining up high quality, reliable and cost-effective level measurement instruments which are marketable not only in Hungary but all around the world. For the future it is very important to maintain the market position both domestically and internationally. In my opinion **NIVELCO** is doing his best not only to maintain but to increase the achieved position step by step.

#### ■ What was the most memorable period for you over the past 25 years at NIVELCO?

I would like to highlight the second half of the 90's. Those days **NIVELCO** was a big family, everybody knew each other very well and the working atmosphere was really familiar. On the other hand the first steps appeared in the development of a modern international corporate structure. This ensured that **NIVELCO** is now a world-class player among the industrial level instrument manufacturers. The first generations from most of the presently manufactured product families appeared on the market in these years which descendants are nowadays the most successful devices in the product selection.



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## NIVOPRESS D-500/600 level transmitter family

### Hydrostatic bottom pressure transmitters from NIVELCO

The instruments based on the hydrostatic principle looks back to a long history in the product selection of **NIVELCO**. The first series of these widely accepted devices were launched in 1998 under the name of **NT-100** series developed in cooperation with the Germany based **Boie Company**.



This series were also manufactured within this cooperation and the units used ceramic membrane sensor. The instruments had -0.1...20 bar g (-1.45...290 psi g) range and 1 1/2" threaded process connection. The transmitters were available with built-in display unit. In 2004 **NIVELCO** launched the current series of the **NIVOPRESS D** hydrostatic level and pressure transmitters introduced with the name **D-500/600** series to complement the **NIPRESS D-200/300/400** series. These 2-wire instruments have a piezoresistive silicium sensor with stainless steel flush diaphragm, available with SAP-200 display module and digital HART output.

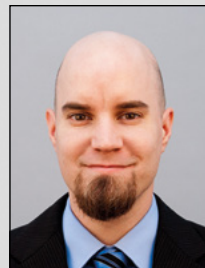
The multiple process connections:

- BSP/NPT threads from 1/2" up to 2"
- hygienic Tri-Clamp from 1" up to 2"
- DIN 11851 standard pipe-coupling connection from DN25 up to DN50

provide wide application range both in normal and hazardous (Ex) applications.

The **NIVOPRESS D** hydrostatic level- and pressure transmitters operate in 2-wire systems and convert relative or absolute pressure (input signal) into 4-20 mA (output signal). The piezoresistive sensor measures the hydrostatic pressure and it compares the water head with the actual atmospheric pressure. The sensor is protected by a stainless steel flush diaphragm which transfers the pressure value to the piezoresistive sensor through silicon oil which can be food compatible edible oil for special request. The intelligent electronics provides on-site programming with SAP-200 plug-in display or remote programming with HART communication. Intrinsically safe (Ex ia approved) models are available for use in hazardous environments. The **NIVOPRESS D** hydrostatic gauge pressure transmitters are suitable for level- and pressure measurement tasks in tanks, vessels and pipes especially in food and beverages industry (for example milk and any other food dollops) applications. The flat surface of the diaphragm avoids the risk of material build up and the maximum medium temperature of 125 °C (275 °F) allows proper (CIP) cleaning required by the regular cleaning processes of the food industry and similar hygienic applications.

News in the year 2014 concerning the **NIVOPRESS D** transmitter family is the stainless steel housing which can be ordered as a special version. The new feature meets the more and more strict requirements of certain industry segments, such as Food and Beverage, Marine, Oil and Gas.



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## Cost-effective level measurement solution for the water industry

### NIVOPRESS N hydrostatic level transmitters with ceramic sensor

The submersible hydrostatic level transmitters have been available in NIVELCO's product selection for more than 20 years, since the first series debuted in 1993. This product family is still very popular in the water and wastewater applications. Water treatment plants, pump stations, lift stations, wells, shafts, basins and pools of the water industry are equipped with hundred thousands of hydrostatic borehole level transmitters all over the globe. The product variations in NIVELCO's NIVOPRESS N level transmitter family have been already covering wide spectrum of applications but in the 3<sup>rd</sup> quarter of this year NIVELCO is answering new customer needs so new types have been launched to widen the existing range of submersible level transmitters.

The four new types are the NIVOPRESS NK/NN-400 and ND/NH-400 series which use piezoresistive ceramic sensor filling the gap in NIVELCO's portfolio offering excellent choice for the customers who are always looking for cost-effective solutions. The new types are similar in the mechanical construction to the NP/NF-400 and the NZ/NR-400 series (using piezoresistive stainless steel sensor), what is more they are lower cost units compared to the NC/NT-200 series (using capacitance ceramic sensor). In case of those applications when the sensor is exposed to aggressive medium but the big membrane size is not required the new series with piezoresistive ceramic sensor offer approximately 30-40% price advantage compared to the NC/NT-200 series with bigger sized capacitance ceramic sensor. The standard output of the 2-wire borehole units is 4-20 mA + HART. The transmitters are available with built-in Pt100 temperature sensor which can replace a separate temperature meter reducing wiring and installation costs.

The transmitters can be ordered in 8 different measurement ranges from 1 m (3.3 ft) up to 200 m (660 ft) water head. The cable length is available between 1 m (3.3 ft) and 300 m (990 ft) and the material of the cable is PUR (Polyurethane) or FEP (Fluorinated Ethylene Propylene).

The linearity error of the units is  $\pm 0.45\%$  between 0 m and 20 m (66 ft) measurement range and  $\pm 0.25\%$  over 20 m (66 ft).

The operation temperature range is from  $-10\text{ }^{\circ}\text{C}$  ( $+14\text{ }^{\circ}\text{F}$ ) up to  $+60\text{ }^{\circ}\text{C}$  ( $+140\text{ }^{\circ}\text{F}$ ).

The sensor face is made from  $\text{Al}_2\text{O}_3$  ceramic providing excellent chemical resistance against aggressive medium. A new sensor protector cap made from stainless steel is replacing the black plastic protector in all types since the NK/NN-400 series have the same 22 mm (less than 1 inch) diameter stainless steel housing as the NP/NF-400.

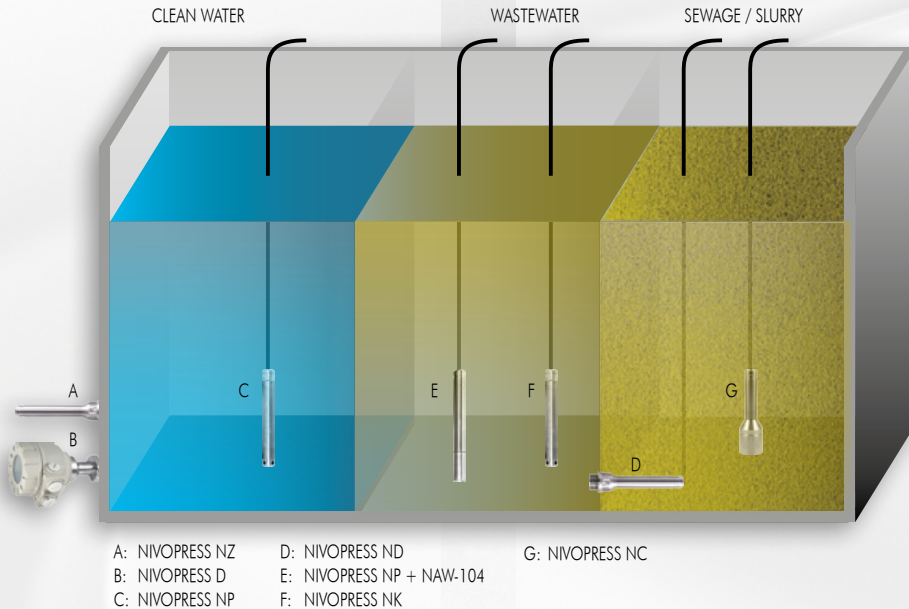


NIVOPRESS  
NP /NK



NIVOPRESS  
NZ/ND

## Cost-effective level measurement solution for the water industry



From now on all units (of course except the 3/4" threaded types) are equipped with this new, precisely manufactured stainless steel protecting cap. It is more robust therefore it has better resistance against mechanical impacts. The protecting cap can be replaced with the well-known **NAW-104** sewage adapter or the 3/4" threaded units can be used with the **NAZ-103**. But in case of the new ceramic membrane types the usage of the sewage adapters are not necessary in most of the cases. This is the case when the new **NK/NN-400** types can be a cost effective alternative to the **NAW-104** equipped **NP/NF-400** types in those applications where the measurement medium is slightly contaminated wastewater or any aggressive liquid.

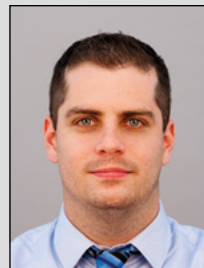
Widening the application possibilities the new piezoresistive ceramic sensor units are available with 3/4" threaded process connection under the name of **ND/NH-400**. Until now only the piezoresistive stainless steel sensor units were available with threaded connection which allows installations where the sensor should be fixed on the bottom avoiding big mechanical impacts.

The wiring and the remote programming with HART communication is absolutely the same as the previously known units so the installation, configuration and the usage doesn't require any new knowledge or special equipment. The **EView2** configuration software supports the new **NIVOPRESS NK/NN-400** and **ND/NH-400** series but only the 2.1.0.21 or the newer releases.

The wide range of accessory products is also available for the new series including the **NAA-101** cable terminal box with moisture filter, the **NAA-102** cable terminal box with overvoltage protection, the **NAA-209** cable mounting wedge clamp, the **NAA-105** cable sliding sleeve with 1 1/2" thread or the **UNICOMM** HART communication modems.

The complete product family received a firmware update recently providing user configuration possibility of the damping time value which is the P24 parameter in the units. The Primary Variable Damping Value represents one time constant which is realized by the #34 HART command. The output response to a step input is 63% of final steady-state value after this time has elapsed.

The value of the damping time can be selected between 1 and 99 seconds using the **EView2** configuration software.



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## FISCHER Product Overview 2014

### A Hungarian brochure aiding the selection in the field of coating technology measurement instruments

**NIVELCO Process Control Co.** – as the exclusive Hungarian distributor of the **Helmut Fischer GmbH** – has been importing and selling fair amount of Fischer instruments and wide range of probes on the domestic market over the years. In 2014 a Hungarian brochure is published aiding the product selection whether the task is coating thickness measurement, material analysis, microhardness measurement or material testing.

#### ■ Knowledge, Competence, Experience

Since 1953, FISCHER has created and produced increasingly innovative, powerful and versatile technologies for measuring coating thickness and micro-hardness, as well as for material analysis and testing. Today, FISCHER instruments are used all around the globe – wherever trueness, precision and reliability are essential.

#### ■ Research and Development

Building leading-edge products requires a strong focus on research and development. All FISCHER products are developed and manufactured in Germany, where one in five employees works in R&D.

Highly qualified specialists – with advanced degrees in physics, chemistry, electronics, engineering and computer science – continually develop new products and processes to meet the ever-changing demands of the market. FISCHER also cooperates closely with universities and research institutes.

#### ■ “Made in Germany” Quality

Keeping its manufacturing lines largely in-house allows FISCHER to fulfill its customers’ expectations with truly superior products. In FISCHER’s modern, high-tech production facilities, close attention is paid to even the tiniest details in order to ensure consistently high quality. This means that the “Made in Germany” is more than just a merchandise mark: It is a point of employee pride and an integral part of the FISCHER philosophy.

#### ■ Calibration and Certification

FISCHER offers a wide range of calibration standards for each measurement method. These include, for example, pure element foils, single and dual layer standards as well as complete standard sets for different applications, including standards for measuring ferrite content or conductivity, as well as calibration standards made of different materials for all common coating thickness applications.



## FISCHER Product Overview 2014

### ■ Training and Seminars

Because FISCHER wants you to benefit maximally from the products, FISCHER's experts are happy to share their application know-how, starting with seminars and training sessions on metrological basics, through the optimal use of the instruments, to expert symposia on special topics.

### ■ Product Assortment

FISCHER instruments cover a comprehensive range of measuring and analysis tasks that are relevant in diverse industries. For each application, the appropriate method is employed for maximum precision and accuracy: whether magnetic induction or eddy current, beta-backscatter, coulometric, micro-hardness or x-ray fluorescence – FISCHER always has the right technology for the purpose. Worldwide, FISCHER customers in industry, research and science depend on the reliability and accuracy of these fine instruments. FISCHER rises to this challenge with its rigorous quality standards and relentless development strategy to produce the most technically advanced, yet practical and easy-to-use measuring systems and software on the market.



### ■ Probes for Standard and Special Applications

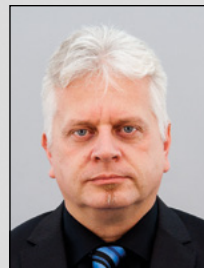
For virtually every industrial application there is an appropriate FISCHER probe available. These are high precision devices tailored to the various measuring applications. After years of continuous development and innovation, the FISCHER probe program now encompasses several hundred probes designed to deliver optimal results with the highest accuracy.



Of course, FISCHER also offers comprehensive, expert consulting services to assist the customers in selecting the appropriate probe for any given measurement applications. FISCHER probes are extremely robust and wear-resistant – they deliver precise measurement results over a long period of time even on hard surfaces and after many measurement cycles. All probes are developed and manufactured in-house according to strict quality standards. Each probe undergoes individual factory calibration to ensure the highest possible degree of trueness.

When particularly challenging measuring applications – for which only a customised probe can provide precise measurement results – come up, FISCHER experts can develop (upon request) individual probe designs that offer maximal repeatability precision and trueness.

**NIVELCO Process Control Co.** – as the exclusive Hungarian distributor of the **Helmut Fischer GmbH** – of course provide repair and maintenance services, assistance to our customers in choosing the appropriate instrument type, as well teaching the proper use and handling of the instruments to the end-users.



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## Material Testing with Fischer instruments

### Material failure can have disastrous consequences

For this reason, materials and workmanship must be tested for safety, reliability and longevity. Whether for determining the quality of weld seams in steel constructions or sealants on anodised facade elements, testing tank coatings or aluminium airplane structures for fatigue – FISCHER's proven measurement technology is in demand.

#### FERITSCOPE® FMP30

A compact instrument for standards-compliant, non-destructive determination of the ferrite content in austenitic welded products and in duplex steel. Using the magnetic induction method, ferrite content between 0.1 and 80% Fe or in the ferrite number range from 0.1 to 110 FN can be quickly and easily measured on-site.



#### ANOTEST® YMP30-S

The YMP30-S is used for testing sealants on anodic coatings on aluminium.

It measures the admittance according to standards and, due to its handy design, is ideally suited for on-site applications.



#### SIGMASCOPE® SMP10

For measuring the electrical conductivity of non-ferrous metals or non-magnetisable metals such as aluminium, copper and stainless steel according to the eddy current method.

Moreover, based on the measured conductivity, conclusions can be drawn about the hardness and strength of heat-treated materials. Heat damage and material fatigue can be determined as well.



#### POROSCOPE® HV40

For finding pores and defects, cracks and inclusions in linings and coatings made of enamel, paint, rubber and bitumen, also in containers made of GFK or other plastics.



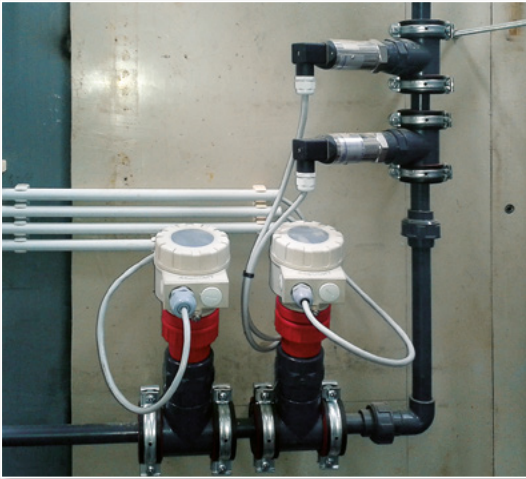
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## AnaCONT liquid analytical transmitters in the agriculture

### pH and electrical conductivity measurements in Portugal

**BRESIMAR Automação** was founded in 1982 exactly in the same year as **NIVELCO**, so both companies have more than three decades of experience in the field of industrial automation. We are representing **NIVELCO** products in Portugal for almost 20 years. Our headquarters is located in Aveiro, only 80 km south of Porto, close to the Atlantic Ocean seacoast.



In the southern corner of Portugal in Faro city the pumping station of greenhouses use **NIVELCO** manufactured liquid-analytical instruments in the irrigation system thanks to **BRESIMAR**. The liquid what is used for irrigation – for the plants produced in the greenhouses – is a mixture of water and fertilizers which requires continuous measurement of level, pH value and electrical conductivity.



The applied units are the following:

- **AnaCONT LCK-232-2**  
mini compact EC transmitter – 2 units
- **AnaCONT LGP-121-2** compact pH transmitter +  
LAP-120 probe protection tube – 2 units
- **NIPRESS DRC-432-2** hydrostatic  
level transmitter – 2 units

In case of greenhouse plant production the irrigation system is very important to provide the suitable components with well-chosen intensity of irrigation and fertilizing. The tanks of the fertilizer dosage system contain soluble fertilizers dissolved in water which is pumped into the mixing tank, where it is diluted with water, and then sprayed to the crops. The optimal concentration of the water diluted fertilizer is continuously checked redundantly by two **AnaCONT LCK** mini compact electrical conductivity transmitters and two **AnaCONT LGP** compact pH transmitters equipped with **SAP-300** graphic displays. The water amount to be mixed with the fertilizers is measured with **NIPRESS DRC-400** series mini compact hydrostatic level transmitters mounted on the input pipe-network.

The transmitted 4-20 mA measurement values of the **NIVELCO** instruments are handled by a process controller computer which is responsible for the entire process control of the irrigation system.



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## Using green energy in the water treatment process

### Water and wastewater measurement in Brazil

The Brazilian **NIVETEC Instrumentação e Controle** is the most successful distributor of **NIVELCO** for many years. In 2014 people from all over the world focus on Brazil not only for the FIFA World Cup, but also for the upcoming Olympic Games held in 2016.

This way it is not a big surprise that the number of infrastructure investments just growing and growing throughout the country. One example is the modernization of the wastewater treatment plant in São Paulo State, (the south-eastern part of the country) in Pinhalzinho city. The instrumentation task was to provide automatic flow control system at the inlet and outlet of the sewage treatment plant allowing storage and collection of data with notebook. In accordance to the customer requirements the system should use 'green' power, without producing waste of any kind and therefore not polluting or assaulting the nature meeting the Environmental Management Policy of SABESP.

Main features of the realized measurement system:

- Security against vandalism
- Specifying the most suitable channel for the accuracy required
- Autonomous Power System
- Flow Measurement System with Data-Logger
- Low cost solution and maintenance
- Possibility of expanding the measurement system with more instruments and integrating into a process control system



Two **EchoTREK SGP-380-3** type 2-wire ultrasonic level transmitters – featuring logging capability – are parameterized to perform open channel flow measurement. Both units measure the instantaneous flow rates and also the total flow values, one with the help of a Parshall flume at the inlet side and one with the help of a V-notch weir at the outlet side.



The Parshall flume at the inlet side of the wastewater treatment plant is surrounded by a small 3 meter (10 ft) high brick house with the area of 3x2 m (10x6.5 ft). On the top of the building there is a solar panel with orientation to the north at the optimal 23° angle providing the required 'green' energy for the measurement equipment. At the outlet side there is an outside V-notch weir made from concrete which is surrounded by high metal railings. The installed ultrasonic level transmitter also comes with a solar panel, which is also installed on top of a small brick building, hiding the electronics for the solar panels.



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## Instrumentation for hydroelectric power plant in Latvia

### NIVOPRESS N submersible transmitters measure the river water level

The company **ZTF Lasma** is a very important player in the industrial automation segment in Latvia. Our company is already more than 20 years old having even longer experience in this field. Our headquarters is located in the capital city Riga where our young and agile team is dealing with a wide variety of the industrial areas along with representing **NIVELCO** and its products for more than 10 years. The company has highly qualified employees which help not only to sell and produce the automation devices, but we are also able to provide the required knowledge, which is important for the customers. Historically water in all of its forms is very important for Latvia. The seacoasts and the Daugava River, that splits it in two parts as transport ways, small rivers and lakes for food and nature. Also for economics it is important, because there are a lot of hydroelectric power plants, which produce the so-called "green energy".

Lasma is also in this part of market with different kind of solutions to control these processes. The town of Bene is located in the western part of Latvia and there is the Auce River which is used in the local hydroelectric power plant. Thanks to Lasma the installed measurement equipments are **NIVELCO's** hydrostatic submersible level transmitters:

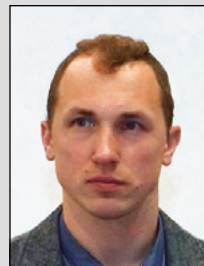
- NIVOPRESS NPD-42-05 – 1 unit
- NIVOPRESS NPK-42-05 – 2 units
- NIVOPRESS NAW-104 sewage adapter – 3 units



The **NIVOPRESS NPK-400** series level transmitters provide important river level and temperature information to the power plant. The units are connected to the central switchboard to control the equipments of the plant. Usually there are 3 sensors for one plant or turbine, because it depends on the water inlet channels.



The first sensor is installed in the upper part of the river, in front of the inlet filter – bars, to get the actual information about water level. The second sensor is placed right after the filter – bars, to get the actual information about the water level after the bars, to check if they are clean enough and the water can freely flow through them. This is also an important signal for operators at the switchboard to clean the filter – bars. The third sensor is installed downstream to control the level of the river after the plant, to protect it from low or high level, which can destroy some flora and fauna. These three sensors together are like three "hands" for the PLC, to check the actual level and control the power plants' "heart" – turbines with generators and inlets sluice. The applied units have two-meter ranges and all of the units are equipped with **NAW-104** sewage adapters protecting the piezoresistive stainless steel membrane from the possible solid particles of the water. The probes are installed in plastic pipes, to protect them from some physical damages or ice in winter time. The incorporated temperature sensor in the **NIVOPRESS NPD** type unit is giving actual information about temperature in the river, which also in some cases is forwarded to general accounting system. This system is public and shows actual level and temperature for almost all of the biggest rivers in the country.



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## NIVELCO instruments on the military base in Afghanistan

### WWTP Effluent Flow Measurement and Chemical Injection Pacing

The **Aqua Technology Group LLC** is an experienced representative of **NIVELCO USA LLC**, representing **NIVELCO** products in Ohio, Kentucky, Indiana and West Virginia. ATG has had a working relationship with ECCI-Afghanistan engineering company thanks to their experience with bulk fuel level transmitters.

Due to this relationship they were contacted when one of their contacts had an urgent need for open channel flow measurement, because the contractor had neglected to include that equipment in the package. When ATG were contacted they were in the final stage of sign off and the construction almost finished.

The instrumentation project's most interesting aspect for the American (and of course for the European) eyes was the installation place which is the 215<sup>th</sup> Camp of the ANA (Afghan National Army) at Shorabak city in Helmand Province, Afghanistan.



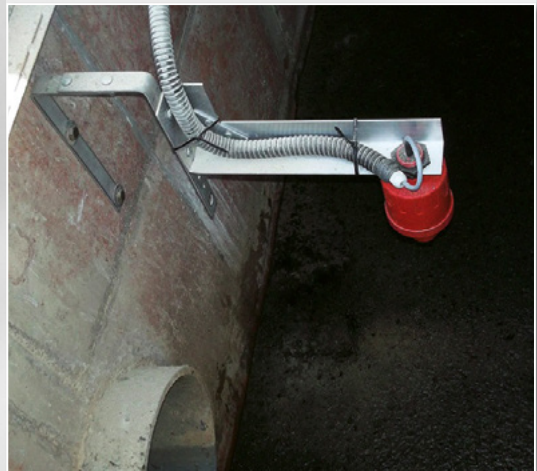
#### ■ NIVELCO durability and Aqua Technology Group's Rapid Response Programming Setup

Of chief concern in this application was operational durability. The first challenge here was that the client had an existing Grundfos chemical feed setup that did not have any of the proper flow pacing equipment. While this application is fairly simple, the second challenge was that the technical team had already left the site and the project manager and locals were all that was left to install the level measurement instruments.



The wastewater treatment plant is to be operated and maintained by Afghan National Army personnel, which means that the equipment has to be easy to operate and durable in a difficult environment.

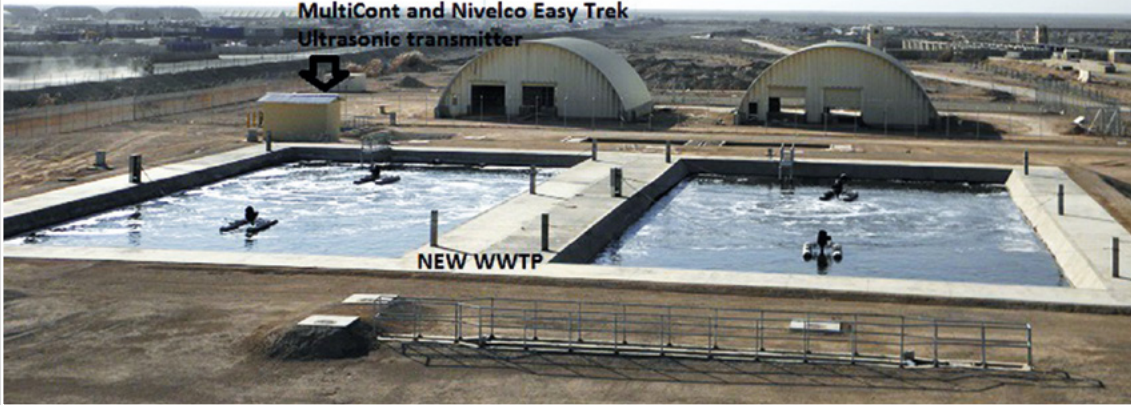
We discussed via Skype the situation and after several photographs of the location designed a simple solution using an analog to pulse controller that we could acquire locally and integrate with **NIVELCO's MultiCONT** controller and **EasyTREK** ultrasonic level transmitter we had in stock. **NIVELCO's EasyTREK** was selected due to the IP68 rated construction and long durability in many other field installations that Aqua Technology Group has completed over the years.



## NIVELCO instruments on the military base in Afghanistan

**ANA 215TH CAMP SHORABAK NEW WWTP LAGOONS**  
built adjacent to Camp Leatherneck, Helmand,  
Afghanistan 2014

Shorabak Chlorination with the  
MultiCONT and Nivelco Easy Trek  
Ultrasonic transmitter



### ■ Open Channel Flow Measurement with Ultrasonic Level Transmitter

NIVELCO representative Aqua Technology Group provided a new ultrasonic flow meter and level measurement solution using the durable EasyTREK SPA-39N-4 type ultrasonic level transmitters with the MultiCONT PRD-214-1 universal display and controller. The system was pre-setup, wired and calibrated to read the flow across the weir and utilized the additional output of the MultiCONT to flow pace chemical injection at the final contact chamber with a pulse converter they provided to match the existing chemical injection pump.

### ■ Durability and Rapid Response

While the equipment was being assembled, ATG sent the instruction manuals to a translator so that the local operational staff would have complete documentation in their native language, took final measurements and fabricated a mounting bracket that would meet the installation needs. ATG then assembled, programmed and tested the units, boxed as a single shipment and arranged for drop off at the closest AFB for delivery.

The flight occurred the next day and by the end of the week, the unit was installed and fully operational, with local sign off happening just a day after installation.

Because Aqua Technology Group kept stock of a MultiCONT and EasyTREK, they were able to work with the project manager to provide detailed installation drawings and overnighted the equipment to the base, instead of the typical 6 weeks. This meant the greatest success, since the project manager was able to come back home that same week.

Count on NIVELCO and Aqua Technology Group LLC to provide a durable and time sensitive solution for all your flow meter and challenging wastewater applications.



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## Level Measurement of Sulphuric Acid in the Czech Republic

### MicroTREK level transmitters in the chemical plant

One of the most well known and widely used acids is undoubtedly the sulphuric acid ( $H_2SO_4$ ). It is one of the most important commodity chemicals in the Globe for its huge utilization in various industries like chemical, pharmaceutical, textile, petroleum, water, plastics and many more.

There are various ways how to manufacture  $H_2SO_4$  and our customer as one of the major producers of chemicals in the Czech Republic uses the so-called contact manufacturing process. The final product of this contact process is oleum ( $H_2S_2O_7$ ), also known as fuming sulfuric acid which is a colourless, odourless and high density acid which is fuming at room temperature. This chemical is actually the key element of the manufacturing process because the concentrated sulphuric acid is produced when oleum is diluted with water.

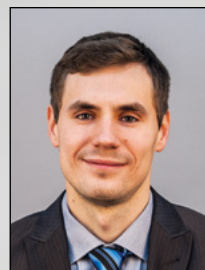
**NIVELCO Bohemia** was asked to suggest a continuous level measurement solution for the mixing tank where oleum is diluted with water. The conditions in the tank were very challenging. There is the very aggressive atmosphere with strong fumes added with level fluctuations and not to mention the high humidity. The tank shape is cylindrical with more than 12 m (40 ft) diameter and 12 m (40 ft) height. Despite **NIVELCO**'s wide portfolio of continuous level transmitters, there are only several methods to be suited in such case. Considering the aggressive atmosphere, the selected transmitter should be well protected against aggressive fumes and also should be able to measure reliably and with high accuracy in this harsh environment. Our choice was to use **MicroTREK** Guided Wave Radar level transmitter with full PFA/FEP coating including probe and flange.



### The detailed technical specifications of the selected MicroTREK HBM-513-4 type:

- 2-wire guided microwave radar level transmitter with plastic coated flexible cable probe
- Ø4 mm (0.15 inch) diameter 1.4401 stainless steel cable with full FEP coating
- Cable counterweight with PFA coating
- Probe length: 13m (42.5 ft)
- Housing material: plastic (PBT)
- Power supply: 18...35 V DC
- Local indicator: SAP-300 graphical plug-in LCD display
- Output: 4-20 mA + HART
- Process connection: DN50 PN25 flange with PFA coated wetted parts
- Ingress protection : IP 67
- Operating temperature : -30°C ... +90°C (-22 °F ... + 194 °F)
- Operating pressure : max. 1.6 bar g (232 psi g)

The **MicroTREK** level transmitters based on the TDR (Time Domain Reflectometry) principle are excellent choices for such chemical applications since this technology is less sensitive on fumes and vapours. The units are also perfectly protected against any chemical reaction because all parts are covered with PFA/FEP coating providing long-term reliable level measurement. Our customer was satisfied with our solution and services and **NIVELCO** has once again proved its high quality products and customer orientated services.



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## EasyTREK transmitters measure radioactive liquids

### Department of Radiology – University of Pécs, Hungary

In the medical practice – like in the University of Pécs – slightly radioactive materials are used in many diagnostic procedures. These slightly radioactive materials especially iodine are used to “paint” the liquids or any parts of the human body, this way the painted parts became visible for the X-ray diagnostic equipments.



These slightly radioactive materials are depleted after the tests from the studied subjects for example with the urine, which is then collected into containers. Of course the storage of these radioactive materials should meet very strict requirements. Our partner, the **Vantacid Kft.** supplied a container system consisting of 7 tanks for the University of Pécs. Since the containers are placed in radiation hazardous location, the installed units should be highly reliable and should be operated without human intervention.



For continuous level measurement in the radioactive liquid storage tanks the **EasyTREK SPA-380-4** type integrated ultrasonic level transmitters were chosen. The **EasyTREK** has been already tested under radioactive environment since these level transmitters are operating flawlessly for long years in the only nuclear power plant of Hungary in Paks city. The remote programmable transmitters using HART communication provide easy configuration possibility from outside the radiation hazardous environment if needed.

The fully automatic tank system consists of one distribution tank and six storage tanks. The level proportioned 4-20 mA current outputs of the transmitters are processed by a central PLC. The radioactive wastewater can be let out into the canal system only after the expiry of the half-life. The most important requirement is the security, this is why the tanks are closed in the bottom as a dry-run protection. The emptying is done by submersible pumps which are controlled by the PLC based on the ultrasonic level measurement.

The complete system is now under real operation since it successfully passed the intensive test operation phase.



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## NIVELCO devices in the WWTP in Romania

### Waste Water Treatment Plant in Borszék town

In the last 5 years in order to develop the environmental sector in Romania the ESOP (Environment Sector Operational Plan) provided around 4.5 billion EUR from the European Regional Development and the Cohesion Funds. The general objective of the plan is primarily to improve the citizens' standard of living, secondly to improve the compliance of the environmental regulations, and thirdly to accomplish the requirements of the EU accession commitments in terms of compliance with environmental laws.



The investments are focused for the enhancement of the water and wastewater network which is materialized in newly built waste water treatment plants and modernizations of the older facilities. The beneficiaries of the projects were the regional water companies. Realizing the great opportunity for the Romanian subsidiary of **NIVELCO** we took part in several modernization projects of small water treatment plants throughout Romania. The **NIVELCO** manufactured level switches, continuous level transmitters and the liquid analytical transmitters met all requirements of the instrumentation projects. The small water treatment plant in Borszék town is one of the modernized facilities which has been equipped with the following **NIVELCO** devices:

- **EasyTREK-SPA-380-4**  
integrated ultrasonic level transmitter (4 units)
- **MultiCONT-PEW-215-1** multichannel  
process controller (2 units)
- **NIVOSONAR-GPA-1P5-4** Parshall channel (2 flumes)
- **AnaCONT-LGD-121-2** dissolved oxygen  
transmitter + extension accessories (2 units)
- **AnaCONT-LGP-111-2** pH transmitter + extension  
accessories (1 unit)
- **MICROSONAR-UTP-211-4** ultrasonic proximity  
transmitter (1 unit)
- **NIVOFLOAT-NWP-110** float level switch (5 units)



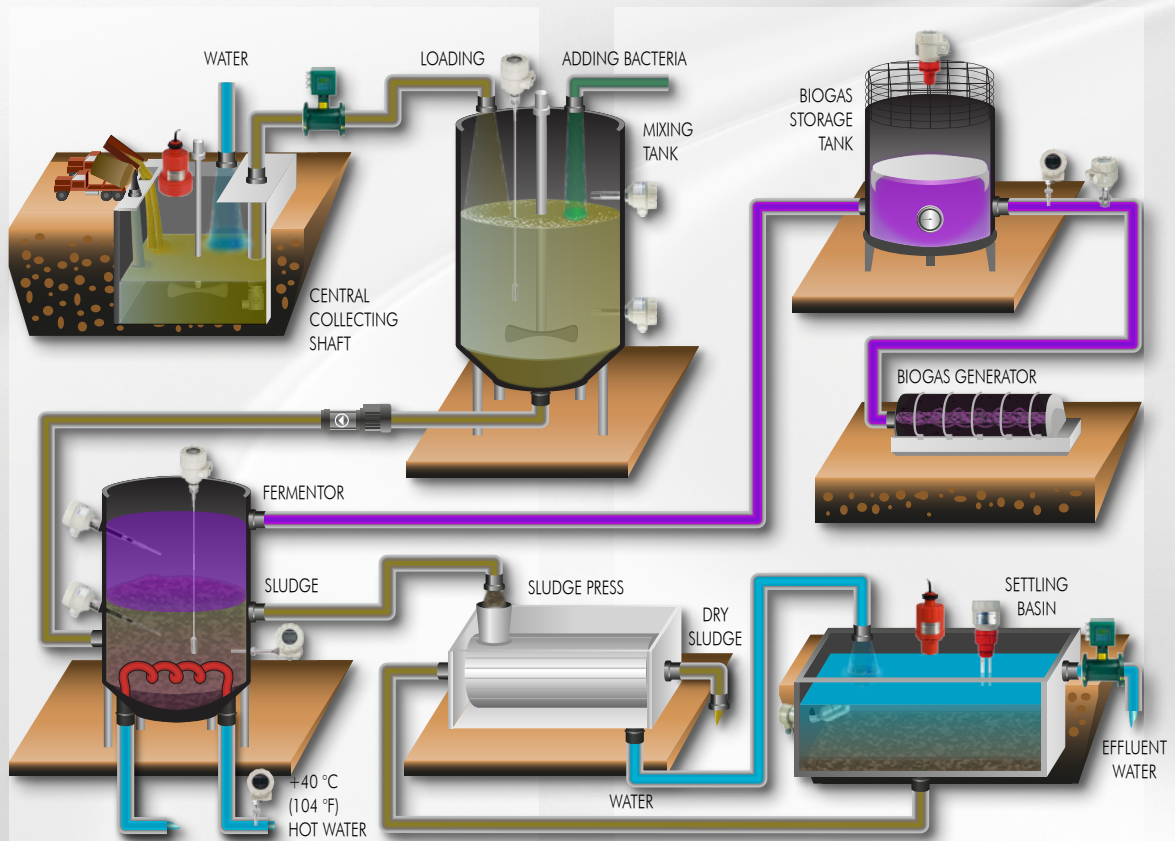
The **MICROSONAR** ultrasonic proximity transmitter is equipped in the primary treatment process where the mechanical cleaning is done with sedimentation equipments such as screens, filtering the larger floating particles and separating the contaminations physically from the water. The **AnaCONT** dissolved oxygen transmitters are used in the secondary, biologic treatment process where the organic materials are degraded anaerobically (without oxygen) by microorganisms. Here the **AnaCONT** transmitters measure the oxygen concentration and controls the air diffusers. Two pools of the biological treatment process are measured by IP68 rated **EasyTREK** integrated ultrasonic level transmitters. The **AnaCONT** pH transmitter controls the chemical feed in the tertiary treatment process where the end-product of the biologic process, the inorganic materials (e.g., nitrates, phosphates) are removed. The inlet and outlet water is measured by an open channel yield monitoring system consisting of two **Parshall** flumes, two **EasyTREK** ultrasonic level transmitters and a **MultiCONT** multichannel process controller. The **NIVOFLOAT** float level switches are responsible for providing high alarm switching in all process steps. The instrumentation of the water treatment plant operates flawlessly for more than one year and the main contractor ordered recently more **NIVELCO** instruments for similar facilities.



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## Biogas production



Biogas can be obtained by anaerobic fermentation from this kind of organic biomass. The targeted processing of the biomass results valuable gaseous fuels such as biogas which is the most important one.

### Other sources of the biogas:

- Agriculture by-products
- Food & beverage industry by-products
- Crops, plants produced for biomass
- Organic parts of the communal wastes

The process instrumentation chart illustrates the most important and the most frequently used biogas production process, where the source material is animal generated organic manure. The incoming livestock manure includes farmyard manure and farm slurry which is transferred with trucks from the livestock farms.

The manure is collected in a closed shaft made from concrete where it is diluted with water and mixed into liquid state to be pumped.

This mixture is pumped into a mixing tank where microorganisms, so-called methanogens are added which allows the fermentation biochemical process by digesting the high-molecular organic materials.

This fermentation process is done in the fermentor tank where biogas is produced and the remaining material is watered sludge. The biogas is transferred into the floating roof biogas storage tank and then burnt in the biogas generator.

The remaining sludge gets dehydrated by a sludge press and then dry sludge is transported from the plant. The water coming from the sludge press contains organic materials so it is pumped into a settling basin.

The settling sludge is gathered in the bottom of the basin and transferred back to the sludge press. The process starting from the fermentor tank is entirely classified as hazardous (Ex) environment.

## Biogas production

### Process instrumentation:

- **Central collecting shaft:**  
Continuous level measurement is performed with **EasyTREK SPA-360** or **EasyTREK SPA-340** ultrasonic level transmitters depending on the measurement range.

Flow metering of the liquid manure is done with **ISOMAG** electromagnetic flow meters.

- **Mixing tank:**  
**MicroTREK HTN-400** series Guided Wave Radars are recommended for continuous level measurement and **NIVOSWITCH RFM-400** series vibrating fork level switches are recommended for low / high fail safe indication.



- **Fermentor:**  
Continuous level measurement with **MicroTREK HTN-400 Ex** certified Guided Wave Radars.

Level switching of the foam is done with **NIVOCAP CKV-100 Ex** type units.

**THERMOCONT TBJ-500 Ex** temperature transmitter with "C" head position measures the temperature in the fermentor.



- **Biogas storage tank:**  
The level of the floating roof tank is measured with **EchoTREK SGB-300 Ex** type ultrasonic unit.

The pressure of the biogas is measured with **NIVOPRESS DTF-500 Ex** type hydrostatic pressure transmitter.

- **Settling basin:**  
Continuous level measurement is performed with **EasyTREK SPA-360** or **EasyTREK SPA-340** ultrasonic level transmitters depending on the measurement range.

**AnaCONT LGP-100** type pH transmitter measures the pH of the water.



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# NIVELCO an instrumentation expert



## Analytical product range

AnaCONT liquid analytical transmitters even with PVDF probe housing!

- pH
- Conductivity
- Redoxpotential
- Dissolved oxygen

### Applications:

- Water and wastewater industry
- Pharmaceutical industry
- Chemical industry
- Food and beverage industry

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