the business of perfection

tbp ELECTRONICS

WAY of life

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column

trust

Trust is the key to success! And what is then the definition of trust? It starts with giving: "he who has never been cheated, has never given trust." The giving of trust: giving is something to be owned by another. Trust is not easy to put into words.

Brigitta van Kanten of Ixchel wrote: "What does it actually entail, having trust in someone? Is trust an idea or a feeling? Does it come from your head, your heart or your stomach? What is the basis of trust? Is that connection friendship, love or does it have to do with the physical aura of the person? Is trusting someone something that you can have at the very first meeting - like love at first sight - or is it something that you develop over a longer period? Can you trust someone too much? If someone says that you are too trusting, do you feel that this is a compliment or a weakness? Can you give someone trust as people say, or is trust something that you have or do not have (any more), but that in any case is highly personal and arises in yourself?"

I have personally experienced being let down in business a few times. At that point you lose your trust in people and suddenly see everybody as a possible criminal. Desecrating trust does indirectly often have a feeling of criminality. Or "white collar crime". I recently found the following definitions from the FBI real eye-openers:

"Punishable facts characterised by fraud, deception or infringement of trust, that are not dependent on threats or the use of violence. This definition is primarily based on facts. A second definition assumes the routine and planned character of white collar crimes. In many cases they are indeed the result of a premeditated strategy, or of one that has grown through time. In short, people may thus assume that white collar crime is carried out by people of a high social status and is characterised by a degree of premeditation and an absence of violence or threat.
White collar crime has its own place in punishable offences. It has the reputation of being a relatively 'innocent form of criminality', whereby the perpetrators are rarely caught. But if they do get caught, it seems as if they get off lightly. Thus, there is a major difference between white collar crime and blue collar crime and other criminal acts. While there may not be a direct victim in white collar crime, the implications can be serious. The crime may not be directed at an individual but at a collective - a bank, tax office, insurance company - but this collective would not be able to operate if the damage brought about by fraud gets too large. Ultimately, many people are duped, and it may lead to loss of confidence in the system. For various reasons, white collar criminals seem to be able to avoid getting caught more easily than other criminals. Of course their high status means that they can hire the best lawyers to defend them. In some jurisdictions white collar criminals can even use bribery or influence judges or legislators. Furthermore, damages are difficult to trace and in many cases are indirect, for example if share prices drop. People may not proceed with a case because an institution has a certain socially important representation. If, for example, a company is charged with environmental fraud, the ones that in the end suffer are the innocent employees and unknowing shareholders.
Ultimately, white collar crime does not affect many people and is also far less shocking because of the absence of violence.
Compare a case of random violence with one where € 1 million has been white-washed. This has an impact on the political and social pressure to deal with white collar crime."

This year tbp electronics celebrates its 35th anniversary, and I consider myself fortunate that, in all these years and before that too, I have been able to build so many relationships of trust. This has helped us achieve everything we have done. It seems unavoidable that you will at one time be cheated. But you learn immediately afterwards that without trust, you cannot do business. I have thus great faith in the future! And I hope that all those who I trust, trust me.

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contents

Techno-tbp on the rise

Techno-tbp is becoming a successful company. The still new collaboration between the design agency Technolution and the producer of electronics tbp has already inspired various companies to become clients. It is a logical development to link design and production. This gives us a high level of synergy. If designers and producers of electronics support each other well, it will lead to the best results. It seems as if 1 + 1 is not 2, but 3, though mathematically speaking this is nonsense of course. Still, that's what it looks like.

In practice

Using an example, we will take you behind the scenes of Techno-tbp to show you what we mean by collaboration. We needed a small amplifier that needed to meet a number of very specific criteria for one of the machines that is manufactured at one of the large semiconductor factories in the south of the country. The amplifier is part of a control loop for the driving of an actuator. A list of requirements was compiled together with the client. The list contains not only the electrical specifications, but also the physical dimensions, heat regulation and so on. Alex van den Heuvel, project leader at Techno-tbp, explains how this project started: "Given the requirements, you know in advance approximately what the design will be. Years of experience helps in this because for some parts of the design you can use 'proven technology'. This gives a certain guarantee of a proper end product. At the same time, you can start on the ordering of particular components, which is handy given the often long delivery times." Sometimes a part circuit remains which must be thought through carefully. A test system must be made to demonstrate that this part works as it should.

collaboration.

The final design can now be made in collaboration with the tbp engineers. While the primary requirements play a role, aspects such as producibility, availability of components, mechanical qualities and strength are also important. This entails ensuring DfM (Design for Manufacturing) and DfT (Design for Testability). Think of the possibility during production of doing a boundary scan in accordance with the JTAG (Joint Test Action Group) standard, or adding control points for the flying probe test or ICT (In Circuit Test). The design is altered according to the given instructions until a fully production ready design is available. In this way two connectors are added to the above mentioned amplifier to measure the tension and all networks are provided with test pads for the flying probe test. Various checks also take place in advance to make sure that the product meets various preconditions. This includes heat regulation, EMI/EMC requirements etc. The finished design is the basis for the steps to be taken to manufacture the product. As the quantities are usually small, it means that work is done to immediately produce a "final end product". This means that much care is given to verifications and reviews to avoid any risk of errors. This saves time. The risks of large numbers of PCAs (printed circuit assemblies) are extremely high, but for small quantities the client can have the required product more quickly. The time to market thus is an important aspect!

jumping in the deep end

Alex: "We then talk about the creation of an AM1 (Art Master 1), the first version according to the first time right principle. We can do this because we are very confident that the product is right. Before production we have used all sorts of tools to check and verify various aspects of functionality. During production all possible test facilities are used so that there is almost no chance of errors." Of course errors are sometimes made, but these are usually easy to correct. With a couple of patches problems are quickly eliminated and the product meets the requirements. By definition, this work methodology is the most pragmatic. The amplifier has now been tested and works well. What remains now are the environmental test and shock & vibration tests to demonstrate the strength of the product.

after care

The final schedule and all its associated features are then recorded in a way that is the norm for the client. In this case, the client receives all the information in its own standard for which the Mentor Graphics Tool chain is one of the tools used. The requirements document and the detailed design are also recorded in the client's required templates. All information can thus be seamlessly included in the client's documentation centre. This means total compatibility so that it looks as though the design was made in-house. The conclusion is clear: collaboration between designer and producer makes the manufacture of an efficient and high value product possible. The client has one point of contact: Techno-tbp. We call this service.

Techno tbp

www.techno-tbp.nl

good software management optimises machine park performance

Gerard Elema is not a stranger to the EMS world. He has worked for various companies for about 20 years. Most of these were suppliers of production equipment, computer systems and software for the design of electronic products. He is also familiar with associated aspects such as PLM/ PDM (data management).

In the last issue of Way of Life, we looked at ODB++, the software that contains almost all the information needed to make a printed circuit board assembly (pcba). But making all these specifications and a complete machine park available, is a step further. There still needs to be an optimal connection of clients' released instructions for the various machines to be able to produce a good product. As the rapidly evolving technology makes more and more new things possible, pushes boundaries and increases quality, thus the technical programming that runs the machines is changing too. This places high demands on the managing of all software flows to be able to play the game of manufacturing satisfactorily. Last summer, Gerard Elema (technical applications manager & DfM expert) was hired to take on this management task.

the software game

Unfortunately, in practice there is no clear and defined software that makes possible a seamless connection of ODB++ information on the machines. Every machine uses software exclusively made for it. In the past, attempts were made to achieve some degree of standardisation, but only a few suppliers use these. That standard, initiated by the International Electronics Manufacturing Initiative (iNEMI), is known by the name PDX (Product Data eXchange), but only a few suppliers adhere to it for "competitive reasons".

overhaul of the website

For years tbp has used it website as a communication tool for clients and those interested in the company. With great success because we see from the reactions that this contemporary medium works well. What works less well over time is the technology behind the website. Just as with many technical products, our website shows signs of wear and tear. Some users' browsers - what you need to view websites - do not display perfect images. Dana Wolters, who keeps tbp's website up to date, sees increasingly more minor imperfections. Reason enough to meet up with the maker of the website, Comwave (www.comwave.nl) in Barendrecht.

update

It is not only the small irritations that have instigated a complete screening of the current site, but also the fact that the website does not fully reflect the tbp house style is a thorn in Dana's eye. "It could be better", is the general opinion at tbp. Comwave, specialist in building websites, too concluded that the look and feel is no longer current. Added to this is the changing demand of mobile users with their smartphones and iPhones, and you have reason enough to abandon the website. Though keeping the good things of course.

Much work has now been done on the building of a new site and the results are already visible. Don't be surprised if the familiar appearance of our website will be different when you next visit!

video presentations too

In terms of text, there will not be major changes. After all, our core business remains the same. The old technology that was used for the logo has given way to modern applications such as JavaScript and similar. As our company video was also in need of an update along with the website, we will be able to combine recent film material with a new website. We will use fragments from our new company video in our new website. If you later click on a particular subject, such as

Gerard can understand the situation: "I understand the disadvantages of universal open source software. Manufacturers of specific equipment would have to give too much ground for sensitive information that they have developed themselves. By doing so, they would jeopardise their competitive position. But this may become less significant over time. In any case, it does bring in more work."
A conversion must thus occur between "client data" and "factory data". In practice, this means that the market sometimes needs to look for the right preparation software that needs to be seen as a type of conversion. If that software is not readily available, it needs to be developed by the company itself.

up-to-date

The machines' software as well as the preparation software need to be updated continuously. Just like office applications, machine software upgrades and updates appear regularly. Gerard about this: "You need to be extra careful with upgrades and updates. They are mostly intended to improve the process. But they can also result in particular functions of a machine suddenly working differently than you expect. Or that the operation between machines is disturbed. You need to remain alert and if necessary take account of this in advance of the work preparation." This means that good contacts with equipment suppliers is crucial and that people need to have thorough knowledge of all the ins and outs. Only then will you be successful.

regularity

It is not only a question of keeping the software of the machine park going, but it is also necessary to keep the different software modules used in the production environment updated.

Some examples of "standard software modules" are:

- Valor Trilogy 5000 (the software that carries out a producability analysis on the design of the electronic circuitry, the software with which the PIMs are made (PIM = Project Instruction Manual, a document describes all assembly and compilation instructions) and the software with which tbp makes the programming software for the production machines);
- Testway (software that controls the electronic circuitry for testability and thereafter carries out the Boundary Scan for example);
- Qsight (quality control software).

There are also other, more general, packages that require maintenance. In short, there's enough to do!

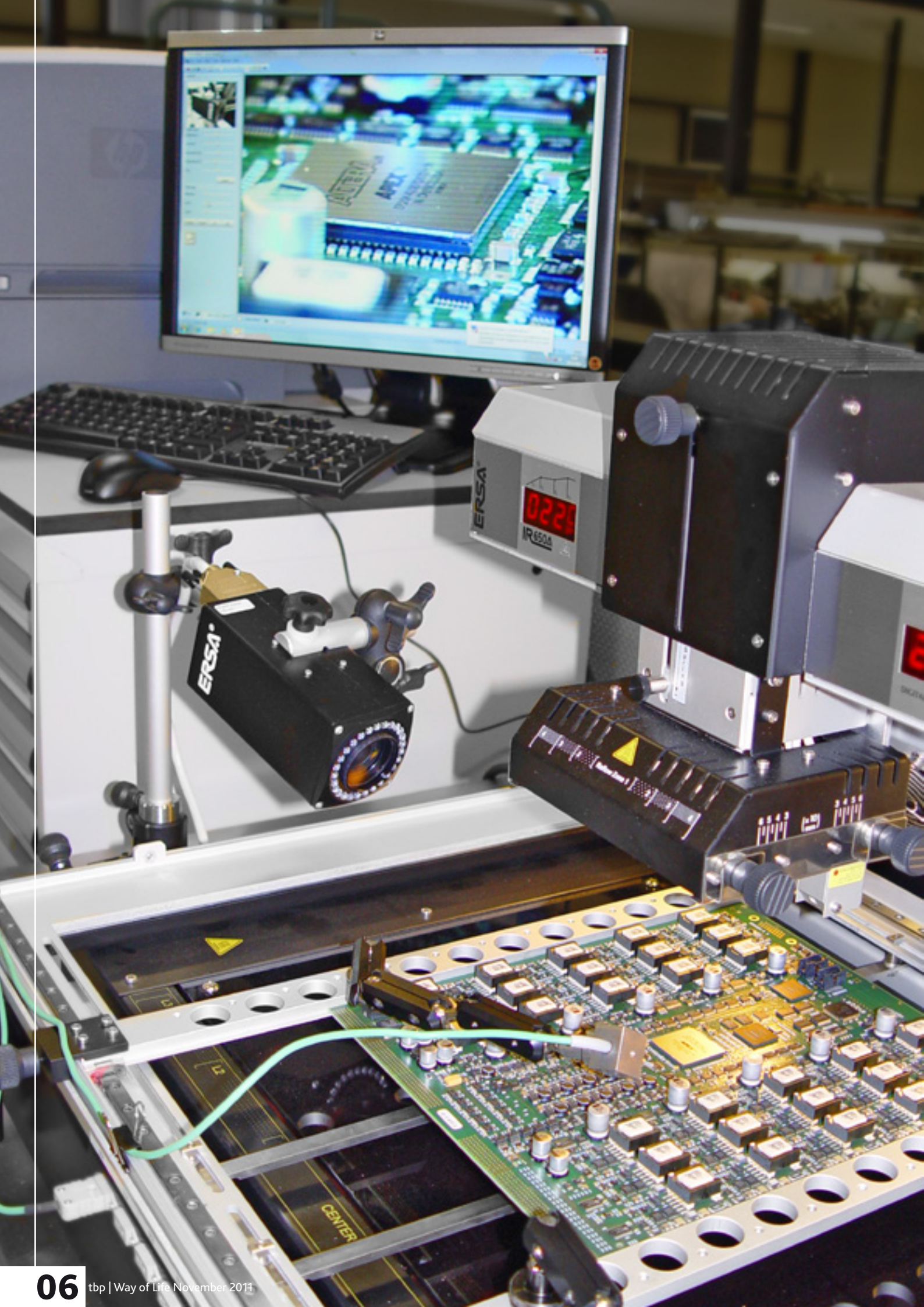
Thanks to this software, tbp can achieve its company goal: supplying the perfect product. Let this be the mission of the company.

soldering technology, you will see a short film that gives a high speed impression of this.

useful and pleasant

Your visit to our new site in the future will be improved in several ways. Mobile users will be able to navigate more easily and faster in the mass of information on the site. You will also find information that is useful indirectly. This could be about certification or environmental or waste management for example. In short, the site will be more complete and you will enjoy it even more.

www.tbp.eu.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CENTER

repair station is up to the smallest component

For about 10 years now, tbp has had access to a repair station to replace broken parts on pcbas (printed circuit board assemblies) by new ones. While this station worked well, it no longer met today's requirements. Rapid developments are making components ever smaller and more complex, and this poses greater demands on the accuracy of placement and temperature. At a certain point, the physical limits are reached. This means that tbp had to look for a system that meets the contemporary demands. The search, including at the SMT fair in Nuremberg, generated a wide range of options. After thoroughly examining all the information gathered from different manufacturers, the best option for tbp was an Ersa repair station. The first meeting with the station was promising. A machine was tested, proved itself, and has been a permanent part of our machine park since last summer.

Requirements

The standards provided to the repair station were clear. It thus did not seem complicated initially. Place the board in which a component needs to be removed between two clamps, locally heat the connections so that the solder softens, and remove the component. Similar rules apply to replacement. However, in practice there was a lot more to it. To start with, the components are becoming smaller and smaller. The smallest components at present are not even a millimetre wide, and sometimes even less than a quarter of a millimetre. This cannot be done by hand and needs mechanical help. The new machine uses a special prismatic optic and a camera to outline the new component to be placed.

Not only are the dimensions important, but also the type of component may require an adapted method. A BGA (Ball Grid Array), for example, requires a different treatment than a usual SMD (Surface Mounted Device). The BGA has all sorts of connections in the shape of mini islands on a surface of the component. On these islands are soldering balls and liquid. By placing the BGA on a print and immediately heating the connection points with infrared light, the soldering occurs. But should a BGA need to be removed, just enough local heating is needed to remove the BGA while leaving the adjoining components unaffected and not causing heat damage. The print card too must be left undamaged by this treatment.

PL-650

This is the new machine's type number, the flagship according to the manufacturer. And this seems justifiable. This machine stood out for its extremely high degree of accuracy during "auto pick & place": within 0.01 mm. Even the smallest components can be placed in exactly the right position.

Even the temperature can be regulated across the whole working area. The infrared heating is divided among a number of zones that guarantee optimal heat regulation. This avoids the damage of components and printed circuits and creates perfect soldered connections. Furthermore, the machine is "self learning".

A profile is associated with particular activities such as exchanging a particular type of component on a particular type of printed circuits (thickness, quantity of copper, multiple layers). The profile contains a description of which zones are heated for a specific length of time before removing or placing a component. The operator can add information based on experience as a new profile in new situations so that when similar actions are repeated, the new profile can be used. This improves both efficiency and the quality of the work. And this is ultimately what it's all about.

left: the PL-650 at work, with an "auto pick&place" accuracy of less than 0.01 mm

the electronic eye that never sleeps

Adimec is specialised in the development and production (assembly and testing) of industrial cameras for high value applications. Cameras that are fine-tuned to the professional user's specific requirements. It is the user that ultimately processes the image information and uses it to carry out certain processes. That can be measuring the thickness of a layer of varnish after painting, determining a defect in a medical diagnosis, or recording speeding motorists.

market segments

Jos Bellers (see photo), supply chain manager at Adimec, talks about the applications of "his" products with verve. "We have divided the market for our cameras into three segments: machine vision, medical imaging and outdoor imaging. They may be the most divergent uses, but they have on thing in common: the cameras need to have extremely high quality images and be highly reliable." For machine vision, most of the applications are in the manufacturing of electronics (EMS market) and wafer inspection. For medical imaging, they are of course about medical diagnostics, while in the outdoor sector they are used for defence, security and traffic.

For machine vision, the cameras are part of the production process. These cameras for example, measure the dimensions of a solder connection. There are countless applications. A car factory uses the camera to check the quality of the paint by measuring the reflection of light. A producer of flat panel displays uses the camera to automatically test if all the pixels work. tbp also uses cameras in the production process to check the quality of the solder connections. In cases of defects, a message is sent immediately on detecting that a connection is not right at a particular location.

construction

Adimec's cameras, with their various applications, are very different from the type of cameras we associate for consumer use. The similarities can be found in the basic construction: lens, image sensor and processing electronics. But that's where the similarities end. To begin with the choice of sensor. These are drawn from manufacturers such as Kodak or Sony, but when they arrive they go through a thorough selection process. By measuring various parameters such as deviating pixels, light sensitivity and so on, the type of camera that the sensor is best suited to (grading) can be determined. Apart from the development of the electronics, a lens is also needed. Many purchasers in the machine vision sector provide their own. For the medical applications, the lenses are mostly made by third parties to Adimec's specifications. Adimec may not produce lenses itself, but it has sufficient knowledge to put all the specifications and constructions - including the type of glass and coatings - on paper. The final product is defined as a camera lens assembly: optics, sensor plus electronics. The signal that a camera ultimately emits must meet a standard. This could be Cameralink, GigE (a sort of ethernet connection) or CoaXPress (worldwide standard developed by Adimec and partners, which even won an award: the Vision Show Award).

outsourcing

Up to 2008, Adimec itself did as much of the design and construction work itself, apart from the so-called 'bestücken'. In that year though, it made a strategic plan in which it decided to concentrate on its core business. This meant looking for a good EMS (Electronics Manufacturing Services) supplier. Extensive market research followed, in which tbp rose to the top. Not only for its pure assemblage of printed circuit board assemblies, but also for its acquisition given its buying power. The project started in 2009. Jos: "We had immediate good experiences, very positive! At the time we chose tbp because of its great flexibility. We got what we wanted, 'unburdening'. We can see this in the production of both regular and new products. As a number of issues run through each other, It is fine if you work with a partner with whom 'you are on the same page'."
There is a degree of difficulty though in the planning. When producing cameras for the medical market or for security/defence, you can make a relatively reliable long running planning. But for the machine vision market this is not the case. There is hardly any planning at all. It is an extremely dynamic world. Jos: "Our clients sometimes demand extremely short delivery times. Thanks to our good contacts with tbp, we can sometimes make the impossible possible."
Flexibility is not the only important parameter, the quality of the delivered product is too. Jos: "We attach very high demands. You can find our system all over the world. In hospitals in Russia, on traffic motorways in Italy, or junctions in Japan. Adimec's cameras are even used in space (Space Shuttle). Nobody wants defects."

regular contact

To make the production as efficient and run as smoothly as possible, the representatives of Adimec and tbp have regular meetings. In short, this is called QLTC (Quality Logistics Technology Costs). These are teams that regularly brainstorm about these four aspects to make sure that all the processes run optimally. To Jos Bellers this is very important: "It is important for us to maintain the feeling with the component market. This allows us to anticipate on future designs and production." Another aspect is the consultation between designer and producer if a new design is being prepared for production. In this process, it is checked if a product can be made according to a design or if it can be done more efficiently, if there are enough test possibilities and so on. If a new product requires components that are not readily available, the purchasing flow is quickly looked at. Jos: "This was a new way of working for us. It means that together we can ensure that an excellent product is created. That's exactly what I mean by 'unburdening'."

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There was a lot going on in and around tbp's stand.

Electronics & Automation fair: good and enjoyable

Do you still remember the Electronics & Automation fair (25-27 May in Utrecht)? We do! Looking back at this interesting fair for our sector, we can say that it did us proud. We estimated in advance the number of guests we might receive, how many contacts with prospects could be made and what the atmosphere would be like. After the fair we could luckily say that we reached our target!

In terms of prospects, it is going well and our customer base is continuing to grow. Next to this, it is of course fine that our contact with existing clients was strengthened. The ambiance that we created was certainly a contributing factor.

Do you want to stay up to date?

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The winner of the 1st prize was Dirk Stans of Eurocircuits.

A good runner-up: Hans Zijlstra of Elincom.

general
The organiser says that there is a positive atmosphere at the fair. There may be fewer visitors, but the loss is made up for by quality. The Spinner, the gadget that visitors can compile themselves, went down well in many ways. Many exhibitors bent over backwards to make a visit to the fair as attractive as possible. And the visitors appreciated it.

Techno-tbp especially so
There was clearly increased interest in Techno-tbp, the recent collaboration between Technolution and tbp electronics. A company that offers everything from design to electronic end product. Perhaps the tbp customer & supplier days that was held a month before the fair gave an extra boost. In any case, various interested parties came to learn something from Ate de Vries who, on behalf of Techno-tbp, was there for potential clients. That in terms of appeal we were on the right track was also clear to see during our happy hour. Serenaded by music by the De Swingers trio, many fair visitors dropped by "to grab a pint" and to talk about issues that make our profession so exciting. It was simply great fun.

double role
Ton Plooy, not only host on behalf of tbp, also had the pleasure as acting chairman of the fair committee, to award the marketing communication trophy that fair organiser FHI makes available every year. All stand holders could take part in a communication competition by recruiting fair visitors. The award ceremony took place in a space bordering the tbp stand. This resulted not only in a prize winner and runner-up, but also extra members of the public who naturally came to see what was going on in tbp's Grand Café. All in all, a tremendous turnout. Another hot phenomenon that we also saw last year during the "Het Instrument" fair: students discovered the beer tap at the tbp stand and quickly smsed their student friends telling them where to go if they were thirsty. Under our motto "the student of today is the client of tomorrow", they were also heartily welcomed.

de Swingers in action
www.deswingers.nl

to the fair

Over the next few months several fairs and conferences that are important to our sector will be held at various locations in the country and abroad . Below is a list of the events up to spring 2012 Of course tbp can be found next year at HET Instrument 2012 (25-28 September, RAI, Amsterdam). Also earmarked is our participation at the electronics fair in 2012 in Munich (13-16 November) Note both events.

IN THE NEAR FUTURE WE CAN BE FOUND IN OUR OWN COUNTRY:

15-16 Nov 2011, Reehorst Ede
MICRONANOCONFERENCE
Two day conference and trade fair about recent developments in micro and nano technology. Organisers: NanoNextNL and MinacNed.
www.micronanoconference.nl

18 Nov 2011, Eindhoven
BITS & CHIPS 2011 EMBEDDED SYSTEMS CONFERENCE
Tenth edition of the annual conference on embedded systems and software. Keynote speaker is ASML top man Eric Meurice.
www.embedded-systemen.nl

23-24 Nov 2011, Nieuwegein
TECHNIVENT 2011
Third edition of the professional event about sustainability and innovation in industry and maintenance.
www.technivent.nl

13-16 March 2012, Jaarbeurs, Utrecht
ESEF 2012
Benelux trade fair for supplying, outsourcing and engineering.
www.esef.nl

27 March 2012
NEVAT EMS CONGRESS
Third EMS NEVAT Congress for the Electronics industry. "Back to the future: the power of technology, service and flexibility of NEVAT EMS companies."
www.nevat.nl

AND YOU CAN COME ABROAD TO:

8-9 Nov. 2011, Munich, Germany
6-7 Dec. 2011, Stuttgart, Germany
EMV SEMINAR 2011
At the practical compact seminars about EMC.
www.mesago.de

22-24 Nov. 2011, Nuremberg, Germany
SPS/IPC/DRIVES 2011
Electrical automation, systems, and components. International exhibition and conference.
www.mesago.de

7-9 Nov. 2012, Dusseldorf, Germany
EMV 2012
International exhibition and conference about EMC.
www.mesago.de

embedded world 2012 Exhibition&Conference ... it´s a smarter world

28 Feb -1 March 2012, Nuremberg, Germany
EMBEDDED WORLD
Fair and conference about the embedded industry.
www.embedded-world.de

7-9 Mar 2012, Guangzhou, China
SPS INDUSTRIAL AUTOMATION FAIR GUANGZHOU 2012
Innovations and solutions in automation, from sensors and control systems to applications.
www.siaf-china.com/english/

21-22 Mar 2012, Zurich, Switzerland
SMART SYSTEMS INTEGRATION 2012
International conference and fair for the integration of miniature systems - MEMS, NEMS, ics and electronic components.
www.mesago.de

25-27 April 2012, Shanghai, China
NEPCON MICROELECTRONICS
Fair focused on SMT. Shanghai World Expo Convention & Exhibition Center.
www.nepconchina.com/en/

PCIM EUROPE

8-10 May 2012, Nuremberg, Germany
PCIM EUROPE
International trade fair and conference for power electronics, intelligent motion, and energy.
www.mesago.de

smthybridpackaging

8-10 May 2012, Nuremberg, Germany
SMT HYBRID PACKAGING
System integration in micro-electronics, international trade fair and conference.
www.mesago.de

22-24 May 2012, Parma, Italy
SPS/IPC/DRIVES ITALIA 2012
Fair and conference for technology for industrial automation, systems and components.
www.mesago.de

SENSOR+TEST 2012 DIE MESSTECHNIK-MESSE The Measurement Fair

22-24 May 2012, Nuremberg, Germany
SENSOR+TEST 2012
19th international fair for sensors, measuring and trialling technology.
www.sensor-test.de

electronica 2012
www.electronica.de

finger on the pulse results in top products

Quality control in the broadest sense of the word is an integral part of supplying a top product. Quality means that all company processes are entire under control all the time and that defects never or rarely occur. tbp does everything it can to achieve its goal of delivering top quality. A team of specialists work hard every day to make this happen. What they do in broad lines, we explain here.

quality

What is quality? In terms of content, quality means that the delivered product fulfils the requirements. tbp's main goal is to deliver faultless products of high quality. Between commissioning and delivery are countless processes. They start with the handling of quotations and really end after delivery of our products in the form of after sales service. This is just as important for tbp. The many company processes that ultimately result in the end product are spread across various disciplines. This also means that several people are involved in quality control.

quality team

There are roughly four distinct disciplines:

- *QLE (Quality, Labour and Environment)* The entire quality management system with the descriptions of all procedures is in the hands of the QLE coordinator. This includes the ISO and AQAP certification, carrying out of audits and following the environmental regulations, and also the management of the waste product flow;
- *product analysis*. Primarily a numeric analysis. Errors that occur during a process are registered and entered into a database. An analysis is made using this database so that, if necessary, improvement processes can be started. This can be an adjustment of a company process or perhaps use of another production tool or another production method;
- *quality engineering*. Is particularly applicable as support for all production processes, but also for related departments such as procurement and entry control. Quality engineering is set up in such a way as to map any internal or external complaints or defects and to solve them as quickly as possible through improvement trajectories. In doing this, it is highly important to secure the solutions for the future. Another aspect that falls under quality engineering is the static process control. By incorporating control points in processes, people can check if processes fall within within the pre-determined values. A form of reporting, originating in the automobile industry, known as the 8D report (8 quality steps), in which error analysis is used for the preventive solving of c omplaints and defects:
- *end inspection* Despite the regular tests and checks during the production process, a finished product may not meet 100% of the requirements. Checks are also carried out on extra requirements, such as IPC3 class, that a client may need.

Quality management: by combining all the functions, the entire field of quality can be monitored.

common denominator

Much more can be said about all named parts. But we will look at the broad lines. How the clients gets the product that he/she wants. How tbp constantly improves its processes, also in order to improve efficiency. The clients after all wants a perfect product against a price in line with the market! Thus attention is given to the internal and external production performance through internal performance assessments. On the production floor and in the test department, we look at the number of errors made per production batch. As all observed errors are registered by series number, we have a good picture of the error so that action can be taken. By following the trend of analysing both in width and in depth, tbp is able to set up improvement trajectories that should ensure the ceasing of repeat problems. Before a PCA is ready in the production, it goes through many steps (processes). By carrying out checks at every step and registering any deviations, we are able to measure our own product quality. This is the only way to learn from mistakes: measure to manage!

multi-disciplinary

The department works closely with the other departments in the organisation. For tbp, that is *the* way to keep quality a priority. Quality is highly dependent on the right staff member motivation, good instructions, procedures, training, collaboration and especially communication. After all, as an individual you can create quality: all these individuals together make up tbp as it is now. Quality is a continuous learning process that should keep everyone sharp. Quality is ultimately something you make yourself.

from left to right: product analyst Wout van Veen, quality engineer Gerard de Groot, end inspector Mirella Looij-van Helden, QLE coordinator Kees du Pree and manager QA/QC & facilities Kees Vis

Art

a different view of the business

Marije van den Oever (1979) was intrigued by photography even as a child. She wanted to know more about it. At eight years old she got a camera that became her trusty companion on holidays, during walks, at parties and celebrations. A friend of the family was a fanatical photographer and taught her the first principles of photography. She quickly learned the secrets of the dark room and how to handle the then much used chemicals. That interest only grew and it was then a logical consequence that after secondary school she continued her education at the photography school in Apeldoorn. After finishing the basic photography course, she was admitted as a student to the Royal Academy of Art in The Hague. She completed her studies in Editorial Photography.

at work

After finishing her studies, Marije decided to join forces with her partner, Redmar Kruithof, who had already established himself as a photographer. Together with him she established a new company in 2007 with the appropriate name "Twee Zien Meer" (two see more). Their clients were mostly companies. This meant a lot of portrait photography, reportages for annual reports, and photos for websites and publications. As she explains, very varied assignments which was just what made the work so interesting. Apart from these assignments, she gives many workshops and courses. For both the beginner who wants to learn more about photography and technique to the advanced learners who want to improve their creations. There a plenty of opportunities. There are courses that specialise in preparing their participants for exhibiting. Or that are specialised in night photography. Fotografieles.nl also organises enjoyable company trips and team building exercises based around photography.

free work

The major creative release for Marije is free photography. Her major specialism in digital image editing means that she can process images so that viewers have a different view of reality. Reality through unusual lighting, for example. Almost surrealistic. The images created are often part of a theme. At tbp electronics there are works from the series 'Sporen' (tracks), 'Segreto' (Italian for secrets), and 'Inanna' (a goddess).
Sporen shows how natural light and artificial light can pollute or enhance the landscape. The result is unique, atmospheric images. While you would not think so looking at the images, they have not been edited on the computer afterwards, but are set in scene while photographing. The light effect is not created by digital enhancement, but is photographed on location by literally ' writing with light'.

Segreto deals with general themes that can be associated with secrets. The photos were taken during a trip through the Ukraine and Armenia. On her travels, Marije looked for things that reminded her of secrets. Things that are closed or locked away and something that remains hidden. Something that you can see through, behind or beneath to
see what it is hiding.

The Inanna series is about photos that are made in connection with stories and tales about 'strong women'. The images are inspired by the story of Inanna, a Sumerian goddess of 2500 BC. Inanna is the goddess of many things including wisdom, love and fertility, and is clearly bound to the earth. The images are then found in nature, in the elements and in the materials and buildings that form a unity with the earth or are being reclaimed by her. The photos clearly show that everything is linked together.

The exhibition can be seen at tbp until the beginning of 2012.

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the paperless office is even closer

In the previous issue of Way of Life, we looked at how far we are on the path to "the paperless office". At that time, we were selecting a supplier of DMS, the Document Management System. Two suppliers fought for the final place: I.R.I.S. and Expansion. After much debate, the choice was made and the first company got the green light to carry out further evaluation and come up with a final quotation.

the scoping phase

While tbp had already done research at an earlier phase into the diverse information flows, no answer had as yet been given to the question what was needed to keep everything in check. A detailed examination was needed to make this visible: the scoping. One aspect of scoping is to map the flow of all documents through the company and how that can be reduced. Another aspect is to make available data and historical data that were stored in various media. The result of the scoping will be an implementation plan and naturally an overview of the related costs and savings. The implementation plan will describe the new procedures and which tools will be used to reach this goal.
It could mean that as much data exchange as possible, both internally and externally, will go through the digital highway. In areas where we may still expect paper, such as incoming post or warehouse items such as packing notes, a scanner will be installed to digitise the information. In short, the flow of paper is being reduced. The challenge is of course to make the digital information available immediately and in the right form to the right user. This is what the entire implementation of the system is concentrating on.

the node

In October, just before this Way of Life was published, the supplier I.R.I.S. completed the scoping phase and brought out a quotation. Full of expectations, the interested parties closely studied the solution presented and now only have to draw one conclusion. The go/no go moment has arrived. Management has the last word and is advised by the project managers of the support department. CEO Ton Plooy: "I believe that the offered solution not only saves on paper, but strongly increases access to information. This means that everyone in the company has faster access to information and that there is less risk of something getting lost or forgotten. Another step in perfecting our company." That is music to everyone's ears.

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