

PtSA Newsletter

Newsletter of the Production Technologies Association of South Africa

Feb/Mar 2019 • Issue 7



Foreword from CEO

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We hope that everybody has had a good start to the year and we wish everybody, and in particular our members, a very successful year for 2019.

2019 has started off at an international level with the World Economic Forum taking place in Davos, Switzerland. According to reports, this year the forum took on more of an activist bent with attendees calling for action to combat problems such as climate change, income inequality and privacy breaches. These certainly are problems which we are also facing in South Africa.

“The issues around climate change took on a markedly different tone this year, as attendees stressed the need for finding solutions with greater urgency,” according to Arun Sudhman, Editor-in-Chief for the Holmes Report ... *The topic drew activists, such as Sir David Attenborough, the 92-year-old broadcaster and naturalist, to 16-year-old Swedish student Greta Thunberg, who told attendees, “I want you to feel as if the house is on fire, because it is.”* (see http://en.wikipedia.org/wiki/greta_thunberg).

“Technology also permeated the Davos discussion, taking shape in a number of forms. The serious issue here is we are clearly seeing technology disrupt every aspect of the business world,” Sudhman said.

PtSA has identified that both the issues of climate change and the disruption that technology is, and will have, on business are issues to be addressed with our members, and both of these issues are included in our objectives, as shown on page 2 of

this Newsletter. (Sustainable Development and the 4th Industrial Revolution)

In this regard, we draw your attention to the article on page 2 regarding the forthcoming Future Production Technologies Convention which is being hosted by PtSA in July. We hope to see as many as possible of our readers at this convention.

In addition to the Convention we will continue to include articles in our Newsletters regarding 4IR and the impact of 4IR on manufacturing technologies, such as the article on page 12

Sustainable development will also be addressed as one of the topics for the Convention, and as an introduction please see a short article on page 3.

We are including some articles of interest with regards to new technologies and developments, local innovations, and support opportunities, which we hope will be of interest to our readers.

Our next Networking Evening will be held in Gauteng on the 21st February, which will be sponsored by DG Capital. We thank the team at DG Capital for this support.

The photo below shows the PtSA offices in Rosenpark, Cape Town.

We trust that you find this Newsletter interesting and informative.

John McEwan

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Production Technologies Association of South Africa



Objectives of PtSA

- To promote the achievement of business success through advocacy, networking, information programs and services
- To strive to enhance the reputation of the industry and its employees
- To promote the efficiency and profitability of its member companies
- To defend the interests of its members with authorities and other associations
- To review the training and educational standards for skilled workers employed by Industry, particularly in times of rapid technological changes
- To ensure the pathway to the future with the promotion of sustainable development
- To guide its members towards a better understanding of the 4th Industrial Revolution (4IR), the potential impacts on the production technologies industry and how its members should adapt to 4IR

Future Production Technologies Convention

The planning for the Future Production Technologies Convention is well under way, with a number of high powered national and international experts having been secured as speakers.

A number of companies will also be exhibiting their advanced technologies at the convention for the benefit of the delegates attending the convention.

The full programme, speakers and exhibitors is shown on the website <http://www.sbs.co.za/fptc2019> which is being updated on a regular basis.

We encourage our members and readers to attend this convention in order to be informed of all the latest developments, and future developments, of the Fourth Industrial Revolution.

<p>FUTURE PRODUCTION TECHNOLOGIES CONVENTION</p> <p><i>The Fourth Industrial Revolution (Industry 4.0) will herald the transformation of entire systems of production, management and governance.</i></p> <p>Robotics . Artificial Intelligence . Nano Technology . Quantum Computing Biotechnology . The Internet of Things . 3D Printing . Autonomous Vehicles</p> <p>31 July & 1 August 2019 • Cape Town - South Africa</p>	<p>Hosted by Production Technologies Association of South Africa</p> <p></p> <p>In association with</p> <p> </p>
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ISTMA World

PtSA is a member of ISTMA World (International Special Tooling and Machining Association) and we encourage our readers to view www.istma.org to see the latest international news, events and achievements. Below are some noteworthy events:-

- Tool, Pattern and Mouldmaking in all its diversity
 - Moulding Expo 2019 from 21-26 May 2019, Messe Stuttgart
- ISTMA Business Conditions Survey
 - A number of PtSA members have participated in this survey and we await the latest Business Condition Report which will be available to PtSA members on request.



Sustainable Development

One of the Objectives for PtSA is **“To ensure the pathway to the future with the promotion of sustainable development”**

To try and define sustainable development, or sustainable manufacturing, in the context of the production technologies industry, we have included extracts from a paper written by the late Professor David A Dornfeld (University of California, Berkley, USA), who was a renowned manufacturing expert, particularly in the fields of precision and sustainable manufacturing and engineering design. Please see <https://escholarship.org/uc/item/80x443hk> for the full paper by D.A. Dornfeld)



Prof David Dornfeld

“There are many challenges facing the world today and energy and the environment have risen to be among the top concerns.... The opportunities for developing advanced manufacturing capabilities while, at the same time reducing the impact of manufacturing on energy use, water and resource consumption and, overall, greenhouse gas emissions and carbon footprint are numerous”

“...what is driving industry in this direction? For industry, these concerns have come to the forefront in a number of ways. In no particular order, these include:

- *Pressure from Government,*
- *Interest in Efficiency/Reduced Cost of Ownership (CoO); reducing waste is a basic element,*
- *Scarcity of Resources/Risk; for processes or systems that rely on continuous supply of basic resources,*
- *Continuous improvement; improving process efficiencies is a key element.*
- *Pressure from Society/Consumers/Customers,*
- *Pressure from Competitors*
- *Maintain Market Leadership*
- *Understand Supply Chain Effects*

“From the perspective of manufacturing, these drivers listed above offer some tremendous opportunities. First off, all future energy, transport, medical/health, life style, dwelling, defense and food/water supply systems will be based on increasingly precise elements and components – that is precision manufacturing. In addition, given the demand of an environmentally aware consumer, the products that evolve (auto, consumer products, buildings, etc.) with minimum energy consumption and as sustainable as possible, will offer some interesting manufacturing challenges – challenges that will drive manufacturing technology advances.”

What does Sustainable mean?

*We are all familiar with the Brundtland Commission definition of sustainable development, “**Sustainable development is a development that meets the need of the present without compromising the ability of future generations to meet their own needs.**” This does not really speak to manufacturing but makes the key point that we need to at least ‘do no harm’. A more contextual definition of sustainable manufacturing is adapted from the US Department of Commerce as “the creation of manufacturing products that use materials and processes that minimize negative environmental impacts, conserve energy and natural resources, are safe for employees, communities, and consumers and are economically sound” Green Manufacturing is a first step towards sustainability.”*

Sustainable development will be one of the topics of the Future Production Technologies Convention, and will also feature in future editions of the PtSA Newsletter, for your information.



Industry assists with the Quality Assurance of the NTIP Skills Programmes

In order to ensure that the NTIP Skills programmes meet world class standards, the NTIP partnered with NIMS (National Institute for Metalworking Skills) for quality assurance and certification of programme elements. NIMS was formed in 1995 to develop and maintain a globally competitive American workforce.

NIMS sets the Industry skills standards for the precision manufacturing industry in North America, with a stakeholder base of over 6000 metalworking companies and five major industry trade associations. This strongly positions the Institute to ensure that programmes offered comply with and address the needs from industry.

NIMS as certification body set training standards, accredits training programmes and promotes innovative solutions such as competency-based qualification and the NTIP programme for tooling and machining. The partnership with NIMS ensures that the NTIP programme aligns and provides the required skills for the production technologies industry in South Africa.

To ensure South Africa's industry's involvement and assistance with the quality assurance of the programmes, NIMS Advisory Committees have been set up in each of the main centres as a collaboration between PtSA, NTIP, Members of industry and the training institutions. These committees, which consist of at least five suitably qualified and experienced members of industry, NTIP staff and representatives of the training institutions, undertake a regular validation of the training at each training facility to ensure that it meets the agreed NIMS standards and provides feedback against industry's requirements.

Representatives from NIMS independently verify that the standards are being met and maintained, through a process of on-site audits.

We thank the members of industry who are serving on the committees, and appeal for additional members of industry to make themselves available to serve on these committees to expand the contribution from industry.

If you are willing to serve on an Advisory Committee, please contact the PtSA office.



Intrinsys has Rebranded

TECHNIA
ADDNODE GROUP

TechniaTranscat and Intrinsys are proud to announce the launch of a unified brand, TECHNIA, bringing the two companies together under a global umbrella.

Each of the companies brought together under the new name has a rich history at the forefront of technological development, and now have a shared identity which reflects their unity.

According to Gary Longshaw (Business Development Manager for TECHNIA) the points of contact will remain the same, and access to the technical expertise, commercial teams and business tools will be improved.

Gary gives the commitment that the **special discounts which apply to PtSA members** on CATIA will continue, and for every CATIA license that is purchased, the client will receive a 3DEXPERIENCE Platform Social Collaboration License for free (see www.ptsa.co.za and view the Nov/Dec Newsletter for more detail)



Gary Longshaw making a presentation at a previous WC Networking Evening

EXPERIENCE MATTERS

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Ready for Carbon Tax?

Is South Africa's Auto Manufacturing Industry Ready for the Carbon Tax?

The automotive industry is particularly affected by climate-related risks, predominantly driven by an increasing number of regulations imposed by both domestic and international legal frameworks. Here in South Africa the proposed carbon tax is set to be implemented on 1 June 2019 and will impose a price-tag of R120 per ton greenhouse gas emissions. The carbon tax is an instrument among the mix of measures that SA Government is deploying to reduce South Africa's carbon footprint.

The OEMs and vehicle manufacturer industry will be impacted directly as well as indirectly by the carbon tax. The direct impact will mainly be due to the combustion of fossil fuels for meeting the energy demand for activities, including paint booth curing ovens and the production of steam and hot water, which generate CO₂-emissions.

The biggest impact of the carbon tax on the auto industry will most likely be indirect, up- stream of the supply chain. This will be due to suppliers passing on the additional costs of their products and/or materials, such as steel, glass, rubber, leather, textile, plastic, etc. The carbon tax is targeting predominantly the most carbon-intensive industries and, a significant number of these are positioned upstream the value-chain of manufactured vehicles, including, mining and processing of ore and metals, glass production, production of textile and leather, etc.

To cushion the impact of the carbon tax on business, industry and the wider economy, the carbon tax has been designed to allow for a transitional phase during which companies can implement measures to reduce their emissions and benefit from other ways to alleviate the new tax-burden. The most instantaneous relief will be brought about by the provision of a number of tax-free allowances. Companies that are eligible to make use of all available allowances, can reduce the total of taxable emissions by 95%.

During the recent Mid-Term Budget Speech on 24 October 2018, Finance Minister Tito Mboweni announced that the carbon tax will be implemented on 1 June 2019 instead of 1 January 2019, 6 months later than originally announced in February's Budget Speech. OEMs and vehicle manufacturers are encouraged to use this small additional window to take steps to prepare for the carbon tax.

For more information please contact DG Capital



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The way forward for PtSA

In order to better understand the needs and wishes of our members, and potential members, we have developed a simple questionnaire which we are requesting members and potential members to complete. This questionnaire is currently being distributed.

Based on the results of the questionnaire, we will determine what we are doing correctly, and where we need to adapt or improve.

We thank those members who have already completed and returned the questionnaires, and to look forward to receiving more completed questionnaires.

We plan to have completed the process by early April and will report back on the results, and any required actions, in future Networking Evenings, in the next Newsletters and on our website.

The questionnaire appears on our website www.ptsa.co.za.

Social Responsibility

PtSA is encouraging our Western Cape Network members to support the Peninsula School Feeding Association (PSFA), which provides daily meals to hungry school children. Since 1958 the association has provided over 1.5 billion nutritious meals to underprivileged school children.

The vision of PSFA is no more hungry school children.

The first PtSA member company to participate is African Pressing Experts who have contributed R750 towards this initiative. We thank Clive Barnes and Russel Bresendale for this gesture.

Please contact the PtSA office or Charles Grey, Fundraising Manager for PSFA on 021-447-6020 for more information. www.psfa.co.za



Injection Technik introduces New Welding Technology to assist the Moulding Industry

One of our PtSA members, Injection Technik from the Eastern Cape have recently acquired the latest micro-welding technology, which they introduced at the recent PtSA Networking Evenings in Port Elizabeth, Gauteng and the Western Cape.

Injection Technik is a specialist company dealing in the repair and maintenance of injection moulds, the graining of moulds and laser welding.

According to Stephan Aucamp (Business Director of Injection Technik) *"this type of technology allows for much more intricate welding possibilities than conventional TIG welding due to the precision as well as wire diameters used. This machine uses from 0.2mm up to 1.2mm wire in various grades ranging from aluminium and copper all the way to hard steel where a result of +60HRC can be achieved. Due to the compactness of the machine it's an ideal solution for quick repairs whilst the mould or press tool is still in the machine, thus allowing for repair work to be conducted during production runs if required."*

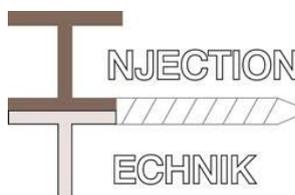
For more detail regarding the process or to purchase this technology, please contact Injection Technik.



Manuel de Villiers (left) demonstrating the welding process to Paula Ferreira (MECO Engineering) at the EC Networking Evening



Stephan Aucamp (left) in discussion with Arnold Higgs of Conro Precision at the Networking Evening in the WC



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Keynote Address at recent WC Graduation Ceremony

Chris Conradie, Mould Services Executive for Polyoak Packaging, gave the keynote address at the recent Graduation Ceremony for students who graduated from the TDM Powered Programme.

Chris stressed the importance of tooling for the manufacturing industry in South Africa and congratulated the graduates on their choice of career. He went on to describe his own background in Toolmaking which led to his appointment to his current position, and how similar career paths are open to these young people who graduate from the programme.

The toolroom at Polyoak Packaging, located in the Southern Suburbs of Cape Town, has been substantially expanded in recent months and employs a number of graduates from the programme. This expansion programme has been managed by Chris, and has resulted in one of the most modern and best equipped Toolrooms in South Africa.

We congratulate Chris and his team on this achievement and wish them all the best for the future.



Chris standing in front of one of the 5 axis machining centres recently installed in the toolroom at Polyoak Packaging



Locally Developed & Manufactured Machine Exported around the World

Snyman Tool & Die was selected by Micron Technologies in 2015 to build a product that they had designed for the hydraulic cylinder repair market. Today, Snyman Tool & Die is the approved manufacturer of the Micron Cylinder Stripping & Test Bench.

This product is used for stripping, assembling and testing of large hydraulic cylinders. These machines are currently been sold internationally to countries like Canada, Africa, Australia and Russia to name a few and it is rated the best in its class for cylinder repair equipment. With a total of 16 machines produced to date and further 6 currently in production.

According to Koos Snyman, the founder and MD of Snyman Tool & Die, the design of the machine demonstrates the true capabilities of South African manufacturing industry and its ability to be a global leader in this form of technology.

Snyman Tool and Die was one of the first companies to embrace the Enterprise Development program offered by the NTIP. After the initial benchmarking by the NTIP/WBA, an intervention project was implemented through the NTIP/WBA, which has improved material flow, production control, quality and efficiencies.

The core industries serviced by Snyman Tool & Die are namely mining, automotive, agricultural, boiler making, machine manufacturing, precision engineering, 3D printing, precision shooting accessories and factory repairs & maintenance.

Today, Snyman Tool & Die is proudly ISO 9001:2015 certified and has its customer focus at the heart of the business.



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Upcoming Conferences & Events

PtSA Gauteng Networking Evening

21 February 2019

PtSA Western Cape Networking Evening

14 March 2019

PtSA Eastern Cape Networking Evening

11 April 2019

PtSA KwaZulu-Natal Networking Evening

May 2019

manufacturing
Indaba

Manufacturing Indaba

25-26 June - Sandton Convention Centre

Small Business Indaba

26 June - Sandton Convention Centre

KZN Manufacturing Indaba

14-15 August - Durban

Eastern Cape Manufacturing Indaba

4-5 October - Port Elizabeth

Western Cape Manufacturing Indaba

6 November – Cape Town

East Africa Manufacturing Indaba

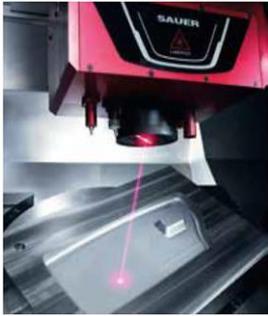
7-8 May – Nairobi, Kenya

Please note we have negotiated a 5% discount for PtSA members attending the Indabas

What is expected of today's machine tools?

The following is an extract from the presentation by Hans-Peter Neth at the Gauteng Networking evening. The full presentation can be viewed on www.ptsa.co.za.

Lasers usage in the toolroom



- Intricate parts – filigree cavities
- Straight walled corners
- Straight into hardened material
- Micron accuracy
- Surface texturing
- Remove or build-up of material
- Full 3-D capabilities



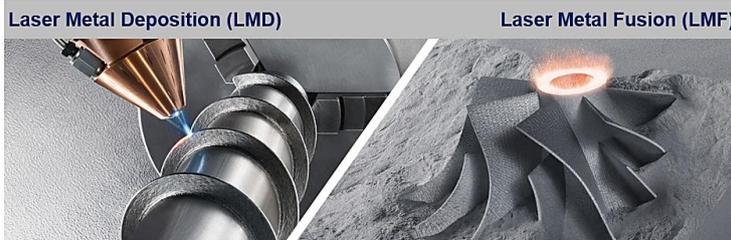
Contact:
Tel: +27 11 976 8600
www.retecon.co.za



Hans-Peter Neth (Retecon) at a Gauteng Networking Evening

Technology comparison LMF and LMD

The two most important metal technologies



Productive method for repairing, coating and generating components	Application	Precise method for generative fabrication of complex parts out of a powder bed
-	★★★	★★★★★
-	★★★★★	★★★ (only on flat surfaces)
-	★★★	★★★
(10 - 600 cm ³ / h)	★★★	★★ (2 - 180 cm ³ / h) ¹
(< 0,5 mm)	★★	★★★★ (< 0,1 mm)
(Ra 10-20 μm)	★	★★★ (Ra 5-10 μm)

¹ dependent on machine configuration, process parameters, material & degree of filling

What are the leading Machine Tool builders working on?

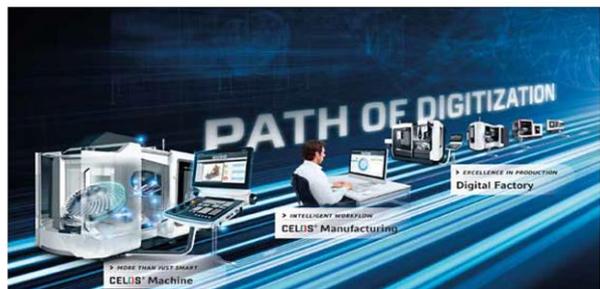
Industry 4.0 – are you ready?

Control developments



- Just like a smart phone
- Apps and more apps!
- Not just programming.
- Planning
- Import and export of data to host computer.
- Planned maintenance
- Logbook functions
- Intelligent workflow
- Performance monitoring

Communication between: Man – Machine - Company



PUM Netherlands Senior Experts

PtSA and PUM Netherlands Senior Experts have concluded a partnership agreement, with the main objective of furthering the technological and business advancement of PtSA members.

PUM Netherlands Senior Experts is a Dutch organisation which offers knowledge and expertise in 35 sectors of the economy. It is made up of retired experts who share their knowledge on a voluntary basis with entrepreneurs and business people in more than 30 developing countries. The organisation was founded in 1978 by the Confederation of Netherlands Industry and Employers and the Dutch Ministry of Foreign Affairs, and to date has assisted over 40,000 businesses worldwide, including a number of businesses in South Africa.

Small or medium sized businesses can benefit from the consultancy support from a PUM expert who has the relevant expertise to solve problems and grow the business. The criteria for eligibility for assistance is as follows:

- Company has been in business for more than 2 years
- Number of employees between 10 and 250
- Company is privately owned

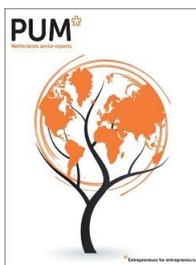
The costs to the company for this support is limited to accommodation and living costs for the expert while in South Africa, plus local transport costs. A typical consultancy intervention lasts for 2 weeks per company.

For more information please visit www.pum.nl

Any member wishing to apply for this consultancy support, please contact the PtSA office.



Ed Heinen (PUM SA Country Co-Ordinator), Anna Tishina (PUM Project Officer) and Lesley Africa (WC PUM Representative)



PtSA Production Technologies Association of South Africa

New Members joining PtSA

We welcome the following new members



How to join PtSA

To join PtSA please:-

- Complete an Application Form (see **PtSA website** www.ptsa.co.za to download an Application Form or contact the PtSA office)
- **On the Application Form indicate the membership category** you wish to join as (see PtSA website for details of the Membership Categories)
 - Industry member
 - Associate member
 - Institutional member
 - Registered Individual member
- Send the Completed Application Form to bell@ptsa.co.za
- Once membership is accepted by PtSA, an invoice will be sent to the applicant

PtSA Production Technologies Association of South Africa

Networking Evenings EC, Gauteng and WC

Networking Evenings were recently held in the **Eastern Cape, Gauteng, and Western Cape** with interesting presentations (see articles in this Newsletter and on the PtSA website for some of these presentations), and with a number of companies promoting their companies or offerings at the “**Bistro Tables**”.

We thank our sponsors, **Retecon** and **RGC Engineering**, for their sponsorships of the evenings.



Hans-Peter Neth (Retecon) Sponsor of the Gauteng Networking Evening with Paul Savides (Machine Tool Merchants Association).



Gerhard du Plooy (RGC Engineering) Sponsor of the Eastern Cape and Western Cape Networking Evenings



Dita de Andrade with Morne Liebenberg and Alistair Venter of Enigma Tech at the EC Networking Evening



Hans-Peter Neth (Retecon) discussing with guests at the Gauteng Networking Evening



Thabo Thulare (GreenCape) announcing Atlantis SEZ at the WC Networking Evening



Stephan Aucamp (Injection Technik) and Wynand Nortje (Weidplas) at the EC Networking Evening



Amos Makgoba and Johann van Heever of RGC Engineering with guests at the Gauteng Networking Evening



Christiaan van Schalkwyk (Daliff Precision Engineering) and Lasni Millar (Wagner Systems) at the WC Networking Evening

Networking Evenings EC, Gauteng and WC



Gerhard du Plooy (RGC Engineering) and Mbulelo Singeni (VWSA) at the EC Networking Evening



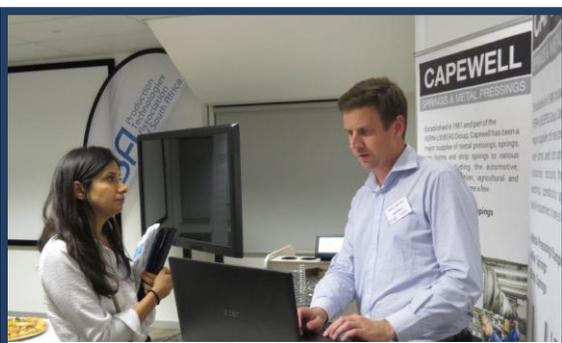
Nkensani Shivambu (Knuth Machine Tools) and Phumlani Mngomezulu (Directech) at the Gauteng Networking Evening



Grant Whittaker (COVA Advisory) and Craig Watson (Enterprise Development Consultants) at the WC Networking Evening



Stephan Aucamp (Injection Technik), Deon Bower (Spectra Mapal) and Redvers Harrison (Multitrade) at the EC Networking Evening



Khush Kazmi (Knuth Machine Tools) and Emile Coetzee (Capewell) at the Gauteng Networking Evening



Alan de Cerff (Riodor Marine) and Russel Bresendale (African Pressing Experts) at the WC Networking Evening



Guy Crosse (Suremill) and Bo Burger (Citijet) at the Gauteng Networking Evening



Mbulelo Singeni (VWSA), Alistair Venter (Enigma Tech) and Johan Ferreira (Shatterprufe) at the Enigma Tech bistro table at the EC Networking Evening

Advances in Additive Manufacturing



The Fourth Industrial Revolution (4IR) is impacting on all aspects of manufacturing, with advances in Additive Manufacturing (AM) technology perhaps being the most disruptive to conventional manufacturing processes.

The following article was written by Malika Khodja, Managing Director of Tiziri Advanced Manufacturing Technologies (Tiziritech), to explain some of the advances being made in additive manufacturing, how these can assist the local manufacturing industry to be competitive and what should be taken into consideration when applying additive manufacturing.

Additive manufacturing (3D Printing) is more diverse today than ever before, with the dominant principle that the application determines the technology. Production managers and developers need to familiarize themselves with many of the technologies to define the right one for each application. On the other hand hardly any company can build expertise in all these technologies for Metal Additive Manufacturing. In addition, each AM process has a different degree of maturity.

AM has been showing promise for many years; its use in prototyping, design iteration and small-scale production is already significant but we are now on the cusp of changing manufacturing forever. Three major changes are starting to occur in additive manufacturing that will lead to fundamental change: Speed - Quality – Materials. As these fundamentals improve rapidly, new opportunities will arise that take AM ever closer to mass production. The biggest roadblock today is speed, but that is something that is being addressed across the AM industry.

AM brings design, manufacturing and service flexibility to many industries with many industrial applications for Additive Manufacturing having been developed over the last few years. Industries such as tooling, aerospace, automotive and medical are embracing the advantages of AM and implementing the technology successfully.

For a better acceptance of AM, some barriers need to be overcome, namely application knowledge, standards and norms for material quality.

Despite the huge potential that AM offers, it is unrealistic to think that current manufacturing methods will all be replaced with AM. The vision of one machine producing any shape with unlimited material variations is highly unlikely. Growth will be seen in opening new horizons and enabling the manufacturing of components that were not possible before.



Today, small series production has been introduced into specialist factories - industries such as supercars - where prices are high and volumes low are perfect breeding grounds for both AM end use parts and the creation of tools such as molds for injection molding. Being able to design for additive manufacturing changes the dynamics entirely: the creation of parts that would otherwise be impossible to manufacture will bring performance, weight saving, and cost advantages to specialist manufacturing. It is easy to consider spare parts and design prototype manufacturing, but the real thing is what manufacturers are after.

A very important aspect of AM is the skills required and the support for companies who are adopting this technology. Companies need to ensure that they have thoroughly researched the available technology, and that their people are well trained. Companies who are exploring AM for the first time must make the right strategic decision to focus on the right AM technology for their applications. It is no longer enough to follow the mainstream and see one process as the only possible option. In addition to its own scope of application, the decision should also include the degree of technological maturity, the qualification requirements and a time component. For short-term success and highly regulated industries, you may rely on mature processes. With longer-term strategic planning, a focus on the currently still young processes for Metal AM is useful (Fig. 1). Please see the diagram below which shows technologies that are currently available for Metal Additive Manufacturing:

Companies need to ensure that they have thoroughly researched the available technology, and that their people are well trained.

TiziriTech was founded in 2018 as a consultancy service to help business leverage advanced manufacturing technologies. TiziriTech offers a consulting service for the manufacturing industry as well as training in additive manufacturing under an intellectual property license agreement provided by The Barnes Group Advisors (TBGA), a leading global Additive Manufacturing Engineering Consultancy focused on the industrialization of the technology.

"TiziriTech has a license to TBGA's AM training materials to facilitate on-site training workshops for customers located in Africa and the Middle East." TiziriTech represents a number of additive manufacturing machine suppliers and material suppliers, as well as having a partnership with a British company AMC (Advanced Metal Castings) which gives access to advanced foundry technology, which is immensely versatile and greener. TiziriTech is an important contributor to allow South Africa to remain globally competitive. The aim is to increase the degree of maturity of the technologies and to develop products that are suitable for production. It aims to provide the right fit technology to the client needs in advanced manufacturing technologies.

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METAL ADDITIVE MANUFACTURING PROCESSES

