



WAY of life



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standing still is not an option

Standing still is not an option. Whenever I hear this saying, I immediately think about my father. Now 93 years old, he only stopped cycling recently when he forgot to pedal one day and fell over. In other words, you have to work to move forward, to propel yourself. This is how we see our relationship with our clients: jump onto my tandem, let's cycle together ...

tbp is celebrating its 36th birthday this year. We are marking this event by refurbishing our production floor. We moved into the premises on the Vlakhodem about six years ago. It was a modern building with every imaginable convenience, including a clean room, which could house all the new equipment that we had hauled into it. During the course of these six years, tbp has made investments from time to time. These have ranged from a screen printer to a warehouse shuttle, and from computers to a server centre. We were looking forward in order to be ahead of the changes in the market and to be able to continue to meet the needs of our

clients. But change happens at express train speeds!

Anyone working in EMS has to anticipate new market conditions and the changing requirements of customers more and more quickly. As you know, the electronics world is highly mobile, and this is the reason that tbp is revamping its entire production department. It will be turned upside down and will get a new, cool look. It will be furnished with new equipment and, of course, plenty of modern software. At the beginning of this year, tbp established a DfM and DfT department in Eersel with software packages such as TestWay, Valor, Test Expert and TestStand. We created this department in order to tie up all the loose ends of the front-end of productions. The next refurbishment phase is the shop floor at Dirksland. The period mid-December to the end of the first quarter 2013 will see the installation of two entirely new SMT lines with reflow ovens and inline AOI. The component towers, such as those on

the floor, will be replaced and expanded. When the refurbishment is complete, it will feel like a new skin!

It will improve speed, throughput and quality. And the new MES system (see page 12 in this Way of Life) will help give us an even better insight into SPC data and will thus help us manage bottlenecks. In order to ensure that our clients experience little disruption in delivery during this period, we are phasing the refurbishment work.

Do check your electronic in-box in autumn 2013 as we will hold the tbp customer & supplier days later in the year to celebrate our new look. You will receive a personal invitation to come and have a look at the future of EMS. Or will we then already have been overtaken by progress? So let's get pedalling so we can propel ourselves even further ahead!

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contents

- 2 column
- 3 summer closure
- 3 tbp at HET Instrument
- 5 new lines increase productivity
- 6 requesting a quotation on the web
- 8 a good design cannot do without DfT and DfM
- 10 say it with video
- 12 quality improvement due to well run production process
- 14 management information gaining ground
- 16 interview with Mr Stock, Orga
- 19 app for order tracking
- 20 Richard Groenendijk wins Poelifinario

tbp at HET Instrument

It was a busy autumn on the trade fair scene. First was HET Instrument (25-28 September) followed by a repeat performance in Munich at Electronica 2012 (13-16 November). We cannot say too much about the latter event as, at the time of this Way of Life going to press, the fair was still underway. We will go to the fair in high spirits reflecting the fair's motto "inside tomorrow".

As far as we can conclude, HET Instrument was a successful undertaking for us. You would never have guessed at the tbp Grand Café that the number of visitors was lower than expected at 13,000. It was always busy and pleasant. Many visitors came to our stand during the two middle days in particular. We do not know exactly what it is that attracts visitors to our stand. Could it be the special beers on tap from the Het Anker (www.hetanker.be) brewery? Or the atmosphere at the stand? Whatever it was, there was much business talk going on. Apart from strengthening our relationship with our existing business contacts, we were also able to make new contacts. One such contact was an institute that turned up and asked if tbp could assemble a 10 layer print for application in a newly developed apparatus for medical diagnostics. It was for a new type of x-ray machine that could take x-rays with a resolution ten times higher than current equipment. A revolution in

medical technology! Another company asked if tbp could develop and produce the electronics to guide a burner. A potential order for Techno-tbp! These are just two examples of unexpected requests.

happy hour

A highlight at the event was the happy hour on 27 September. There was a treat in the shape of the well known De Swingers trio (www.deswingers.nl) which meant it was time to put pleasure before business. And our guests joined in too. They thoroughly enjoyed the beers, flown in specially for this event from Belgium. In collaboration with Eurocircuits (www.eurocircuits.com), who had our neighbouring stand, the beer tap provided two types of beer: Maneblusser (Blond Mechelen city beer) and Gouden Carolus Ambrio (Amber special beer). These are beers that we seldom see in our own country. It was a good experience for many people.

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summer closure

Summer may be a long way away, but we would nevertheless like to mention that our work premises will be closed for two weeks during the holiday period. Dirksland will be closed for production in weeks 31 and 32, or Monday 29 July to Friday 9 August 2013. In cooperation with you, we can of course ensure that your order flow is not compromised. Simply send us your quotation request and orders on time so that we can deliver in advance. While our production facility in Dirksland and the branch in Eersel may be closed for two weeks, Mr Frans Geerts will be available in case of emergency (M +31 6 5025 2708, E fgeerts@tbp.nl).



and plenty more

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attractive gadget

The gadget, this time a compass clock that visitors to the fair could assemble themselves, was again a success. Visitors needed to visit four stands to complete the clock. Step 1 was to acquire the assembled print; step 2 was to get the batteries; step 3 was to get the control system; and step 4 was to get the programme. Visitors could complete their 4 step assembly at the tbp stand and start using the gadget straightaway. That new contacts could be made from an activity like this goes without saying. It was a great initiative by the fair's organiser, FHI (www.fhi.nl)!



effective

Looking back, we can draw the conclusion that our presence at the fair was useful. The market shows us that there are enough potential clients to justify our presence. And that our mission, *the business of perfection*, is the right one. We feel good about the fair in Munich and we have confidence in the future.



A number of conferences, fairs and events will be held in the next few months. These may be of interest to you. We will name just a few:

6 December 2012, TU Delft Aula
AUTOMATED PRODUCTION PROCESS CONGRESS
www.fhi.nl

10-11 December 2012, De Reehorst, Ede
MICRONANOCONFERENCE '12
 Conference about microsystems and nanotechnology for universities, institutes and industry
www.micronanoconference.nl

7-9 March 2013, Guangzhou, China
SIAF FAIR AND CONGRESS 2013
Innovations and solutions in automation. From sensors and control systems to applications. Affiliated to SPS/IPC/ Drives, co-organised by Messe Frankfurt and Mesago
www.mesago.de

5-7 March 2013, Stuttgart, Germany
EMV
International trade fair and workshops on electromagnetic compatibility (EMC)
www.mesago.de

13-14 March 2013, Amsterdam
SMART SYSTEMS INTEGRATION
International conference and fair about integration in electronics - MEMS, NEMS, ICs and electronic components
www.mesago.de

16-18 April 2013, Amsterdam
SMT HYBRID PACKAGING
System integration in micro-electronics
www.mesago.de

24-25 April 2013, Klokgebouw, Eindhoven
HIGH-TECH SYSTEMS 2013


International conference and fair about mechatronics and precision technology
www.hightechsystems.nl

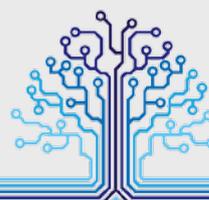
14-16 May 2013, Nuremberg, Germany
PCIM EUROPE 2013
International trade fair and conference for power electronics, drive technology and energy management
www.mesago.de

14-16 May 2013, Nuremberg, Germany
SENSOR + TEST 2013
 The exhibition for measurement technology.
www.sensor-test.com

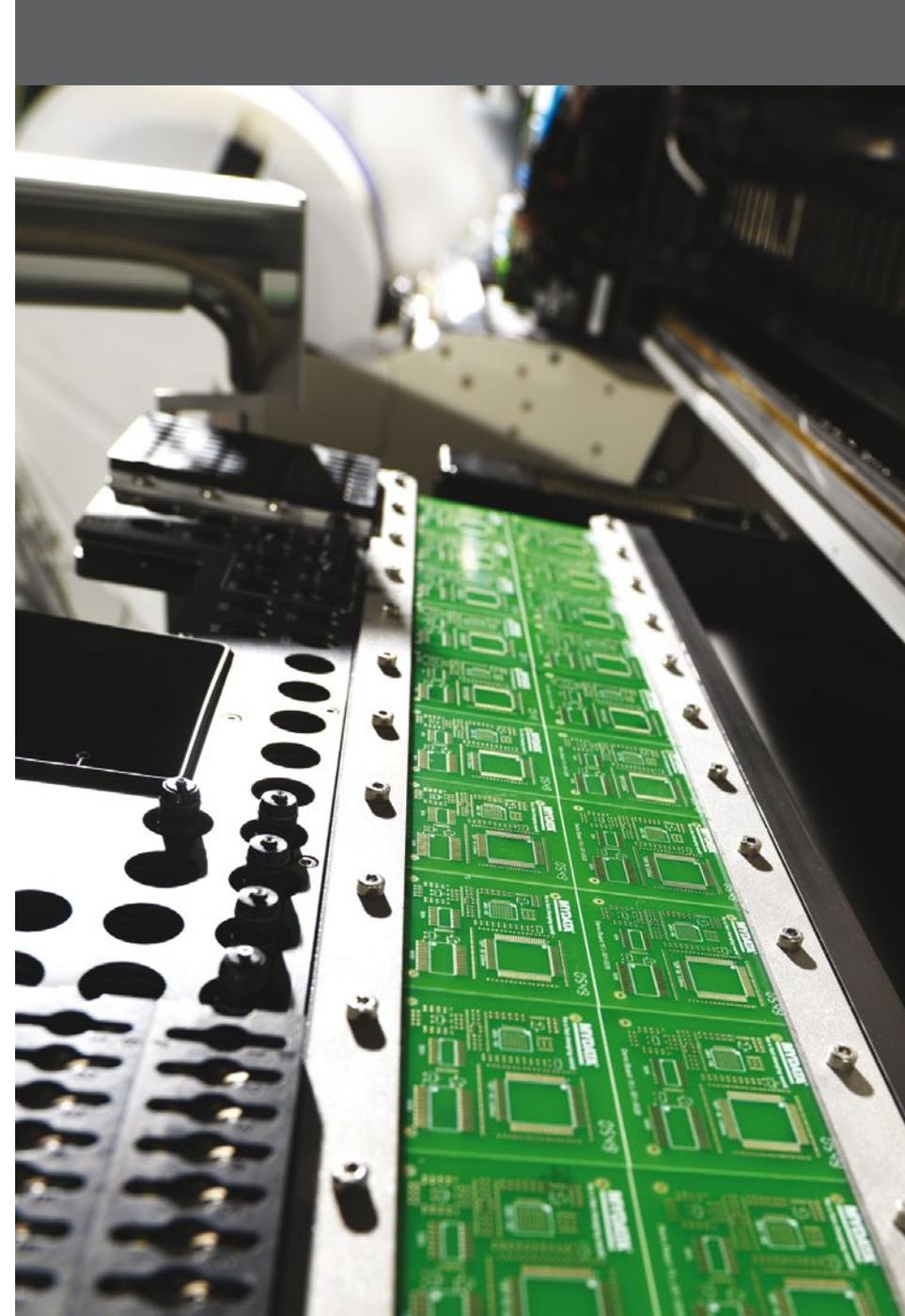
Naturally tbp is to be found at the next Electronics & Automation.

Make a note of the date and place: 28-30 May 2013, Jaarbeurs,

Utrecht. Information will be detailed on: www.eabeurs.nl.



ELECTRONICS & AUTOMATION



new increased productivity lines

Pick-and-place. This is now how pcbs are assembled. Simply pick it up up and put in down in the right place. This is done by a machine in which a placement cap ensures that all SMT (Surface Mount Technology) components are positioned in the right place in the right way on an empty print board. The soldering that is then done completes the mounting, finishing the pcba. Needless to say, this process must be efficient and reliable.

This robotic technology was actually conceived in the 1960s, but it was only in the 1980s that industry started using it. That was the start of SMT. The placements caps were only able to manipulate this new generation of components due to a more simple design. Pick-and-place machines have been part of our equipment for years. Of tbp's seven machines, four are arranged in two lines, as it is called. In line because various machines are directly linked to each other to form a production line together with a paste jet or a screen printer to apply the soldering paste, an SPI (Solder Paste Inspection) for 3D paste inspection and an AOI (Automatic Optical Inspection) for control purposes.

flexibility

A number of Mydata (www.mydata.com) pick-and-place machines are available in the production area. Despite good maintenance and ensuring that the control software is up-to-date, these machines have become somewhat out-dated and lag behind the latest developments. There have been significant improvements in pick-and-place machines over the last few years. Thus the need for greater flexibility in combination with speed is increasing noticeably in the field of production. Small series, sometimes just a few pieces (prototypes), meaning high-mix / low volume and divergent sizes require production methods be adapted quickly. Given that tbp's strength is precisely in this sector, tbp has taken the decision to purchase two new lines, similarly from Mydata. The current lines with two machines (MY12 & MY19) will make way for four MY100DXe-14 machines, the most versatile machine currently available. They can be used to make the most varied productions, day in day out. Not only are they amazingly high speed at up to 40,000 component placings an hour, but the changeover times for a varied production is significantly reduced.

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advanced technology

The further miniaturisation of electronics and thus the density of components make designing for clients increasingly more complex. It goes without saying that accuracy is crucial. The placing cap in the machine needs to place all the components in the right location at very high speeds. The old machines were equipped with a few Hydrakop (8 tools). The new machine has two of the newest generation which allows the placing cap to place a number of components - 16 instead of 8 - in one go. The control method is very modern and uses so-called linear motors. Oddly, the caps are situated on one axis. But this means that the system ensures that these do not touch each other.

An advanced camera system monitors the correct placing of the components. The Linescan Vision System also checks the assembly of special components such as flip chips. Depending on the settings, a quick test can be carried out during placing of the electrical qualities of components such as resistors, condensers, elcos, diodes and transistors. Thus the chance that a defective component ends up on the board is reduced to almost zero. It also avoids time consuming repairs. The components are usually taken from a stick or a tape which is wound around the reel. This is referred to as a 'reel' in jargon. Each component type has its own reel or stick. One machine can house up to 160 different types of components. If you think that in practice, usually one type is placed more than once on a printed board, this limit will rarely be reached.

two new lines

Soon production will be done by two new lines, with four pick-and-place MY100DXe-14s machines. These lines will of course have even more machines such as the paste jet and screen print to apply soldering paste, SPI (Solder Paste Inspection), before and after the AOI reflow-oven and the reflow-oven for soldering itself. Another new feature in the lines is a Nutek board handling system. This system consists of loader, buffer and unloader magazines to store the bareboards or end products. The connected transport belts make sure that the pcbs are transported from the magazines either into or out of the production machines.

And finally, the current MY19 line will be figuratively cut into two. These machines will be used as stand alone machines, and will include the current loader and unloader which are still in perfect condition. We will bid farewell to the old MY12 machines. The new lines will, of course, be connected to a newly acquired Aegis MES system (see page 12 in this Way of Life). This will allow us to anticipate potential problems much more quickly. These steps will bring the refurbishment to a close and will smooth the path to the future.

This is what the MY100DXe-14 looks like



requesting a quotation on the web: it's very easy

The design is ready, it's time for a quotation! This appears automatically on the visitor's screen once the quantity and timing of the required electronics are known.

The usual method of requesting a precise quotation is by providing tbp with all the details that it needs to make the product. This is often done by email with attachments. In practice this does not always go smoothly. Information is sometimes missing or a particular activity is required which was not included in the quotation. In short, on occasion it is not always clear exactly what a client wants.

online offerteaanvraag

[Verander klant/contactpersoon](#)

Uw contactpersoon bij tbp: de heer Frans Geerts
 Leveringscondities voor orders: Franco
 Betalingscondities voor orders: Binnen 30 dagen netto

Ooftermiddag

1. Uw informatie

Uw referentie:

Omschrijving:

Artikelnr klant:

Wij verzoeken u vriendelijk per product 1 offerteaanvraag (RFQ) in te vullen.

Nieuw product
 Nieuw product voor tbp
 Herhalingsopdracht voor tbp

2. Data (informatie) uploads

Voorbeeldbestanden: [BOM](#), [PCB Specificatie](#), [Test Specificaties](#)

CAD Data
 Bill of Material (BOM)
 PCB Specificaties
 TBP Standaard
 Klantspecifiek
 PCB Multipanel informatie
 TBP Standaard
 Klantspecifiek

Bestanden uploaden:

[Toevoegen](#)

Link naar data:

3. Overige gewenste services

Teststrategie

Functionele test
 Flying Probe (FP)
 In Circuit Test
 Boundary Scan (BS)
 Automatic Optical Inspection (AOI)
 Andere:
 In overleg met tbp te bepalen
 Geen test gewenst

Speciale wensen

Coaten
 Reinigen
 Design for manufacturing (DFM)
 Design for Test (DFT)
 Andere:

Bestanden uploaden:

[Toevoegen](#)

Link naar data:

4. Batchgroottes

Jaarlijks volume:

Batchgrootte:

5. Additionele vragenlijst

Dit product is: eenmalig continuërend

Dit product is: loodvrij (RoHS compliant) niet loodvrij (Dispensatie)

Dit product is: IPC-klasse 2 (tbp stand.) IPC-klasse 3

Zijn er door u al afspraken gemaakt met leveranciers?
 Zo ja, dan verzoeken wij u aan te geven welke afspraken in het "Extra aandachtspunten"

nee ja

Mag uw bedrijfsnaam bekend worden bij onze aanvraag naar de leverancier(s)?

nee ja

Moet tbp voor het uitbrengen van de offerte eerst nog een keer contact met u opnemen?

nee ja

6. Extra aandachtspunten

Gevenste verzenddatum eerste batch van product:

Denk hierbij bijvoorbeeld aan de gewenste verzenddatum van de gevraagde offerte, waarbij wij u vragen rekening te houden met een benodigde doorlooptijd van twee weken. Ook kunt u hier de gewenste verzenddatum aangeven van de eerste batch van uw product en additionele informatie voor tbp electronics.

via the web

To help the client request the right quotation, tbp has created an online quotation request service using the website. The person requesting the quotation logs in to a secure part of the website using a log-in name and password. A quotation request form with specific questions appears on the screen, the responses to which are used to generate the right quotation. The form leads you through the information. In principle, nothing should be left out. Any digital information, such as the BOM or CAD-data, can be attached to the form and submitted. For further support, a help button is available for every module of 6 steps. As all the data is processed in the company's information system in a logical order and all the relevant individuals within tbp get the right information. The Eersel branch can then do the DfT and DfM planning, if required; the procurement department sees what is needed straightaway and project engineering immediately checks the required processes. The system also requests the user to indicate the required options within the production process and/or the required test facilities. In short, everyone who needs to supply input that is relevant for the quotation can begin work on it. This means that the time needed to produce the quotation is minimised. And another advantage ...

everyone is invited to join

The doors are now open for current clients who are already using order tracking or the track 'n trace app: they simply log in with their log-in name and password. Current clients who do not yet use these services and new clients can contact Dana Wolters (T +31 187-602744 or info@tbp.nl) to request log-in codes. tbp of course hopes that its clients find this method of requesting a quotation an improvement. The first experiences are promising!

a good design cannot do without DfT and DfM

Many electronics designers immediately recognise the main features of an order: "Design a circuit that meets the specifications. Preferably have it produced at low cost and the board must be ready before the date specified. Good luck." After assessing the request, an experienced designer considers the direction he/she will take. He/she creates a rough block diagram, considers the relevant technical solutions options, checks the component specifications and starts by drawing the diagram. The result should be a faultlessly working pcba. However, experience shows us that this is not always the case - with varying consequences. From pcbas which cannot be made to products where the slip through (the percentage of pcbas which cannot be determined if they are good or bad) is unacceptably high. Thus, there is more to the production of electronics than only producing a diagram and generating a print layout with a list of components (BOM).*

collaborative thinking

As an EMS company, tbp electronics knows all too well the problems that arise if the designer does not take the practicalities of production thoroughly into account. The understanding that designing consists of more than just determining the diagram and layout is beginning to get through to OEMs. But this understanding does not mean that the solutions are on the table! However, as of February of this year, designers can make use of a new tbp service: test engineering. We announced this new service in the previous issue of Way of Life. That this service meets a need became immediately clear. With his 8 colleagues, team leader Marcel Swinnen processed a large number of orders in a short space of time. In practice, it means that by using DfT and DfM*, both a

test engineer and a DfM engineer can collaborate with the designer to further refine the circuit to optimise its testability and manufacturability. The result: a well functioning product, low dropout and minimum slip through.

DfT and DfM

DfT and DfM are key concepts in this world. They stand for Design for Test and Design for Manufacturing. Any planned product must meet the criteria set out in DfT and DfM. tbp test engineers view this as the mainstay of their area of work. In terms of DfT, the point is to design an electronic circuit in such a way as to obtain an optimum test strategy with the maximum test coverage. This will result in a well-functioning product for the least effort. It means that the designer needs to take

into account the running of a number of tests in the circuit.

We distinguish three phases here:

- the zero phase. The designer has not yet created the diagram and only has a block diagram in mind at the most. The test engineers provide general advice about the relevant test facilities. The advice could comprise using boundary scan components, or adding control points for structural test methods (FPT*, ICT*, BST*) at crucial steps to be run after the soldering process;
- in phase 1 the designer creates the electronic diagram and converts it to a net list (Edif 2.0, Cadence Allegro) and a components list (BOM). These documents, together with any BSDL documents (a file format in accordance with JTAG, the Joint Test Action Group) of boundary-scan components used and the diagram ("searchable pdf") are supplied to tbp for analysis. After analysis, the test engineers provide advice and a DfT report stating the minimum test points that are needed and what, if relevant, is covered by a boundary scan. At the same time, a report is issued about the expected slip through;
- in phase 2 the designer creates the layout of the printed conductor plan on the pcb, taking into account the advice provided. The tbp test engineers use the outcome - similarly a digital file, but now in CAD format (ODB++) - together with the BOM and the diagram (in searchable pdf format) to put together a final DfT report that describes the implementation of the test strategy. It includes a proposal regarding the choice of the testing equipment such as the flying probe or the in-circuit test method, depending on the production volume.

* pcba - printed circuit board assembly

* DfT - Design for Test

* DfM - Design for Manufacturing

* FPT - Flying Probe Test

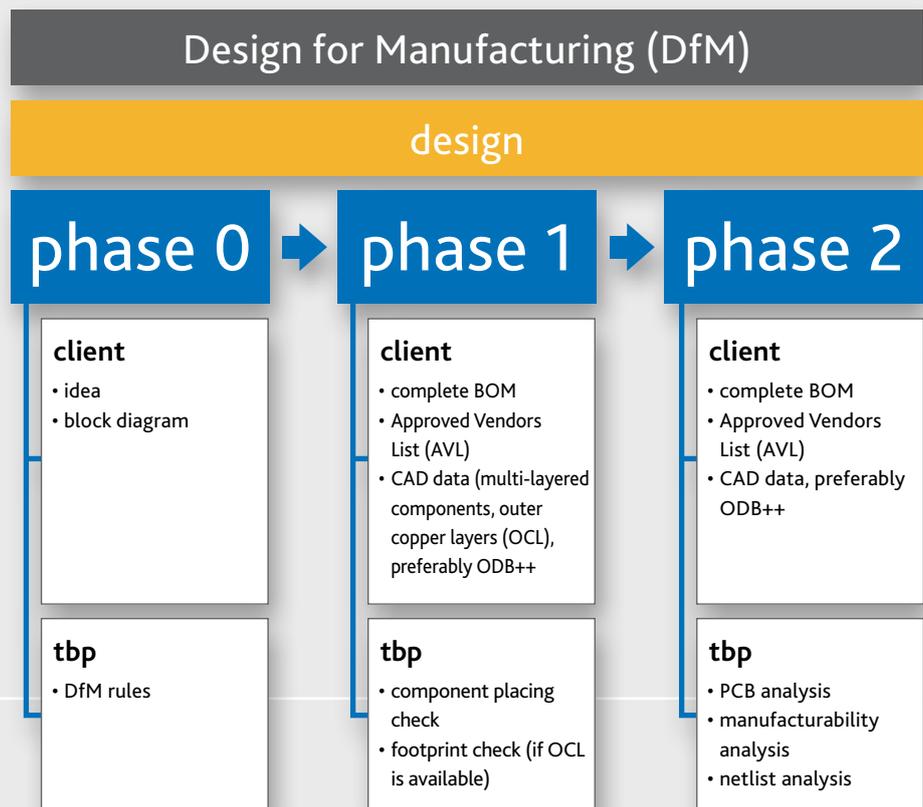
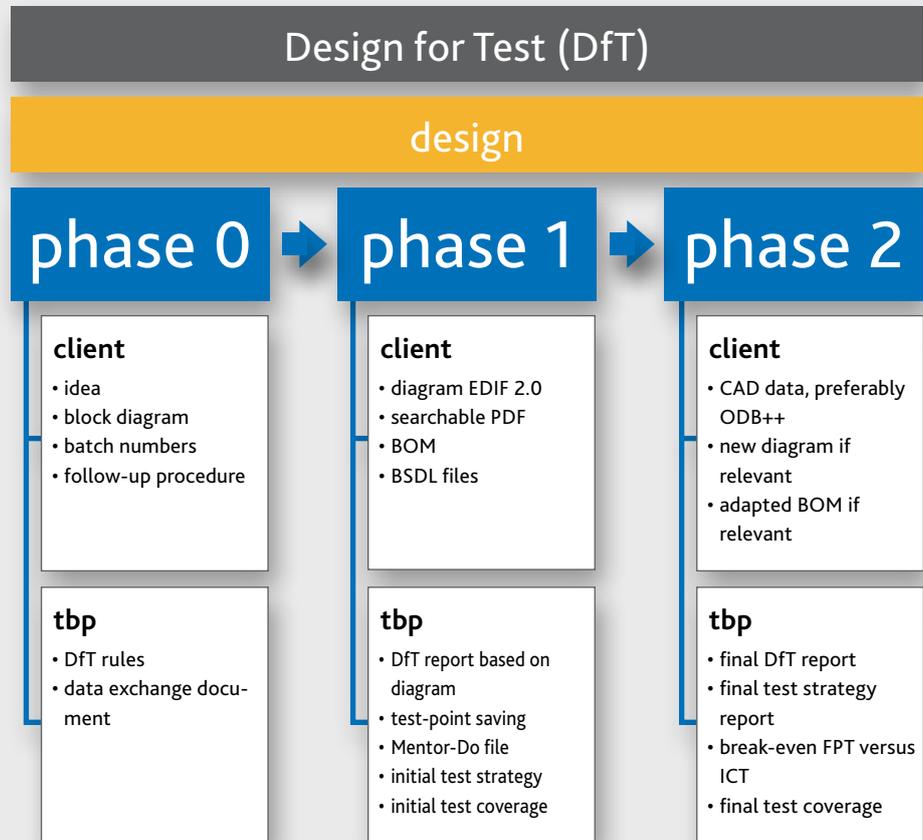
* ICT - In Circuit Test

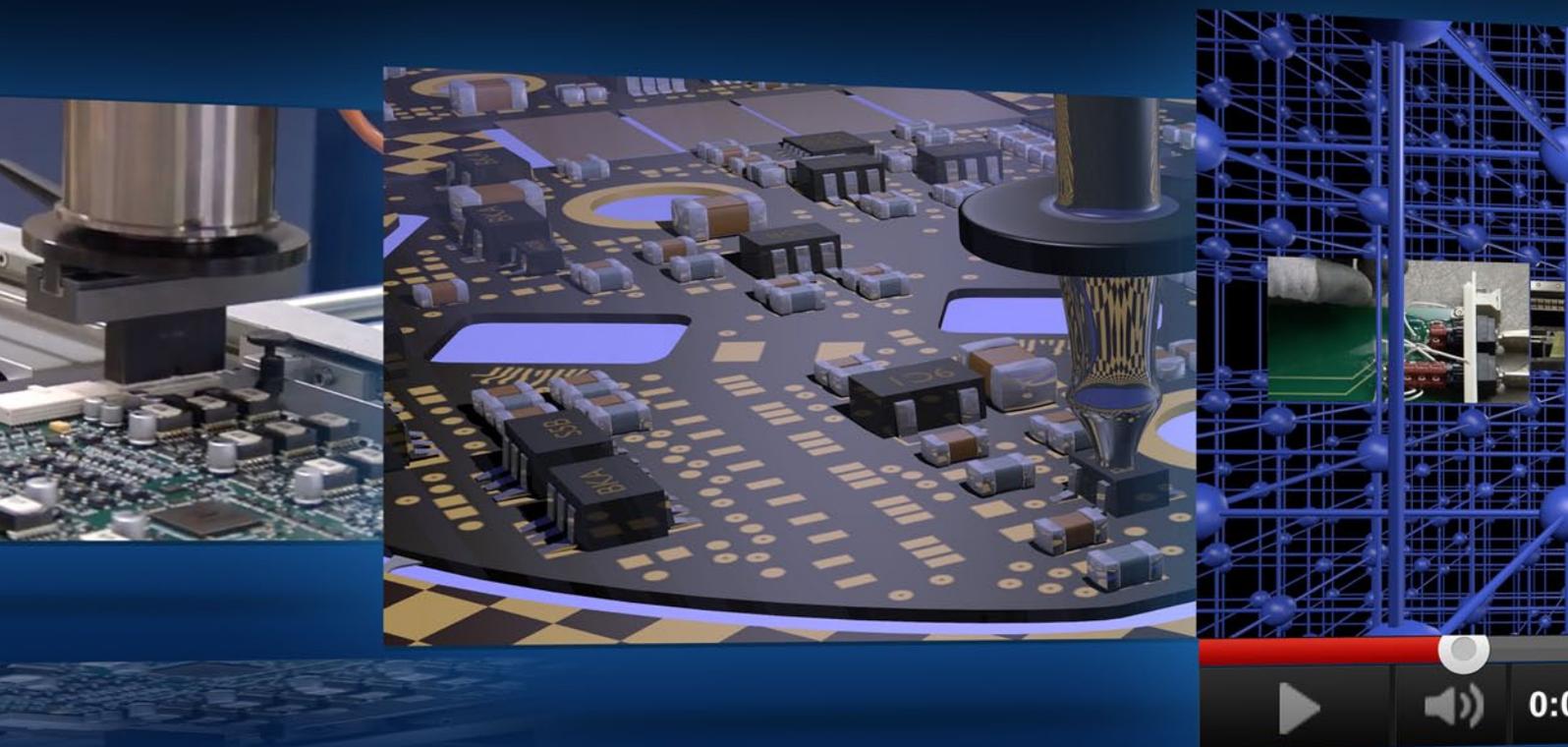
* BST - Boundary Scan Test

We also distinguish three phases in DfM. In this area, the advice concerns manufacturability. What problems can be expected? Is there a risk of tombstoning (components that stand up on end during the soldering) for example, or a short circuit as a result of unwanted solder joints? Is there enough space to place the components in the available space? Are the footprints compatible with the component housing?

great interest

tbp's initiative in setting up test engineering appears to have worked out well. Several clients have found their way to Eersel. The order portfolio is full and there is plenty of work for the next few months. So much so that the team of test engineers had to be strengthened. One new member of the team is a specialist in the field of DfM. It seems that electronics designers increasingly see that the synergy between creating and producing is of enormous importance. DfM and DfT have evolved into disciplines essential for modern company operations.





say it with video

What better way to present company processes - if you are unable to show them during a factory tour - than with a film? With this in mind, tbp started using film as a communications tool years ago. At that time it was not on the internet but on video tapes. They may have been easy to distribute, but could only be used if the interested viewer had a video player and TV or monitor.

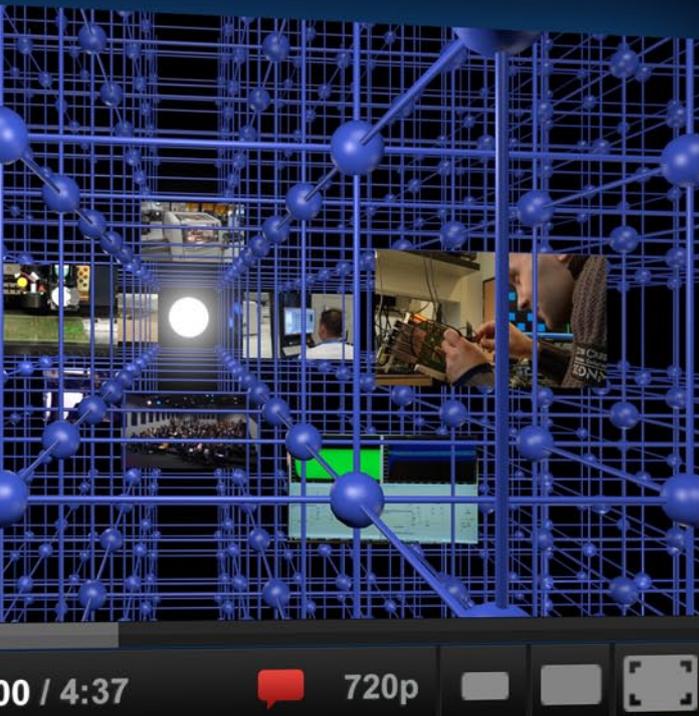
*Times have changed. Video tapes have all but disappeared and we now watch films digitally. One such company process film is on tbp's website. But just as with technology, a film like this is liable to become outdated. Reason enough to replace the old film with a new version using high-tech elements (see www.tbp.nl, button *tbp bedrijfsfilm*). A job that was given with much pleasure to Delta Video Producties.*

modular

Delta Video Producties' owner and director, Cees de Vos, had a complex task ahead of him. To make a corporate film of the company, but to do so in ten stand-alone modules. Each module had to tell its own story, for example about the pick-and-place process, or about soldering. The completed film had to be a collage with a common element binding the modules together. And each module should have a simple link on the website. If someone wants to see or hear about testing, one click should be enough to start the testing video. Cees conceived a three dimensional space with a block diagram background as the common element binding the films together. This is recognisable to people from the electronics world.

false start?

Cees wanted to use the image of a circuit board for the new film and asked tbp to make a couple of complete circuit boards available. They turned out to be very different to what he expected. He did get his circuit boards, but thought that they were still empty. When he questioned us, all he heard was that "Those pcbas really do have components!" He examined them again and saw that he had not looked closely enough. Cees: "I remembered the old circuit boards with their large, for modern standards, components. You now need a magnifying glass to see them." The circuit boards were used for the film's introduction. The film images were processed into animations which moved in a three dimensional space. The result is amazing, as is the time that went into creating digital objects from film images. The eight minutes viewing time took about 30,000 minutes of work.



Delta Video

Delta Video Producties was established in 1986. It was originally a two-man company that grew from the founders' wish to make a video film to promote the rental and/or sale of machines. Armed with semi-professional equipment, the team hit the road. With barely any experience, they approached an ice-cream factory. The agreement was unusual: produce a promotional film for the costs of the tape. Cees: We worked free of charge, but gained a lot of experience in one go. Shortly thereafter came the first contact with tbp. Ton Plooy thought a film would be a good thing. Whilst we were on a roll, we made a video film, an exciting one for that time.

studio work

In order to produce modern animations, you need specialised software. Two of the options are Blender and 3D Max, fantastic software with which users can develop all their most creative ideas. A few years ago Cees started learning about this software and quickly discovered that he had a steep learning curve ahead of him. He had to invest plenty of time to acquire the skills with which to use the programme well. He has now acquired all the skills he needs to turn his ideas into image and sound. But it is a continuous learning process. Software developments mean continuous study to be able to use all the new possibilities. Here too, standing still is not an option.

outdoors

Filming is often done on location, which can be exciting. "We once made a documentary about the Port of Rotterdam area for Discovery Channel. One of the collaborators was a container company which meant filming on a large container ship.

I boarded the vessel from a pilot at night in rough weather. We set up all the lights and the camera and just when I was about to film on the bridge, the ship's captain came and asked what was going on. Despite the previously issued permission, I had to pack up my stuff. That the reason lay in the use of alcohol was immediately clear. Luckily I had another chance to film a week later." Filming was somewhat quieter at tbp ...

portfolio

Cees de Vos is literally a jack-of-all-trades in his company. He does everything himself: writing scripts, editing, conceiving the animations and implementing them and, if the client so wishes, he also does the voiceover. The only exception is that he hires in composers and musicians. His company's portfolio has grown immensely and includes productions ranging from building supplies merchants to museums, government to a seafood company. And of course electronics. Most of the productions are promotional films, but there is also some educational material. The company has grown into a fully-fledged - though small - company that enthusiastically creates successful visual productions. When asked what Cees most enjoys in his profession, he says "You start with nothing and after a while there is a product of which I am proud."

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quality improvement thanks to well-managed production process

More and more clients are demanding higher quality products. And rightly so as OEMs are building such complex machines these days that they cannot have one or more defective internal pcbas. Not to mention the irritations this would cause during the building and the financial consequences. Companies such as ASML which produces chip machines containing a lot of pcbas, suffer great harm if defects occur after starting up a new machine. It means looking for one or more defective boards and then a lot of work to replace it with another. In short, delivering a well functioning product with a minimal dropout is a must. Ideally, you want to supply pcbas that work 100% perfectly. But, as with all products, this is just theoretical. The trick is to come as close to 100% as possible.

slip through

A term that you have often seen in Way of Life is slip through. This is the proportion of products that do not meet the quality standards compared to the total number produced. In practice, 1% or 2% is not unusual. In the example of the chip machine above, this would mean that out of the 1,500 circuit boards that it contains, about 15 to 30 may be defective. The question now is, how can you reduce this percentage, and what percentage is acceptable? To answer this, we enter a complicated world of production process manage-

ment. MES stands for Manufacturing Execution System, and it should come as no surprise that tbp has been using it for years.

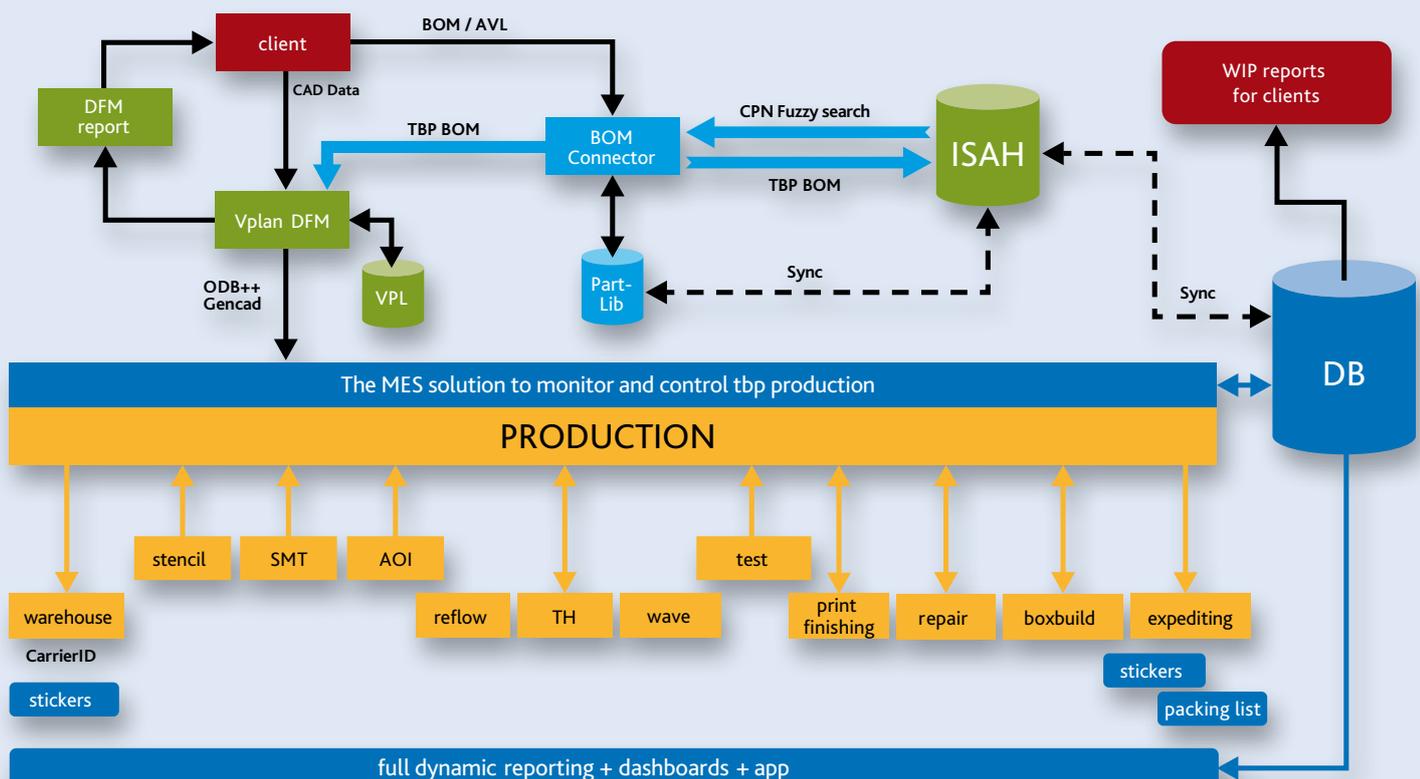
production improvement

One factor that actually works against attaining good quality is the low quantity that usually applies to industrial products. This could sometimes be five prototypes or a limited series of 100 pieces. In contrast to consumer products, it is not possible to design the production process in such a way that extensive test facilities would bring

all irregularities to light. Despite the measures taken, there remains the risk of faulty products. Naturally, a company should do everything it can to reduce the chance of errors. MES provides the right tools for this. It provides the operators with all the information needed, monitors the machine park and thus guarantees the entire production process.

MES

MES can be considered as the monitoring software for the entire production facilities. The system checks the quality



of each step in the process. The current measurements are compared to the registered boundary values, and the system is immediately alerted to any deviations so that corrections can be made. This means, for example, that an automatic adjustment can be made, or that an operator or manager will receive a warning that a defect needs attention. It goes without saying that we immediately try to find the cause of the problem. This could be human error as a result of incorrect or unclear work instructions. This is called root cause analysis, or RCA for short. RCA identifies all deviations, be they material, machinery, operators, working environment, work methods or management. A comprehensive system that in return not only signals, but also provides the information that shows where the defect lies. In this way, if a test shows that a defect component has been placed, the system will indicate which machine or who has placed the component, from which badge or role that component comes from, any other

products that the component may have been placed in and the supplier.

current situation

The current system is limited to supplying job instructions to operators and has access to a registration and storage system for errors that arise. This information is in the form of reports and tbp uses them when the product has reached the end of the process. This is an undesirable situation and is the reason to look for a system that could supply dynamic reports. The choice thus fell on Aegis' MES. The first steps have already been taken to make implementation possible. This means that an extensive inventory has been made of all the steps that need to be monitored, the training required and who needs to be trained. What interfaces are required to be able to process reports from all the machines? After all, every machine has its own format. The operators receive their instructions directly from the MES. The operator registers, scans the circuit board's identification barcode, and

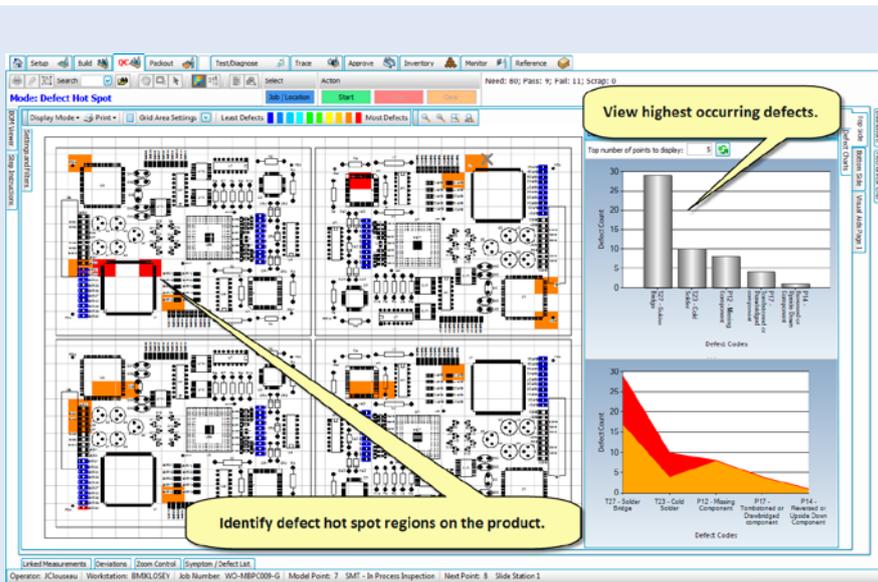
sees on the screen the actions that are expected. After completion of the activities, he/she signs out and the board enters the next step in the process. If errors arise later, the MES supplies all the information about all the steps in the process and indicates where the error may have occurred. A controller then translates these indications to activities which result in an improvement in quality.

the future

Hard work is currently underway to implement the Aegis system. By mid-January, the new software should be visible on the screen of all work stations where job instructions should appear. Less visible but equally important is that the Aegis software will run on a new server that has more than enough capacity to host the database with the product information. All the machines will be connected within a couple of months and the reporting possibilities will be used to the full. Given the many adaptations and the fact that an expansion of the current machine park is expected in the short term, this step will need more time. As an aside, the expansion is again connected to further improving quality. To this end, extra AOI systems (Automatic Optical Inspection) will be used to identify defects at an early stage. Similarly, one system will be placed immediately adjacent to the pick-and-place machine and another at the end of the soldering process. The first will check that all components have been positioned correctly and the second will check the solder joints.

To summarise, we believe that all our efforts will be rewarded by a far lower slip through. This is what our clients want and naturally we will work to this end. After all, tbp is in the business of perfection!

* printed circuit board assemblies:
circuit board including all components



above: an example of an Aegis functionality to quickly gain insight into the location of problems on a board (or panel), the number of problems and the type of problem so that a quality engineer or process engineer can undertake action to solve the cause of the problems and can improve the process steps

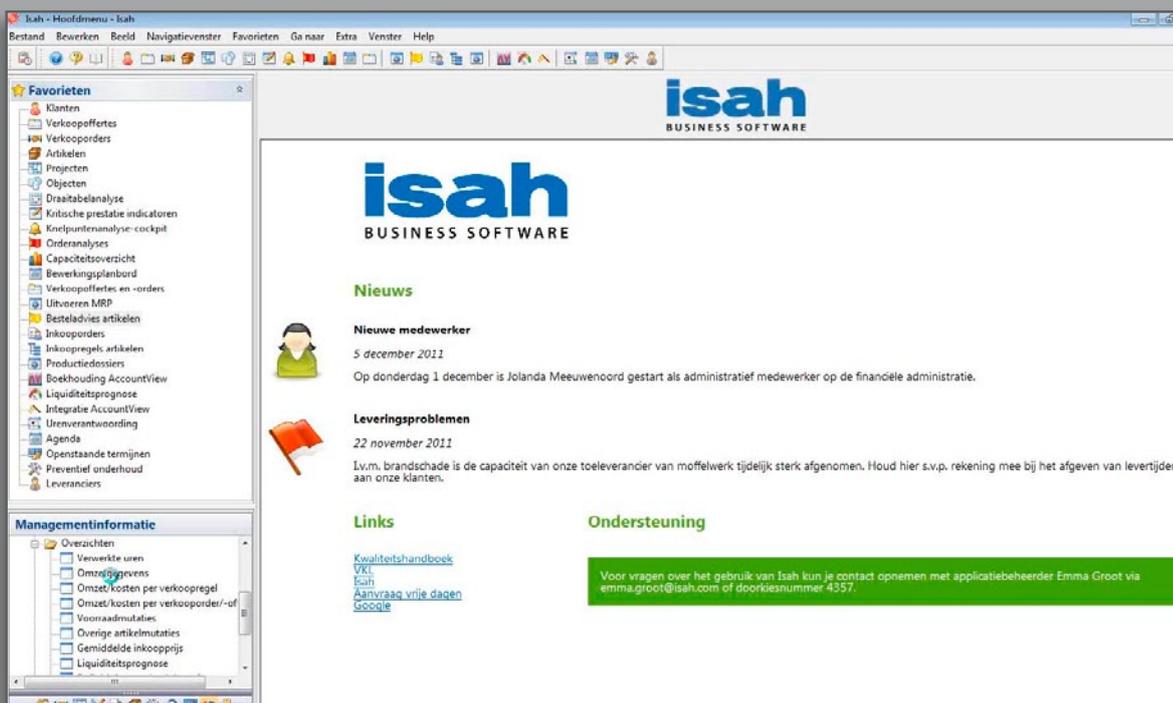
left: the general MES structure at tbp

management information gaining ground

Our "internal conscience", the Isah company information system (officially ERP, Enterprise Resource Planning), will soon undergo a minor metamorphosis. In broad lines, Isah not only manages the information streams within the company, but also ensures the optimisation of all company processes. As with most software, within time an upgrade is needed after the usual updates. We will shortly upgrade from version 3 to version 4. This means new opportunities. One thing is certain and that is that everyone who uses it will have to get used to it.

changes

The most important reason to change to the new version is, as mentioned, to expand the options. And this means real improvements. After all, not every change is an improvement. The first thing you notice is the design of the screen. The information on the screen will be better and more clearly displayed. This also means that requesting reports will be easier. Up to now, users requiring a particular report needed to call in specialists to compile a report in a set format. In the new version, any employee can make their needs known and with the proverbial push of the button can convert a report into the desired format for further processing. A "tailor made" report entirely geared to the request. The need for tailor made reports is relevant to many, including the production planning. With this information, the planners can anticipate the current situation more easily and have greater flexibility in the use of the production lines. And of course they have an immediate overview of potential bottlenecks or other types of problems that require extra attention.



a few examples of the screen information from the new Isah ERP system

other database

Up to now all the information in the ERP system has been stored in a so-called Sybase database. This will soon change with the transition to a Microsoft SQL database. The reason for this is a better connection to the current MS Office software that tbp uses for general purposes, with its Word, Excel and Outlook programmes. The integration between Isah and MS Office will be significantly improved. The email traffic can operate with Isah in a better and more structured way. A particular email about a product can be directly linked to everything that is related to it. It also works the other way round. Using a product code, users can find out at a later stage all the correspondence that took place. Time consuming searches will be a thing of the past.

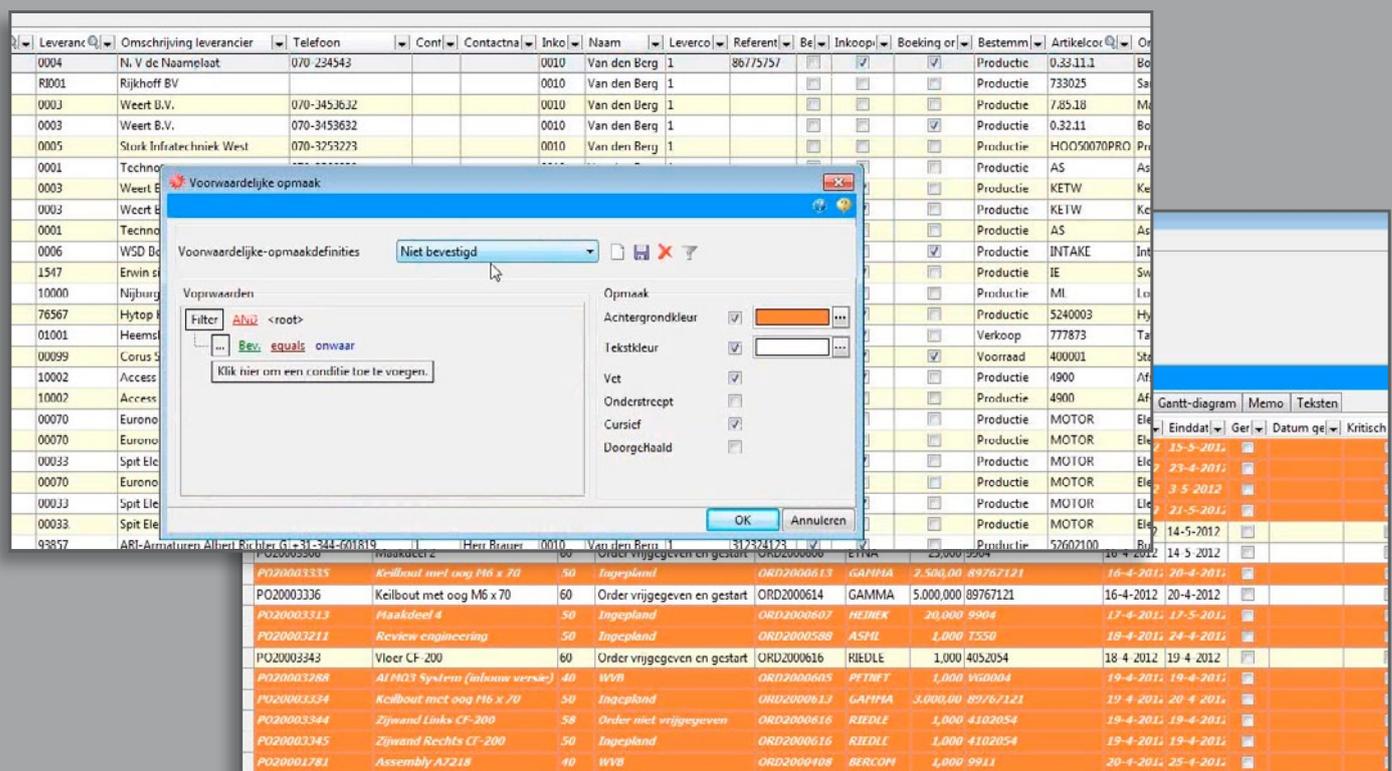
new server

In order to implement all the changes, the server used to run Isah needs to be upgraded. As this Way of Life goes to press, a decision has not yet been taken about the new set-up. The options are somewhat complicated, partly given the need for

good and secure automatic back-up. Thought is being given to using a virtual server on an existing server, or a new server whose format is dedicated to Isah. The idea of working in the cloud was briefly toyed with, but quickly put aside given the associated risks. Among the disadvantages of the cloud are that the company has no idea where the information is stored, who will be able to gain access to the information and whether the information will always be available.

two monitors

Finally, improvements will be made to the work stations. In view of the impending DMS (Document Management System), almost all work stations in the office will be provided with two monitors. One for regular work and one for displaying information that was often previously available on paper. As all paper documents will be scanned and thus available electronically, they will not get lost and people will be able to work more efficiently.





safe electronics on land, at sea and in the air



Have you ever thought about who makes the light beacons for windmills, high buildings or the petrochemical industry? One manufacturer is Orga. This may be a little known company among the average consumer, but Orga enjoys much international recognition in this niche market.



Mr. Jan Piet Stock

The company started 35 years ago maintaining and servicing electro-technical units on oil and gas rigs in the North Sea. This mostly entailed maintaining maritime lighting, fog horns, obstruction lighting, energy provision and explosion-proof electronic materials. It can safely be assumed that the experience accumulated would lead to the development of new products. The aim was to find solutions to improve safety and to reduce service costs.

In 1985, the company started developing its own series of products, for the oil and gas industry in particular. Today, Orga is the market leader in the development and manufacture of technically high quality light beacons, radar signals, fog horns, fog detectors and many other navigational aids. Apart

from these, its range also includes solar powered systems and explosion-proof solutions for the petrochemical industry. While there is competition from countries such as the United States, Italy and England, Orga's innovative drive keeps the company at the forefront of its field. About 20 of the 150 employees are engaged in research and development of new products. A branch office in Kuala Lumpur with about 15 employees provides that region with sales and service.

not just off-shore

The demands placed on off-shore installations are usually higher than terrestrial installations. Take lighting oil platforms for ships for example. Ships need to recognise these structures at sea in time to avoid collision. This is

the reason that these structures are equipped with light beacons and emit acoustic signals to warn of danger. The flashing lights must be visible from a distance of 10 to 15 nautical miles as an approaching supertanker needs significantly more space to manoeuvre than a car, for example. An additional requirement is that these signals must be operational at all times, even in situations when the regular power supply fails. Should this occur, the explosion-proof batteries must provide power. The light beacons therefore need to be energy efficient in order to keep running on these batteries for days. Light beacons are also used on land for objects such as windmills or tall buildings. In terms of buildings, they are usually placed on exceptionally tall structures such as the Millennium Tower



an idea of where light beacons can be found

in Rotterdam, the Rembrandt Tower in Amsterdam, the Pharos Tower in Hoofddorp and structures such as the Euromast in Rotterdam.

In-house development

All products are designed in-house. The manufacture of prefabricated units is outsourced to suppliers, the final assembly of the finished product is done in-house. Thus Orga develops all the optical, electronic, software and mechanical elements of every product.

tbp is an important partner in manufacturing the electronics used in various products. Mr Jan Piet Stock, general business manager at Orga, explains. "We do not only see tbp as a supplier, but also as a strategic partner. The company is part of the supply chain. It implies that we have made firm agreements. It is important for both parties to build and maintain a long lasting and trusted relationship. You do not select a partner like this to simply do one job, but for a long-term collaboration."

Why did Orga choose tbp? Jan Piet explains that it is for a few, crucial qualities: availability, flexibility and reliability in delivery and commun-

ication. These qualities are reflected in the two companies' collegial collaboration. Engineers from both companies seek each other out more often to exchange experiences and to review developments. "We use each others' knowledge to improve ourselves." In terms of costs, Jan Piet's opinion is clear. "There are undoubtedly suppliers who will be a little cheaper, but the other side of the coin is that tbp guarantees high quality. We have considered outsourcing our production to an Asian supplier, but, in the first place, our numbers are too low. In addition to that, if you have no control you cannot be sure of quality. These are factors that we have now, and it gives us reassurance."

Electronics

Previously, light bulbs were used for continuous light and xenon gas discharge lamps were used for flashing lights. Nowadays, by far the most common light source is led. The rationale behind this is clear: led lasts far longer than conventional light sources and is far more energy efficient. Given that for many uses the power source comes from batteries, it is also convenient. Technology has advanced to such a degree that led now emits the

same light intensity as a xenon flash tube. As these power-leds are used for critical applications, the engineers at Orga have direct contact with the R&D engineers at a number of led factories. The developments in this area are steaming ahead. Keeping abreast of these developments is of interest to both parties. The electronics needed to safely drive the leds demand great care. In the case of led, it is not regulating the voltage that is important as in the case of light bulbs, but regulating the current. The current determines the amount of light that is emitted by the led. The controllers that drive the led also need a high efficiency factor - otherwise the batteries will not last long. The batteries make up a significant part of the cost of a unit, and thus it is a must to design an efficient controller. Another important aspect is remote control, sometimes through the internet. Once the electronics have been assembled, the pcbas* still go through a final finishing process. They are given a selective coating to make them less vulnerable to the effects of the permanently salty air at sea. Some prints even get an extra protective layer which makes them even less susceptible to corrosion. >>>

>>>

extra reliability

The light beacons manufactured by Orga for use in the aviation industry, are subjected to a 36 hour in-house burn-in test. During this test, a range of functional tests are carried out to demonstrate that the product works properly. The test results after all need to meet the standards of the international authority the Federal Aviation Administration (FAA). This is totally understandable given that the goal of all equipment is safety. The chance of failure must therefore be brought down to as close to zero as possible.

collaboration from design onwards

There is increasingly closer collaboration with the engineers from tbp in designing the electronics. Similarly, Orga increasingly recognises the importance of synergy between designer and producer. However well thought through a design looks on the drawing board or on the screen, it does not automatically mean that the design will lead to a successful product. Jan Piet: "We are involving tbp more often in the design phase. This gives us a better fit with the manufacturing methods that are used. Our collaboration has become much closer over the last few years. At the time that we started working together, we felt a little resistance among our designers. They questioned why people from outside should interfere with our work. But now there is more and better communication between both

disciplines, and this is leading to far better results." The concepts DfT** and DfM*** are playing an increasingly important part. The collaboration between designer and producer can also be seen in other disciplines. Jan Piet: "This is why we design our own optical systems with lenses that when combined with the light sources produce the right light beams. The raw material used is a transparent plastic that is injected into a mould and shaped into the desired product, for example a lens. There is continuous consultation between our R&D people and the manufacturer of the mould to ensure the right result. This avoids any conflict that could arise during the injection moulding process. This situation is somewhat comparable to the production of our electronics.

about five years

Jan Piet: "We came into contact with tbp about ten years ago. High quality was even then viewed as the most important attribute. The products not only met the highest quality standards, but sometimes even exceeded Orga's requirements. And that had price implications. The prints met all conceivable standards, but for our industry went too far. Our end product would be too expensive. Around four or five years ago, we noticed that tbp's company philosophy had become more flexible as there was more coherence between quality and price. We were then able to get the quality that we needed at a good price.

synchronisation

There is one interesting point about the light beacons used in aviation around the world, and that is that they need to be synchronised. This means that all the lights flash at the same time. While it is not relevant to synchronise the lighting between airstrips, it is necessary within one particular airstrip. All beacons emit light at the same time and go off at the same time. The synchronisation is wireless and runs on a satellite signal. The GPS signal supplies the necessary time code. This technology is also used in windmill farms. The lights at the top of the windmills for aircraft all flash simultaneously, avoiding unwanted "fairground light effects".

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* Printed Circuit Board Assemblies

** Design for Test

*** Design for Manufacturing



Light beacons: these emit white light during the day and red light at night

new: app for order tracking

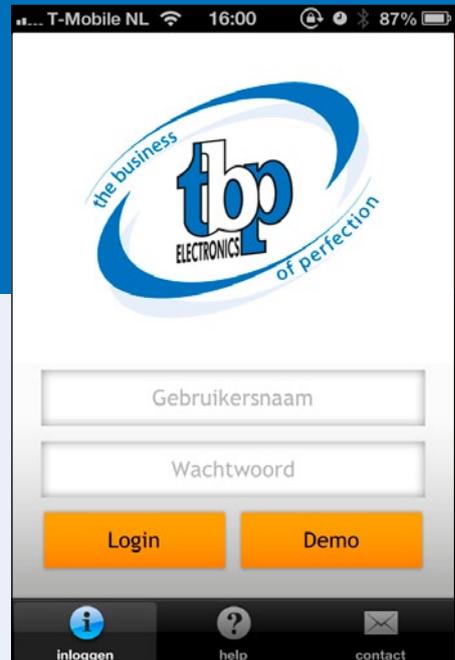
In its continuous efforts to improve communication between client and producer, tbp strives to be the leader in its field. As of summer 2012, clients who have an iPhone or iPad can use the track 'n trace app for order tracking. Using the app, the client can see at a glance the status of the batch of products. Handy for those who are regularly out and about. Experience shows that clients want to keep tabs on the progress of the production processes. Track and tracing is a useful tool in meeting this information need.

The possibility to check the status in the production may have been available on the website for a while, but this app makes access much easier. In just a few clicks clients can see which orders and products are being handled and their status. The client selects the items or the order from a list on the screen. The information is always current as it comes straight from tbp's ERP system.

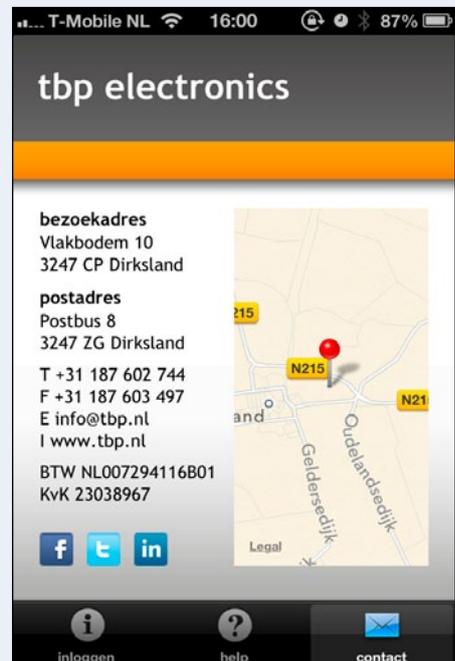
An added extra is that the app has a link to Google maps which shows the route to the company premises in Dirksland from where the client is at that point in time. At present the app is only available for iPhones or iPads. Once the applicati-

on proves itself to be successful, tbp will consider producing the app for Android and BlackBerry.

You simply download the app using this QR code or through the app store by searching for "tbp" and selecting "tbp electronics order tracking". The application is only accessible with an access code. The demo button gives any viewer an idea about how the system works, whether or not you have placed an order.



track 'n trace app



Richard Groenendijk wins Poelifinario 2012

At the end of September, Richard Groenendijk won the Poelifinario 2012. This is the cabaret award for the theatre producer who has produced the season's most impressive programme. He won the award for his performance *Alle Dagen*. Our guests during the customer and supplier days (18 & 19 April 2012) saw him perform parts of the show. Did you think at the time that you were watching someone in the running for the Poelifinario award? In any case, he looked very successful. In the jury's opinion, "He was awarded the Poelifinario for his ability to give a universal twist to an intimate and personal programme. His anecdotes seemed very casual, but beneath the surface of the amusing stories are hidden layers." The comedian exudes "intensity and focus" in the play, says the critique. "And all of

this while the theme of his programme is uncertainty. It is a wonderful, balanced programme." Groenendijk is currently acting the part of one of the main characters in a musical about the Yab Yum sex club.

The Poelifinario was created by the Vereniging van Schouwburgen en Concertgebouwdirecties (VSCD - association of theatres and concert halls). Groenendijk received the award in a ceremony that took place at the Kleine Komedie theatre in Amsterdam. The other nominees were Theo Maassen, Kasper van Kooten, Jan Jaap van der Wal and Maarten van Roozendaal.

www.richardgroenendijk.nl

