



WAY of life



edition

43

May 2019





tbp 2.0

A great deal is currently changing at the same time at tbp. A brand-new production line is operational, as well as a new flying probe tester and extra towers for the SMT component storage. This was a great opportunity to immediately tackle the reorganisation of our production floor. And in the same weeks, the expansion of our annex on the Watertoren was also completed. This has two production lines, which we can use to manufacture small series and prototypes.

Directly after this, the relocation of our test engineering team in Eersel to the Brainport Industries Campus in Eindhoven had to proceed at full speed. We devoted time and effort to a new stand for the Electronics & Applications trade fair, and we'd really like to meet you there for a chat! A quick glance at our employee records showed that we have 25 new staff and yes, that means it's high time to add 1,000 extra square metres to our production facility on the Vlakhodem. Thanks to Kees, our facilities manager, the permit has already been issued,

and the tendering phase has also been completed successfully.

Alongside this, the update to our corporate identity will not have gone unnoticed. Last but not least ... we have a new COO, in the form of Patrick Akkermans. He replaces a living fossil who is still present. You can get to know Patrick in this newsletter (which, by the way, we also found time to write).

And is all this necessary? Of course it is! In fact, it's all going much too slowly. tbp wants to make progress, and become even better at everything. We must be properly prepared for what is to come: major changes in the manufacturing industry, which will not stop with industry 4.0. First of all, we will now prepare for the coming AS9100 audit and the uptoooling of our organisation. Plenty of challenges!

How far have you got?

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aerodynamics and teamwork: the focus points for DUT19

visual of the DUT19

Aerodynamics is once again in the spotlight. By concentrating on this, the Formula Student Team Delft hopes to achieve a strong performance at the German track in Hockenheim. A team of around 80 students are building the DUT19, thanks to the contributions of tbp and other sponsors. The racing car competition is a fantastic testing ground for learning.

'Expanding into new areas is my personal goal', explains team manager Jelmer Blom. Having earned his bachelor's in physics, he is now fully focused on the construction of the electric vehicle. 'Last year I was part of the construction team. I was unexpectedly approached for this job. The group dynamics are very interesting. In my eyes, it's mostly about the structure: making clear who does what, and bringing everything together. With 18 nationalities and 17 areas of study, that's quite a challenge.'

team spirit

'It must be fun for everyone to take part: then the result will come itself. We organise a team evening after each design phase, and we eat lunch and dinner together. In this way, we develop our team spirit. As the team manager, I regularly tour the workplace to check how things are going with everyone personally.'

"you only have this opportunity once"



team manager Jelmer Blom

The core team members work sixty to seventy hours a week. I make sure we don't exceed our limits.'

unique opportunity

Based on the ideal aerodynamic scenario, the students came up with a different chassis shape, which in turn affects the design of the rear. The alumni help to assess their decisions. tbp also assists the students by analysing their electronic design and giving feedback. Their sponsorship also includes the production and supply of the printed circuit board assemblies (PCBAs).

'The Formula Student Team Delft last won in Hockenheim in 2015. That's why we're extra motivated this year. We're also racing on the tracks in Assen, Hungary and Austria. It's a learning process for us all, you only have this opportunity once!'

www.fsteamdelft.nl



tbp moves to the top campus for

In April, tbp's test engineers moved into a modern facility on the Brainport Industries Campus in Eindhoven. Here, high-tech manufacturers join forces to innovate together and to enhance their collective competitiveness.

Moving to the first industrial unit is only the start. A total of five industrial units are included in the plan, and the interest at home and abroad is growing. Innovative suppliers, specialised companies and engineering education and knowledge institutes are moving here to contribute to knowledge exchange and innovation. They are able to take advantage of the shared facilities, such as a business centre, flexible production areas, warehouses and central catering.

exchange

'It's a very attractive region', explains managing director John Blankendaal of Brainport Industries, the cooperative of high-tech suppliers in the Netherlands. 'Universities, colleges and secondary schools are located nearby or offer their engineering courses on campus. This helps to create fantastic interactions between learning and practical environments. The site is also

ideal for our [innovation programme](#), which will offer field labs for testing our technological developments in practice.'

accessible and green

The campus is very easy to access from the A2/N2 and Eindhoven Airport. Good public transport connections have been provided. The province and municipality are also working hard to adapt the infrastructure.

The site will be given a beautiful 'green' makeover as part of the Brainport Park urban park initiative. Green also means sustainable. The guiding principle is that the environmental impact should be kept to a minimum. The objective is to make the campus completely energy neutral, which includes installing solar panels on the roofs of buildings.

**“your high-tech
open supply
network”**

The Brainport Industries Campus is a partnership between the province of Noord-Brabant, the municipality of Eindhoven, Brabantse Ontwikkelings Maatschappij (BOM), SDK Vastgoed and the Brainport Industries cooperative.

www.brainportindustriescampus.com
www.brainportindustries.nl



high-tech manufacturers



team tbp test engineering



campus of the future

"Through partnerships between companies and institutions, and the use of common services and facilities, a unique location for innovation and high-quality production emerges."

Edwin Wolterink,
CTO of Anteryon WaferOptics

anteryon.com



face of high-tech manufacturing industry

"At this location, the high-tech manufacturing industry is really in the spotlight; not just nationally, but also internationally. We also moved to the campus, and became 'part of the BIC picture'. The partnership between companies, educational and knowledge institutes creates new business models, which give us all an advantage."

Edward Voncken,
CEO of KMWE

www.kmwe.com



automation and robotisation

"On the campus, we are closer to our customers, which makes communication quicker and easier. We are also very interested in the field labs initiated by Brainport Industries, particularly those related to the production process. Our aim is to make our process as good and fast as possible, while using automation and robotisation to keep human involvement to a minimum. An additional benefit of our relocation is that we now have over 400 m² of modern office space adjacent to the atrium. This also makes us a more attractive employer for young people. We are very positive about our new location."

Steven Van Hout,
team leader test engineering
electronics test development



from left to right: former alderman F. Tollenaar, Steef Visser, former alderman A.J. van der Vlugt and Jan Verhage from Rabobank Het Haringvliet

Smart Water makes new island connections

Five years ago, the province of Zuid-Holland predicted a fall in population on the island of Goeree-Overflakkee. Companies, government and education got together to develop the Smart Water vision. Their goal: creating sustainable economic growth with the water-related sector as the driving force.

“it's important to look beyond borders”

The initiators were the Federatie Ondernemers Goeree-Overflakkee (FOGO), the municipality, the province, Rabobank and the education sector. Steef Visser* is chair of FOGO and the Smart Water Steering Group. 'We want to reach our goal with a clear vision and a structured approach. This focus helps us to set up new partnerships and encourage innovation. With these, we expect to create around 1,600 new jobs by 2025.' Thanks to Smart Water and other developments, 1,300 new jobs have already been created in the past five years. This is a great result.

connecting examples

'Now we have a vision and strategy, we are bringing together as many stakeholders as possible. And that's exactly my role', explains Marlies

Mulder**. 'At nine crossing points, representatives from business, government and education work with topics such as water and life, water and food, water and energy from a technological perspective. We position ongoing projects that fit within our frameworks within these crossing points, such as hydrogen development and tidal energy. This in turn leads to new initiatives.'

One great example is Technieksucces, which aims to generate enthusiasm about technology and robotics among young people. During the lessons, the children find out about programming, controlling robots and virtual reality headsets. The teaching material has been developed with the help of sponsors such as tbp.

'With knowledge development on the island, we make it interesting for young people to stay here', explains Marlies. 'I really admire the municipality's recruitment strategy of bringing back former island residents to Goeree-Overflakkee by offering them jobs with the municipality.'



* Steef Visser is CEO of Visser & Visser Accountants Tax Advisers

** Marlies Mulder is director of De Zakenpartner - intermediary between government and business

ambitious target

'We are talking to other partnerships, such as the Energie Coöperatie, the Energieke Regio and Paulina.nu', adds Marlies. 'Smart Water creates mutual support networks. For example, fitters develop their hydrogen knowledge together, and companies discuss collective energy generation and distribution on industrial estates. Goeree-Overflakkee aims to become the number one knowledge centre for water-related subjects.'

'Our ambitious target focuses on the long term; it's important that we look beyond the borders of time and possibilities to take major steps', emphasises Steef. 'The education sector has been brought on board to safeguard the future of knowledge development on the island. We need everyone to reach our goal.'



Steef and Marlies also praise tbp's commitment, which includes this article about Smart Water. 'That deserves a compliment!'

fo-go.nl/smart-water



energetic steps

Encouraged by the Climate Agreement, Goeree-Overflakkee has a sustainable ambition: to be completely energy neutral by 2020. Companies, government, schools and social organisations are initiating projects such as Energie Coöperatie 2.0. Jacob Herrewijnen is the contact person and CSR expert at tbp.



The goal of this partnership is to keep the production and storage of sustainable energy on the island. Hoeksche Waard is also on board. The cooperative brings together local producing and consuming parties and realises common storage capacity. Shortfalls are made up and surpluses traded via an online trading platform, which generates money for social projects on the island. Thanks to a

subsidy from the province and municipality and the financial support of Rabobank, Energie Coöperatie 2.0 will start this year. tbp actively contributes ideas to this initiative.

In addition, tbp continues to take its own sustainable steps. In 2017 and 2018, annual energy savings of 10% were achieved thanks to the Energy Reduction Plan. The same target

applies to 2019. Between the relocation of lines 3 and 4 and the coming of the new line 5, LED lighting was installed in the production hall, annex and warehouse. The offices will follow this year. The number of charging points for electric cars will also be expanded with two fast chargers. This increases the total to six.

'early supplier involvement is tbp's great strength'

'By supplying high-quality printed circuit board assemblies (PCBAs), tbp consciously focuses on the specialist market segment', says Patrick Akkermans, the new Chief Operating Officer. 'In addition, there is a clear strategy of involvement in the earliest phase of development. This delivers a great deal of value for our customers.'

Patrick Akkermans (54) joined the tbp management team on 1 November. His first priority is the continuity of the business. Early supplier involvement, the self-developed extended boundary scan test solution and the growing market are leading to an increasing number of orders for tbp, while the worldwide demand for components is under pressure. An extra production line has since been commissioned, and he is also taking a fresh look at the internal organisation to help us face the future with confidence. He will eventually succeed Ton Plooy as CEO of tbp.

people person with perseverance

Patrick describes himself as interested in what moves people and ready to make great efforts to achieve results. He also takes the time to unwind. 'I live with my wife and three daughters in Burgundian Brabant, and so it's no surprise that I love carnival, cooking and good food. I also enjoy discovering other cultures, which I have been able to do a lot thanks to business trips across the world.'

Philips and Kipp

'At Philips, I was responsible for the sales and marketing of PCBAs; we were a direct competitor of tbp. Ton Plooy's innovative approach already caught my attention back then. At one of the Philips trade fair stands, we presented

pick & place machines, and Ton bought one there and then. With a prominent 'purchased by tbp' sticker, he made sure his company was visible for many stand holders and visitors! I later worked for around 12 years as commercial & operational director at Kipp & Sons, which supplies instruments to measure solar radiation.'

'Following a tip halfway through last year I approached Ton, and we soon reached agreement. The clear strategy at tbp appeals to me. I'm also a perfectionist in the sense of setting up structures to get things right first time.'

future perspective

'When I left the PCBA market in 2004, there was also a shortage of components. In that respect, not much has changed. However, the machines are much faster and more accurate, and the Industrial Internet of Things is here to stay. We will continue automating our processes until we achieve a lights-off factory without the human factor. At the same time, we need highly-qualified staff to manage the increasingly complex processes. With regard to connectivity, we expect our suppliers to take their share of the responsibility.'

early involvement, highest value

'Early supplier involvement is another important way of dealing with the component shortage. If customers share their product design with us openly, we can respond with selected preferred components, in partnership with our suppliers.

With our DfX analysis*, we help customers perfect their PCBA designs in terms of manufacturability, testability etc. This gives them the highest product value and the best 'value of ownership'. And that's something I want to contribute to.'



[linkedin.com/in/patrick-akkermans](https://www.linkedin.com/in/patrick-akkermans)

*DfX = Design for eXcellence



***"tbp's clear
strategy appeals
to me"***

capacity expansion with extra line with

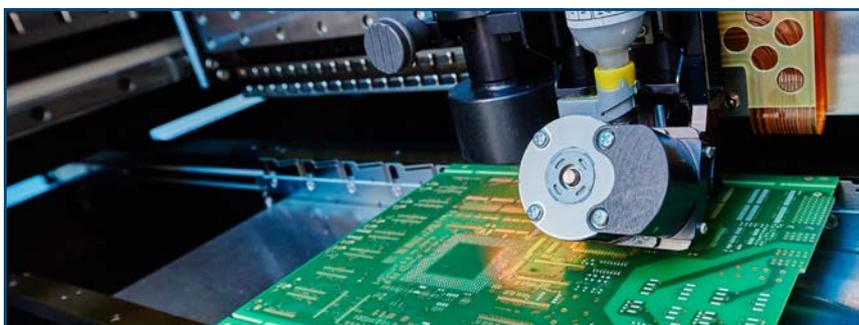


Klaas van Duin

tbp has answered the growing demand for printed circuit board assemblies (PCBAs) by investing in an extra state-of-the-art production line. This has been operational at our main location in Dirksland since October. At the same time, the overall production process has been further optimised thanks to smart improvements.

The new line 5 is identical to production lines 1 and 2, but the latest technologies ensure a modern range of equipment and an even more efficient process. Thanks to the efforts of many tbp staff and equipment partners, the new line was constructed in a very short time and is now operating in two shifts.

This has resulted in a considerable increase in capacity. Combined with other modifications, tbp can continue to offer the same supply reliability, despite growing demand. A look behind the technological scenes...



flexibility in paste printing

The new paste jetter (MY700) can, just as the previous generation, apply the solder paste to the PCBs in multiple layer thicknesses (3D paste printing). By adding an extra jet nozzle, paste and adhesive can be combined in a single production stage.

The arrangement of the paste jetter and screen printer also offers a great deal of flexibility. Further improvements include a larger jet nozzle and a smaller machine area.

A buffer tower after the solder paste inspection machine (SPI) provides storage for jetted and/or screen

printed boards. This means that jetting and screen printing can continue even if the pick & place machines are not operational. In addition, it is possible to set up the screen printer for the next product while the production of the previous product continues with the buffer stock. This allows the assembly of components to proceed uninterrupted. The new machines and smart software also make it possible to optimise the machine planning and 'family kits'. Family kits are batches for multiple (similar) projects that have a component overlap.

accurate assembly with digital positioning

In the latest generation of pick & place machines (MY300), the centring mechanism with electrical verification unit has been removed, which makes the machine shorter.

The optical verification unit (now part of the Y axis) takes over all verification of the correct components.

Following a short transition period to adapt the database to this, placing components will proceed even more rapidly and accurately.

space for the new line

To make space for the extra production line, lines 3 and 4 for small series and prototypes have been relocated to the tbp annex on the same industrial estate, 'De Watertoren'. The manufacture of complete housings takes place on the upper floor.

latest technology

Depending on demand, we install the PCBAs in modules and cabinets, or take care of the entire box build. This includes cables, connectors, card readers, batteries, cladding, manuals and any software. This equates to custom designs.

The temporary clearing of the production floor was an opportunity to reorganise the test department. This was recently expanded with an extra flying probe tester and three extra base stations (now six) for the extended boundary scan test solution. This is the most effective and efficient option, which we developed in-house to automatically detect faults in PCBAs. We advise customers on the best test strategy as part of our early supplier involvement, which helps them to perfect their PCBA design (Design for eXcellence, DfX).

plug & play

Senior maintenance engineer Ronald Willemse spent weeks laying, moving and expanding connections for electricity, data and air. 'Workspaces had to be temporarily moved to access these, but everyone was very flexible. Lines 1 and 2 could continue operation without interruption, and lines 3 and 4 were only out of service for a few days. We had prepared so well that all machines could be connected immediately. I'm really in my element with tasks such as this.'



Ronald de Jong

optimising in software

Communication between the machines is crucially important for the production process. As our technical application manager, Ronald de Jong prepared the software for the new line. 'This means all available connections between the machines and the control processes around them. We wrote a program to automatically compare the component information, so that we can use existing comparable information packages instead of creating new ones every time. We expect to receive these digital packages from our suppliers in the future.' In addition, the technical application managers write the software that allows the entire control process for each product to be set up at once in advance, so that this no longer needs to be done for each machine. The new generation of machines makes this possible.



Raymond Hokke

even more accurate inspection

Immediately after the paste is applied, the 3D solder paste inspection machine (SPI) checks that the right quantity has been applied correctly. Before soldering, the automatic 3D optical inspection machine (AOI) checks that the correct components are in the correct place (pre-reflow) and also that the soldering process has proceeded correctly after soldering (post-reflow). 'Inspections by the latest generation of machines are even more accurate, thanks to the higher camera resolution', explains Raymond Hokke. He is a test operator at tbp. 'As the communication between the AOIs and the SPI develops further (with the K-SMART software tool), we can continue to fine tune the inspection process for maximum product reliability.'



ASM 

smart thinking: the fifth production line at tbp electronics



MYCRONIC

'When designing this new line, tbp had two important priorities: uniquely high productivity and high technological value. Thanks to the arrangement of our new paste jetter, in combination with a screen printer, there is space to work with a wide range of components. The Add-On Technology of the paste jetter results in a higher first-pass yield. Our modern SMT assembly machine operates fully digitally. The number of possible changeovers per day is thus higher than before. This results in higher productivity. In addition, our machines provide full traceability thanks to the perfect integration with the MES operating system from tbp. By bringing the responsibility as the system integrator as close as possible, tbp has set a new trend.'*

Paul Roimans, managing director of Mycronic

* Manufacturing Execution System

mycronic.com



'Under tbp's supervision, the construction of the new line proceeded extremely smoothly and pleasantly. We supplied a loader to load the PCBAs automatically, conveyor belts between the machines, buffers to absorb cycle differences between machines and an unloader to collect finished PCBAs and PCBAs that require further processing. Thanks to the flexible and automatic setup options, these modern machines save time and money. Nutek is proud that tbp has chosen our latest Advanced series, which is suitable for inter-machine communication via the new Hermes standard. We are convinced that, with the latest technology, tbp will be able to manufacture flexibly and efficiently and is well-prepared for the future.'

Willy Soomers, area sales manager at Nutek Europe

nutek.com



'For W&S Benelux, this production line is certainly not a standard project. Industry 4.0, Hermes inter-machine communication and a closed loop for quality control are all present in this setup. We supplied tbp with the newest generation of SPI and AOIs from Koh Young, fitted with modern technology for even better inspection, and thus higher product reliability. At the same time, we are able to further expand our own system knowledge in practice. Our challenge is to make the information collected by the 3D inspection systems available for all systems and processes.'*

Ruud Bouwhuis, directeur of W&S Benelux

* SPI = Solder Paste Inspection
AOI = Automatic Optical Inspection

wsbenelux.nl



'Under tbp's supervision, with shared responsibility, we realised a capacity expansion with the latest technology in a short time. We will construct a demo area together at the forthcoming Electronics & Applications fair. This outstanding partnership between competing partners is unique in the Netherlands. I have a huge amount of respect for tbp's approach. Thanks to the clear, transparent communication, we were all able to act very rapidly. We supplied the latest Teknek PCB cleaner, ASM screen printer and Vitronics Soltec solder oven completely on schedule. For us, the partnership was very fruitful.'

Maurits van der Laken, founder and owner of Partnertec

partnertec.nl

real works of art in Dirksland



One thing is certain: tbp delivers works of art. Early supplier involvement perfects the design of printed circuit board assemblies (PCBAs) to allow customers to achieve top quality in all respects. There is also real art on the exhibition wall at our main location in Dirksland. AbrahamArt has supplied original works of international origin.

Bram Reijnders established this Eindhoven-based company 16 years ago. 'In our gallery on the Stratumsedijk in Eindhoven, we show a large contemporary collection of 'upcoming' and established artists from across the world', explains consultant Stijn Verstralen. 'Buying immediately or in phases, temporary or long-term loans and assessing on location with test hangings are all possible. In this way, we remove barriers for corporate and private customers.'

positive effect

'Companies such as tbp usually loan canvases so that they always have something new to admire. It has been proven that such elements increase people's mental well-being. Loaning works while accumulating credit to purchase the artwork is often also an attractive option. This means you don't need to make a final decision straight away, which is particularly valued by private customers.'

expressive and original

'At tbp, we recently hung works by the Brazilian artist William Malucu. They are very colourful and expressive. We create natural unity and help our customers to choose. Should the works create thematic or aesthetic harmony, or do they have other wishes? We usually bring along a variety of works, because seeing the original is very different to a digital image. There are plenty, because we are the largest gallery and art lender in the Benelux area, with almost exclusively original works. That is really unique.'



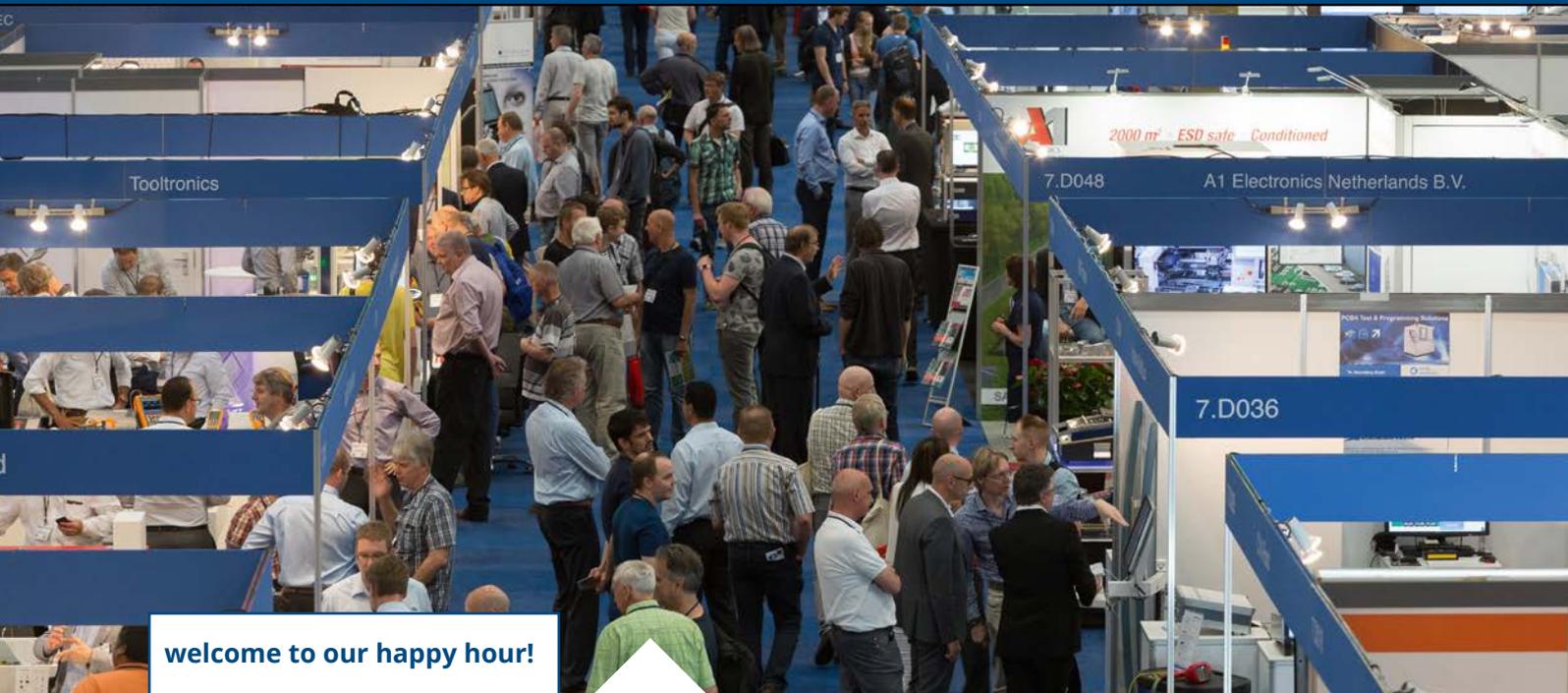
“art improves people's mental well-being”



AbrahamArt.com

You can see William Malucu himself at work on our website:

www.tbp.nl/nl/nieuws/echte-kunstwerken-in-dirksland



welcome to our happy hour!

On Wednesday 15 May from 17.00, together with our trade fair partners Eurocircuits (eurocircuits.be) and Romex (romex.nl) we will organise our friendly happy hour at our stand. Eurocircuits will serve Belgian beer on draft in partnership with Duvel Moortgat, and our very own Ineke and Hanneke will provide tasty snacks. You can also hear lively music from special guest DJ Thomm.



presentations and demos

Theme 'Smart Industry': a presentation from tbp about the best way to achieve a reliable (electronic) product by Marcel Swinnen, consultant test & DfX on 14 May at 10.55.

Visit eabeurs.nl for all interesting talks in the [conference programme](#) and for enlightening [demonstrations](#) on the exhibition hall floor about electronics and electronic applications.

meeting each other...

at Electronics & Applications: 14 to 16 May 2019

At the premier trade fair for industrial electronics in the Benelux area, tbp will present its work, as always, with early supplier involvement and Design for eXcellence. Visitors can learn about the latest developments at our informative stand in the electronics production cluster and the joint demo area.

The Federation of technology sectors (FHI) organises Electronics & Applications, which will take place in hall 7 of the Jaarbeurs in Utrecht.

Current topics will be covered in the conference programme and during demonstrations in the exhibition hall. The electronics production cluster includes the central demo area. The adjacent stand holders will show how printed circuit board assemblies are produced with working machines. This has traditionally attracted a lot of visitors.

multifunctional FlexKlok

In contrast to previous years, the show gadget will not roll off the demo production line. However, this time there is another interesting electronic application for visitors: the restyled FlexKlok. This has over 22 functions and can also be used after the fair. Electronics fans can adapt the functionality, thanks to the freely-accessible software.

Sponsors – participants in Electronics & Applications – made the development and production of the FlexKlok possible.

Visitors can sign up for the gadget when registering for the fair and collect it (if registered in advance) free of charge on any of the fair days from one of many participating stand holders.

ELECTRONICS APPLICATIONS
WWW.EABEURS.NL
 14-16 MEI 2019
 JAARBEURS UTRECHT



Electronics & Applications, Jaarbeurs, Utrecht

stand number tbp: 7B048

Opening times: from 9.30 to 17.30, entry is free if you have registered in advance via our website tbp.nl (see news).

eabeurs.nl

meeting each other...

at the Precision Fair: 13 & 14 November 2019

Around 300 specialist companies and knowledge institutes from the Netherlands, Belgium and Germany will show their wares at this trade fair for precision technology with around 4,000 visitors each year. *tbp* is also represented.



Precision Fair, NH Conference Koningshof Centre in Veldhoven

stand number *tbp*: 216

Opening times: from 9.30 to 17.00,
entry is free with advance registration via
the website precisiebeurs.nl.

a high-tech guided tour?

Of course, we would be very happy to meet you outside the trade fair events. Would you like to outsource your assembly to us? You are very welcome to call or e-mail us for a guided tour.

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our catering talent

*The sisters Ineke Vis (rechts) and Hanneke de Voogd-Vis, who both work at *tbp*, have been the driving force behind the catering at the *tbp* stands for many years.*

'I buy everything needed a few days before the fair, I know it all by heart', explains Ineke. 'Of course, we buy

the fresh ingredients on the day itself. We have our own stocks of glass, cutlery and pans. On the day before the fair, one of our drivers takes us to Utrecht so that we can set up the kitchen and the bar.

On the fair days, I work in the kitchen and Hanneke runs the bar. We attract a lot of visitors to our stand with our

fresh cakes with coffee each day, luxurious filled rolls for lunch and many tasty snacks to go with the evening drinks. It's always busy and fun, especially during our happy hour, when we have 300 guests! A lot of students visit us too. It's fun to do, and our previous catering experience comes in handy.'

meeting and sharing knowledge

This year, we are again taking part in various trade fairs and conferences to meet one another and exchange knowledge. A small selection of the fairs we will be part of:

■ **7 – 9 May 2019**,
Nuremberg, Germany
PCIM EUROPE
trade fair and conference on Power Electronics, Intelligent Motion, Renewable Energy and Energy Management
pcim.mesago.com

■ **7 – 9 May 2019**,
Nuremberg, Germany
SMTCONNECT
trade fair and conference on solutions for electronic assembly and systems
smtconnect.com

■ **14 – 16 May 2019**,
Jaarbeurs, Utrecht
ELECTRONICS & APPLICATIONS
trade fair and conference on industrial electronics
tbp stand number 7B048
fhi.nl/eabeurs



■ **28 – 30 May 2019**,
Parma, Italy
SPS ITALIA
trade fair and conference on smart and digital industrial automation
spsitalia.it

■ **12 – 13 June 2019**,
NH Conference Centre Koningshof, Veldhoven
VISION, ROBOTICS & MOTION
trade fair and conference on the future of humans and robots in manufacturing industry
vision-robotics.nl

■ **19 – 20 June 2019**,
RAI, Amsterdam
AI & BIG DATA
trade fair and conference on artificial intelligence and digital information
ai-expo.net/europe

■ **25 – 27 June 2019**,
Nuremberg, Germany
SENSOR+TEST
trade fair and conference on measurement, testing and monitoring technology
sensor-test.de

■ **26 – 28 June 2019**,
Shanghai, China
PCIM ASIA
trade fair and conference on Power Electronics, Intelligent Motion, Renewable Energy and Energy Management
pcimasia-expo.com

■ **9 – 11 September 2019**,
Santa Clara, California, USA
PCB WEST
trade fair and conference on the design, production and assembly of PCBAs
pcbwest.com

■ **13 – 14 November 2019**,
NH Conference Centre Koningshof, Veldhoven
PRECISION FAIR
trade fair and conference on precision technology
tbp stand number 216
free entry via the site:
precisiebeurs.nl



■ **19 – 22 November 2019**,
Frankfurt am Main, Germany
FORMNEXT
trade fair and conference on the next generation of production technologies
formnext.com

■ **26 – 28 November 2019**,
Nuremberg, Germany
SPS (SMART PRODUCTION SOLUTIONS)
trade fair and conference on smart and digital industrial automation
mesago.de/sps

welcome to tbp!

*Customers, partners, students, pupils and other interested parties are always welcome for a guided tour of our production location. We would also love to meet motivated people who want to contribute to our **business of perfection**. The growing demand for printed circuit board assemblies (PCBAs) and our expansion with an extra production line mean we are looking to expand our team. As such, we are very happy with the new group of around twenty-five specialist staff for the HRM, order processing, planning, purchasing, quality and sales departments. We would like to introduce a few of them.*



Justin Mouthaan

(production analysis and quality)

Justin is passionate about analysis and improvement. 'Following my college education in Commercial Economics, I worked in the holiday market: analysing the occupation of holiday parks and developing marketing plans to increase this.

My interests are very broad. To develop myself further, I wrote an application to tbp and was quickly hired. As a production analyst, my task is to investigate incidents and unusual trends and to make proposals for structural improvements.

The fact that I don't have a technical background actually helps me to take a helicopter view of the process. I ask a lot and my technical knowledge is growing by the day. The data warehouse that we are currently constructing to bring together digital data is another important aid to my main task. I'm also a quality control officer.

In my free time, I enjoy going out with friends and playing baseball. Now the renovation of our house is complete, I'll take it up again.'



Dave Verheij

(sales)

Dave learned about account management while working at a company trading in technical components. After moving to Goeree-Overflakkee, he sent an open application to tbp.

The meetings that followed quickly turned to a commercial position, and I was hired as an account manager. In this role, I'm the main point of contact for various customers. No two days are the same! I really enjoy communicating both internally and externally, and making customers' jobs easier. I am very happy at tbp. Technology is a very interesting sector, and tbp's specialism is the crème de la crème. During my college studies in Communication, I worked in catering and learned to get on well with everyone. I have always had an affinity with technology, and combining this with customer contact is even better.

In my free time I enjoy gaming, eating out and sometimes bike racing. We recently got a sheepdog puppy, it's great to go walking on the island with him.'



Joaquín Payá Sánchez

(planning)

Joaquín was born in Spain, but moved to the Netherlands at a young age. 'In my Dutch consultancy business, I researched the demand for specific software for the healthcare sector in Spain and Portugal. Just as in the Netherlands, the developments in this market are very interesting. There turned out to be a lot of interest, and I had the opportunity to set up a branch in Spain as the country manager. That was a really fantastic experience.

After almost ten years, my wife and I returned to the Netherlands. I worked on improvement projects as a consultant until I discovered an interesting vacancy as a planner at tbp. The high quality level at tbp appeals to me. Given the large number of orders and the high processing speed, this is a complex task. We want to start using new software to help us with this. Processing the agreements with our customers involves contact with many departments, and that makes my work really enjoyable.

In my free time I enjoy running and I have a passion for cooking. I love trying out new dishes and combining flavours!



Manita Boeter

(purchasing)

Manita was very happy to return to the 'old nest'. 'I started out as a purchasing assistant at tbp many years ago, before moving to secretarial and administrative positions. When I had children, I started working part-time in a hospital, but I missed the dynamism of a manufacturing company. Now that I'm back at tbp it feels like coming home, and purchasing is the most enjoyable of all the jobs I've had here. It's so varied: you're in contact with both customers and suppliers.

Ordering advice is automatically generated based on predictions, but you have to pay attention to avoid any unnecessarily large stocks. Combining orders is also important to keep down the cost prices. I love the businesslike, professional environment and I enjoy taking responsibility. I'm very happy working in technology!

And when she has the time, Manita enjoys visiting the gym.



mini-sensor for seismological measurements conquers the world

In just five years, Innoseis has succeeded in transforming a scientific discovery into a market-ready application: small sensors that measure subterranean vibrations. As a partner, tbp works alongside this innovative start-up to continuously optimise design and production.

When Mark Beker was completing his doctoral research at Nikhef*, he and professor Jo van den Brand came up with the idea of using gravitational wave technology for new, commercial

purposes. They founded Innoseis and became the managing CEO and CTO. Last year, around 20,000 Tremornet sensors for seismological measurements were supplied, and

this year the same number were on the order list for the first quarter. Contacts with global partners and scientific publications help to create awareness of the product, and the prestigious scientific background increases customers' confidence in the product.

small version

'Sensors for gravitational wave research are often up to three kilometres long, and are extremely sensitive. We have used our development knowledge to create small seismic sensors that are more suitable for use in practice', explains Mark Beker. 'Companies such as Shell are interested in this, because they can

* Nikhef = National institute for subatomic physics – a partnership between five Dutch universities





look up to four kilometres ‘into the ground’ and collect important information about oil, gas and geothermal reserves (geothermal energy). This data helps with risk analyses and using these energy resources efficiently and responsibly.’

Each Tremornet sensor is around 11 by 9 by 5 centimetres, and weighs just 650 grammes. Around 10,000 of them are connected together in a network over an area of a hundred square kilometres. They communicate wirelessly via the Internet of Things, thanks to printed circuit board assemblies (PCBAs) produced by tbp. The long battery life also increases their attractiveness.

partnership with tbp

tbp has been involved with the development ever since the design phase and production of prototypes. Early supplier involvement with Design for eXcellence helps to optimise the

“it’s important to look beyond borders”

design and industrialisation to create a product ready for mass production. 40,000 pieces have now been supplied in multiple orders, for which tbp

supplied not just the PCBAs but also the entire box building, including housing and accessories. The level of automation of the process is increasing to permit upscaling to larger quantities.

‘Quality is our top priority, we want to immediately bring a top product to market’, emphasises Jo van den Brand. ‘The chosen test strategy guarantees a high degree of certainty about quality. The continuous design, production, application and redesign cycle is unique. We will now link our experiences in practice to the test results, and integrate the conclusions into the next phases of design and process optimisation. In this way,



we work together to achieve the highest possible quality level.'

special applications

'The sensor technology is the result of scientific research, and following further development, we will also give this back for academic purposes', adds Mark Beker. 'One special application is the trial in South Africa with detecting

the movement of elephants and people, to map the risks to humans and animals. The Dutch police are also interested, as they believe our sensors may make it possible to rapidly detect groups of people or vehicles remotely. Our goal is to develop even better and smaller versions, which could be used in drones or automated vehicles to detect motion, for example.'

*“early supplier involvement that’s ...
one small step for tbp,
one giant leap for manufacturing”*



INNOSEIS

Their involvement with Einstein Telescope in Zuid-Limburg is a source of great pride. Jo van den Brand has an active role in this, due to the use of the small sensors in the preparatory phase of this future gravitational wave detector. He proudly summarises what Innoseis has already achieved: 'Five years ago, the Tremornet didn't yet exist, and now our sensors can be found in every continent.'

[Innoseis](#)

ELECTRONICS & APPLICATIONS

14 TO 16 MAY 2019 JAARBEURS UTRECHT

