technology innovation
AGENCY
Innovating Tomorrow Together

TECHNOLOGY STATIONS PROGAMME

A network of Technology Stations hosted at Higher Education Institutions in South Africa

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

Higher Education Institutions affiliated with the Technology Stations Programme

DUT Durban University of Technology

Central University of Technology, Free State

WSU Walter Sisulu University

VUT Vaal University of Technology

University of Johannesburg

University of Limpopo

Nelson Mandela University

Tshwane University of Technology
We empower people

Universiteit Stellenbosch University

Cape Peninsula University of Technology

MUT Mangosuthu University of Technology

technology innovation AGENCY
Innovating Tomorrow Together

CONTENTS

TECHNOLOGY STATIONS PROGRAMME

The Technology Stations Programme (TSP) was established to enable Universities of Technology (UoT) to provide technology development services to small and medium enterprises (SMEs). The Technology Stations (TSs) provide innovative Science, Engineering and Technology (SET) solutions for complex engineering challenges within the relevant industrial sectors aimed at supporting government's socio-economic priorities.

There are 18 Technology Stations (TS) based at 11 Higher Education Institutions in South Africa, managed by the Technology Stations Programme (TSP) Unit based in Pretoria at the Technology Innovation Agency (TIA) office. The TSP is a management and systems-wide support unit responsible for all Technology Stations across the country. The mission of the TSP is to assist the Technology Stations and Higher Education Institutions (HEIs) in the core, by performing the following functions:

a) Ensure that funds allocated to the TSP have impact and are aligned with the TIA/DST national strategic objectives and performance measures;
b) Reduce transaction and co-ordination costs of activities that involve or benefit multiple TSs to promote synergies and network benefits;
c) Monitor and evaluate the performance of TSs SME-related projects, and initiate interventions where required;
d) Identify opportunities to upgrade and/or expand the TSs high-end technology infrastructure;
e) Facilitate opportunities for technology knowledge transfer and innovation support to TIA's stakeholders; and
f) Promote the network of Technology Stations to other government programmes and ensure that the TSs are aware of and participating in related national priorities and industry programmes.

The Technology Stations are well positioned to support industry, particularly SMEs and Higher Education Institutions. The Technology Stations' activities offer an opportunity to bridge the gap between local suppliers and industry to take advantage of the recapitalization and expansion programmes by enhancing competitiveness of local suppliers through technology improvement. The TS provide technology transfer infrastructure that plays a critical role for transferring technologies from Higher Education Institutions to technology users.

The Department of Science and Innovation (DSI) provides financial support through TIA, to Higher Education Institutions (HEIs) which house Technology Stations to provide technical support to SMEs in terms of solutions for services and training.

OPERATIONAL OBJECTIVES

The TSP has contributed towards the achievement of the DST and national objectives relating to technology innovation, enabling and support. The TSP network in FY2019/20 offered sophisticated and effective technological solutions to more than 3 000 enterprises and individuals in targeted communities. The TSP has also directly contributed to the DST knowledge-based indicators by becoming a critical enabler for forty two (42) prototypes and technology transfer packages onto the regional innovation system with HEIs.

The core goal of the TSP is to contribute towards improving the competitiveness of industry through the application of specialised knowledge and technology; and facilitating the interaction between industry (especially SMEs) and academia in order to enable innovation		
Objectives	**Contribute to HEI being more responsive to the needs of industry**	**Enable industry, SMEs in particular, to benefit from the specialised knowledge and innovative technologies of the universities**
KPA	**Institutional learning and development**	**Technology transfer and industry support**
Measures	**Knowledge products supported, Post graduate studies and students on projects, Equipment of TS used by host, Collaboration with other TS, Contribution to academic content & by host to TS, Interns hosted**	**Technology based support & training to SMEs, Tech based products/processes developed or improved (projects), Industry relevant services, TS equipment used by industry, Industry uptake of technology, Financial contribution to TS from industry/public sources, Provision of industry relevant training**
	Socio-Economic Impact	

SERVICES OFFERED

Technology Services management and support systems have been developed that will incorporate knowledge management based applications in the near future. The support system has enhanced the efficiency the TS to give technology based services to Entrepreneurs, SME's, large corporations and relevant industrial sectors.

The following is a list of products and services offered by the Technology Stations:

TESTING AND ANALYTICAL SERVICES

Testing and Analytical Services include material testing and behavior analysis, as well as quality tests. These can be R&D or routine jobs according to existing standards or client's specifications, using readily available high-end software and equipment.

RAPID PROTOTYPING AND MANUFACTURING

This involves producing a working model with regard to the indicated functional aspects of a product. The manufacturing is not limited to batch/pilot manufacturing of models, but can include either contract machining or manufacturing, based on the client's drawings or specifications.

CONSULTATION, TECHNOLOGY AUDIT AND FEASIBILITY STUDY

Consultation includes search and technology brokerage services, finding the know-how as a diagnostic service, assessment or consultancy. This is usually the first part of any project to identify the potential for improvement and the required interventions. This involves the searching and sourcing of technology from outside the Universities of Technology, generally from firms, engineering consultants; brokering as well as possibly managing technology transfers to SME's.

PROCESS OR PRODUCT IMPROVEMENT

Productivity, workflow and quality all improve production facilities and products by applying standard procedures and methods. In many cases, this would also involve testing and analytical services to make the product conform to required specifications on new market demands and regulations.

APPLIED DEVELOPMENT, ENGINEERING AND DESIGN

This involves the application of engineering processes from CAD to CAM now CAĚ, including scaled production based on the know-how from Technology Stations, needing professional engineering and design skills as well as identification and sourcing of technology or equipment. These services lead to demand driven projects that can be funded by various funding Agencies.

RESEARCH AND DEVELOPMENT

This refers to the R&D conducted on behalf of SME`s to investigate new products or processes which are beyond the existing state of the art; applying scientific methods to improve competitiveness and compliance to prescribed standards. Some of the categories of R&D are initiated from within the University of Technology with the intention to market them at a later stage.

TECHNOLOGY DEMONSTRATION AND TRAINING

The demonstration of technology focuses on the introduction of SMEs to new products or to improve existing technologies related to their respective projects. Tailor-made training and demonstrations can be to a number of SME`s or Individuals. Technology Demonstration and Training is also aligned to formal accredited University Training activities.

PROCEDURE TO FOLLOW TO ACCESS TECHNOLOGY STATION SERVICES

1. Fill out a Client Capturing Form (CCF) – Must be completely filled and signed with the Company registration number.
2. For start-up companies not registered with the Companies and Intellectual Property Commission (CIPC), an Identity Document (ID) Copy of one of the members should be submitted.
3. Copy of ID (if the client is an individual without a registered company) should be submitted.
4. Clients under the age of 18 are to be accompanied by a guardian or school teacher when using any services at the TS.
5. For large groups (I.e. schools or organisations) the entity representative will need to sign a CCF.

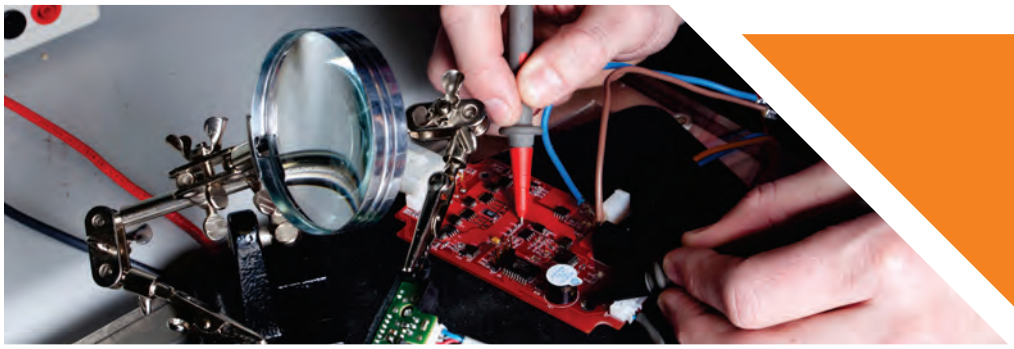
TECHNOLOGY STATIONS

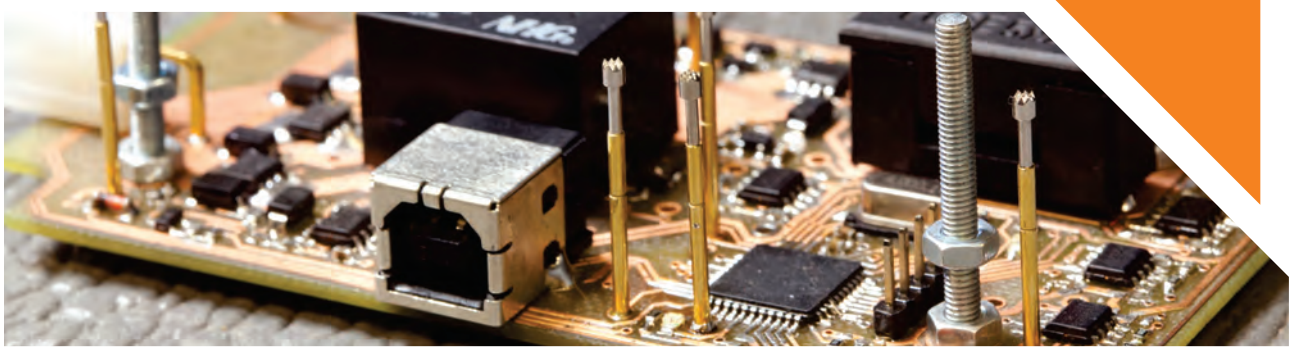
TECHNOLOGY STATION IN ELECTRONICS (TSE)

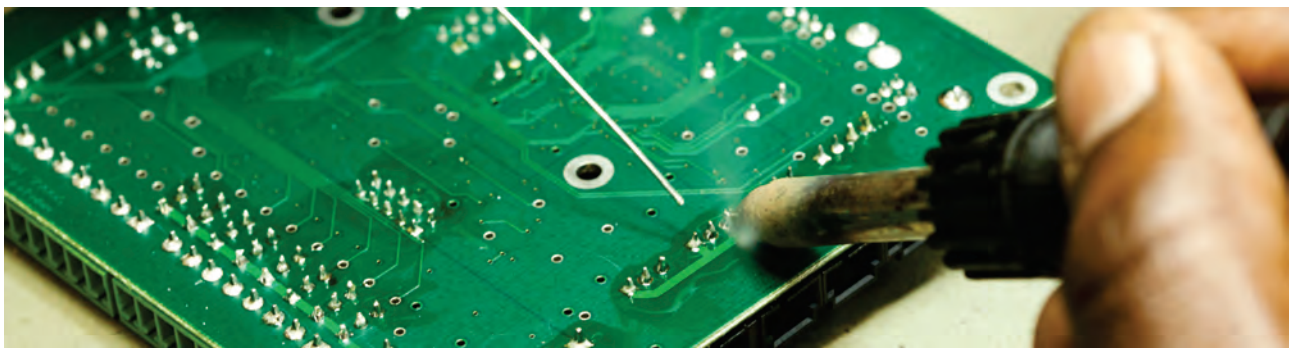
The Technology Station in Electronics (TSE) is situated at the Tshwane University of Technology (TUT), operates in the Electronic, Electrical and information and communication technology industries. The TSE collaborates with various academic departments within the Faculty of Engineering and the Built Environment to fulfil its mandate.

The Technology Station is primarily a technology platform where clients can come for expert advice, product development and low volume manufacturing services. In 2004 TSE implemented a state of the art electronic manufacturing platform that allowed the TS to assemble electronic products for small business clients who were unable to wait for long periods of time or who weren't satisfied with quality levels of their current manufacturers.

This was later expanded to include a team consisting of a number of electronics, mechatronics, industrial and mechanical specialists who are able to take a new concept a client might have and design the product the way the client envisioned. This allowed the Station to not only design products, but to be able to also manufacture the products in small quantities to allow clients' businesses to grow and enter new markets with their products. Today the Station performs a wide variety of services that target a number of sectors in mining, automotive, rail, military, energy, etc.







TECHNOLOGY STATION IN ELECTRONICS (TSE)

TECHNOLOGY COMPETENCIES AND OFFERINGS

Development expertise include, but are not limited to:

- **8/16/32 Bit Microcontroller Technologies**
- **PGA Design**
- **GPS Technologies**
- **GSM Technologies**
- **Wireless Transceiver Technologies**
- **Various Sensor and Actuator Technologies**

Electronic Development
Needs analysis and specification development
Schematic development
Printed circuit board design
Prototyping and testing
Existing product line improvement
Electronic Development Services (EDS)
The main focus of the EDS is on innovation through design, prototyping and development of electronic hardware, which includes the design and development of new products from initial concept to production readiness.

Electronic Manufacturing
Low volume manufacturing
Prototyping (once-off build)

Electronic Manufacturing Services
The TSE utilises state of the art equipment to manufacture high quality and reliable products for clients using several manufacturing processes and technologies. The Electronic Manufacturing Services (EMS) is executed by experienced and trained staff.

Training
Short Learning Programmes
Customised training programmes

CONTACT DETAILS

Station Director: Dr. SJ Jacobs | **E-mail:** jacobssj@tut.ac.za
Station Manager: Mr. Kobus Vorster | **E-mail:** VorsteK1@tut.ac.za
Office Manager: Ms. Annette van de Poel | **E-mail:** vanderpoela@tut.ac.za

Tel: +27 12 382 5039
Website: www.tut.ac.za

METAL CASTING TECHNOLOGY STATION (MCTS)

The Metal Casting Technology Station (MCTS) is based at the University of Johannesburg (UJ), Doornfontein Campus. MCTS is a technology transfer partner for the metal casting industry, pioneering development through training, research and technology support. The Technology Station operates in partnership with the Department of Metallurgy in the Faculty of Engineering and the Built Environment. MCTS supports and assists the metal casting industry – foundries, suppliers, related industries – to improve the sectors innovation ability for increased competitiveness and sustainability.

METAL CASTING TECHNOLOGY STATION (MCTS)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Casting Design and Simulation**
- **Education and Training**
- **Physical Metallurgy**
- **Rural and Emerging Foundries**
- **Sand Technology**

Casting Design
CAD Design: 2D and 3D Modelling
3D modelling is the process of developing a mathematical representation of any three-dimensional surface of object using specialised software.

Casting Simulation
The process used to forecast pouring, and solidification of liquid metal at different temperatures and environments with a high level of accuracy before conducting actual casting trials.

Education and Training Focus Area
Internship and Graduate Programme
In-house training/short courses
Skills Development
Student Exchange programme

Physical Metallurgy
Chemical Analysis
Failure Investigation
Tensile Testing and Impact Testing
Metallography
SEM and EDX Analysis
Hardness (Rockwell, Vickers and Brinell) Testing

Rural and Emerging Foundries
Development of the rural and emerging foundries

Sand Technology
Green sand testing
Full foundry bentonite and coal dust testing and analysis
Raw silica sand testing - all types of sand
Resin sand testing, heat cured, gas cured and self-hardening systems
Moulding systems trouble shooting

CONTACT DETAILS

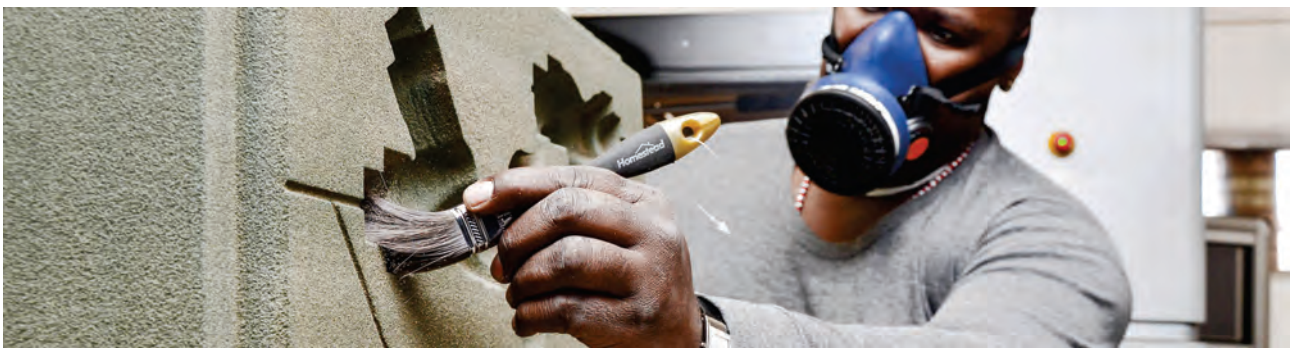
Station Manager: Mr. Kulani Mageza | **E-mail:** kmageza@uj.ac.za

Tel: +27 11 559 6032
Website: http://www.metalcasting.co.za

TECHNOLOGY STATION FOR MATERIALS AND PROCESSING TECHNOLOGIES [TSMPT]

The Technology Station for Materials and Processing Technologies (TSMPT) is located at the Vaal University of Technology (VUT) Southern Gauteng Science and Technology Park in Sebokeng. It forms part of the VUT's Technology Transfer and Innovation Directorate. As such, it is supported by an Enterprise Development Unit (EDU); Iscor Innovation Centre (IIC); Engineering Manufacturing Centre (EMC) and Institute for Chemical and Biotechnology.

TSMPT assists SME manufacturers of metal-based products and composite-based products to not only improve their products, but their product knowledge, processes, process knowledge and skills. VUT willingly assists and guides potential clients with any viable and marketable products and ideas. This support extends to the acquisition of potential funding through various institutions.



TECHNOLOGY STATION FOR MATERIALS AND PROCESSING TECHNOLOGIES [TSMPT]

TECHNOLOGY COMPETENCIES AND OFFERINGS

- Additive manufacturing (3DP, FDM, LS)
- Contact digitising
- CNC robotic milling
- GRP casting and composites
- Industrial design and product development
- Management and funding support
- Manufacturing
- Metrology
- Non-contact digitising Tooling & machining Training

Advanced Additive Manufacturing V\M

As part of the VUT's advanced manufacturing drive, significant investment has been made in Advanced Manufacturing (AM) platforms. The EOS P100 offers the finest Z-axes resolution in polymer-based laser sintering available in the country. Through its cluster projects, the VUT is currently expanding its AM platforms to three more EOS systems as well as two Voxel jet systems. Future plans will include Stratasys' direct manufacturing technologies.

AM Education and Innovation

The VUT's unique I2P concept (Idea 2 ProductTM Lab) offers 14 seats with entry level AM and CAD technologies available to students, school learners and individuals or small companies to test innovative ideas by having the opportunity to develop these into physical products. The recent success achieved with the I2P lab drew international interest leading to acquiring a total of 100 entry level AM machines to start 9 more 12P labs at the VUT's satellite campuses namely: The Science and Technology Park and throughout the Southern Gauteng region.

High End Facilities at TSMPT

With the assistance of the Technology Stations Programme, VUT has made a substantial co-investment in facilities that can be used for technology transfer and demonstration, which will also support research, training and skills development, as well as undergraduate education. Through this collaborative effort, TSMPT can offer significant opportunities for industry as well as the internship training programme. As part of a strategic positioning, much of the planned and acquired infrastructure serves industry in a cluster approach, hence making a significant impact.

Robotic Milling

TSMPT developed unique 5-axes and 8-axes Robotic CNC milling capabilities, which currently serves a diverse industry in a wide array of applications, varying from artistic master patterns for the casting industry. Similar scale work has been completed for the automotive industry where moulds for composites fibre moulding have been developed at significantly reduced costs, compared to conventional technologies. The VUT is one of the only few institutions world-wide using the complex 8-axes milling solution.

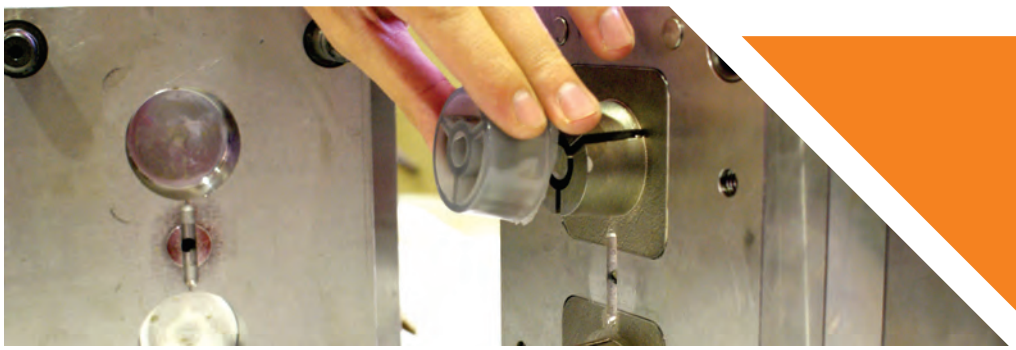
CONTACT DETAILS

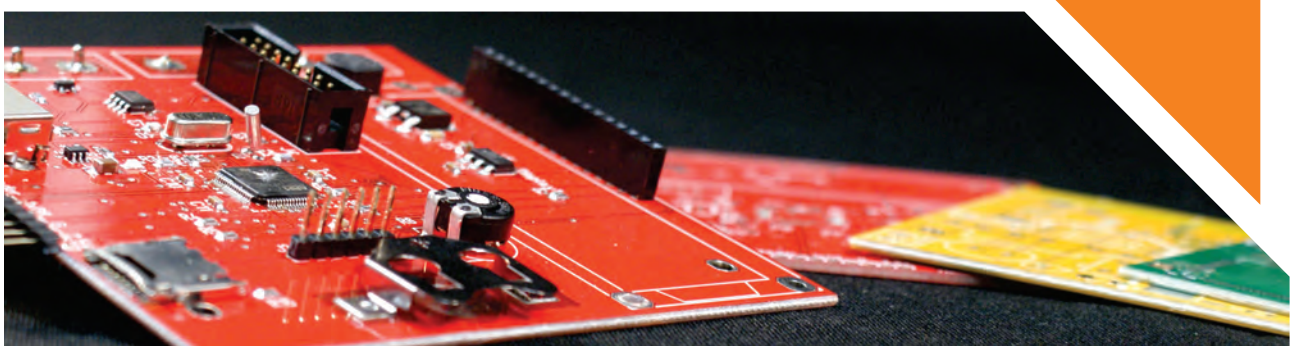
Station Manager (Acting): Mr. Robbie Mac Pherson | **E-mail:** robbie@vut.ac.za
Administrator: Ms. Annelie Bekker | **E-mail:** annelieb@vut.ac.za

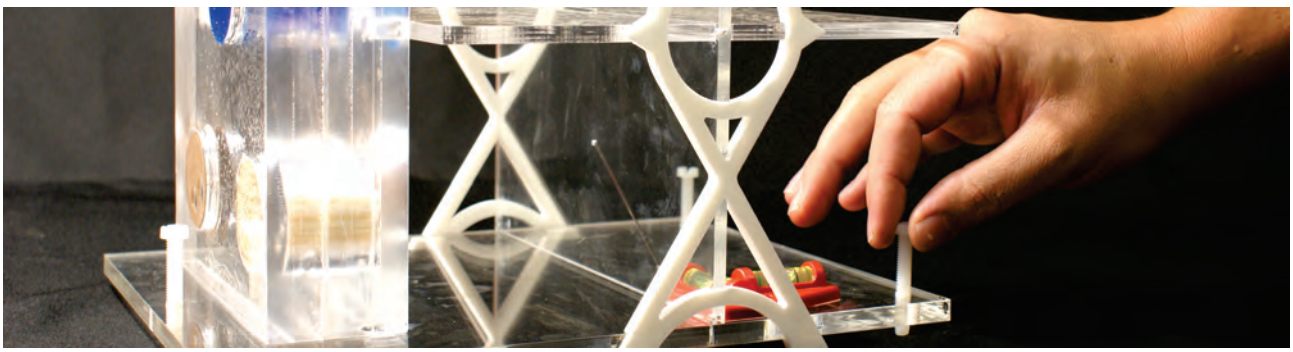
Tel: +27 16 930 5011
Website: http://www.sasciencepark.co.za
Website: http://www.vut.ac.za

PRODUCT DEVELOPMENT TECHNOLOGY STATION [PDTS]

The Product Development Technology Station (PDTS) is located on the campus of Central University of Technology (CUT) in Bloemfontein. The Technology Station develops new ideas into products, or improve existing products with detailed engineering and develop ideas from concept to prototype. In this way PDTS assists SMMEs by providing them with technological support to design and manufacture innovative new products. The station makes use of first-class engineering expertise from CUT as well as specialized prototyping equipment from the Centre for Rapid Prototyping and Manufacturing (CRPM) to support businesses and individuals through the entire 'new product development process'. The innovative technologies that PDTS makes use of are Computer Aided Designs (CAD), Finite Element Analysis, Additive Manufacturing and Reverse Engineering (3D Scanning). The PDTS services big corporations like Coca-Cola, Aurecon, SA Truck Bodies, Avbob through to SMEs and individuals with an idea that they would like to take further.







PRODUCT DEVELOPMENT TECHNOLOGY STATION [PDTS]

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Machine and Process Development**
- **Electronic Development**
- **Product Design and Development**
- **Reverse Engineering**
- **Tool Development and Limited Run Tooling**
- **CNC Machining**
- **3D Scanning**
- **3D Printing**
- **Brand Development**

Machine and Process Development

The design and manufacture of machines and mechanical devices that are used in the manufacturing or processing of products, such as a bean sieve, pill press or detergent mixer. PDTS also develop mechanical devices and implements used in framing to enable the production of crops. These range from simple hand-held implements to complex harvesters of modern mechanized agriculture.

Electronic Development

PDTS has a specialized electronic unit for the development of custom solutions such as agricultural sensing systems, sensors for moisture and water levels, wireless infrastructure, database management and farm security.

Product Design and Development

PDTS is involved in the first steps of the product development process through concept design, product design, detail engineering, prototyping and short run production.

Brand Development

Development of corporate identities and a wide range of graphic design services.

Reverse Engineering

Creating an accurate digital representation of an object by means of laser scanning. The digital information is used to create a replica of the original object, or compare the original design to determine how accurately it was manufactured.

3D Printing

The automatic fabrication of an object directly from Computer Aided Design (CAD) using Additive Manufacturing (3D printing) techniques to produce physical prototypes and models.

Assistive Device Development

The development of products that assist physically impaired individuals to engage in activities making use of the products and devices that was developed by the PDTS.

Tool Development and Limited Run Tooling

The development of manufacturing aids such as cutting tools, dies, gauges, jigs, moulds and patterns of a specialized nature for the performance of a specific manufacturing task. The PDTS also make use of grown tool inserts, also known as 'Rapid Tooling', combining Direct Metal Laser Sintering techniques with conventional tooling practices to produce a mould quickly or parts of a functional model from CAD data. Using this technique, the PDTS can manufacture cooling channels, known as conformal cooling, in mould inserts where traditional CNC machining cannot achieve the required results. Better cycle times can be achieved by this. The PDTS can also assist with the production of limited run tooling for clients that need a small batch of parts, using vacuum casting or injection-moulding to test the functionality, assembly and do market research before investing for final production runs.

CONTACT DETAILS

Acting Station Co. Manager: Mr. Ronald Masheane | **E-mail:** rmashane@cut.ac.za
Acting Station Co. Manager: Mr. Allan Kinnear | **E-mail:** wakinnear@cut.ac.za

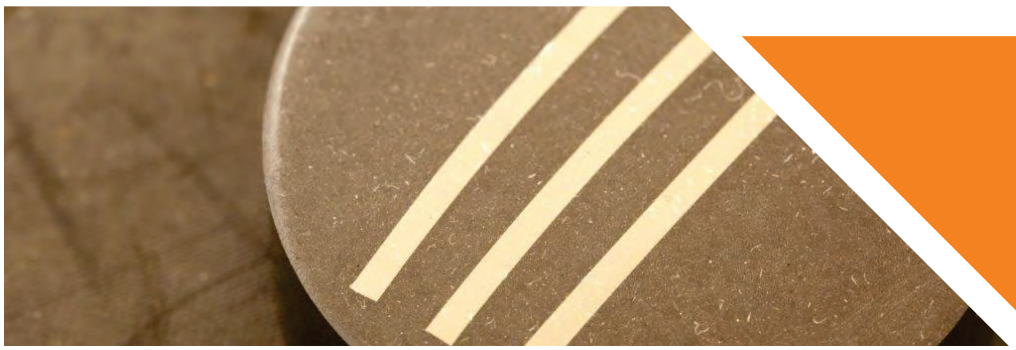
Tel: +27 51 507 3253 | **Email:** pdts@cut.ac.za
Website: http://www.cut.ac.za/pdts

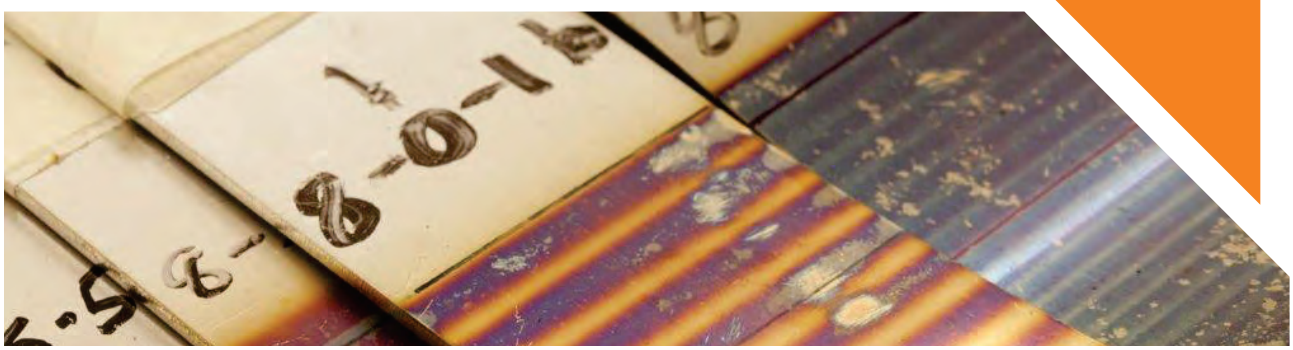
eNTSA

eNtsa is recognised as a prominent research, design and technology support unit for the advanced manufacturing sector in South Africa, based in Port Elizabeth at the Nelson Mandela University (NMU).

eNtsa's main focus is to support and stimulate engineering innovation in order to improve the competitiveness of local manufacturers which will enable industry exploit and development of new markets.

Growing the manufacturing economy in South Africa holds the key to sustainable job creation and improved quality of life. This forms the drive of eNtsa to provide innovative research and advanced technical training for support to the local manufacturing industry according to international best practices.





eNTSA

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Development and Design**
- **Material and Mechanical**
- **Product Engineering**
- **Process Control and Automation**

Development and Design
Mechanical design
3D Modelling
Finite Element Analysis (FEA)
Rapid prototyping

Material and Mechanical
Mechanical Testing (e.g. Chemical, tensile, fatigue)
Residual stress analysis
Portable x-ray diffraction (non-destructive)
High speed hole drilling (semi-destructive)
High speed camera

Product Engineering
Product and process development
Fatigue analysis
Failure analysis

Process Control and Automation
Automation
Quality Control
Robotics
Vision

Small and Medium Enterprises Development
eNtsa provides support for enterprises in the first, second and emerging economy (SMEs) within the engineering and manufacturing sector, with a specific focus on the automotive components component sector with the aim of making South African automotive industry more globally attractive.

CONTACT DETAILS

Station Manager: Mr. Julien de Klerk | **E-mail:** Julien.DeKlerk@mandela.ac.za
Public Relations: Ms. Nadine Goliath | **E-mail:** Nadine.Goliath@mandela.ac.za

Tel: +27 41 504 3073
Website: http://www.mandela.ac.za/eNtsa

INNOVENTON: INSTITUTE FOR CHEMICAL TECHNOLOGY

InnoVenton: Institute for Chemical Technology is a formally registered Research Institute at the Nelson Mandela University (NMU), whose principle research focus is in Product and Process Development. The Institute strives to be self-sustaining through income generated from services to industry, income from technology transfer projects and royalties from patents.

The institute incorporates the Downstream Chemicals Technology Station, a Government funded initiative to make available high level research, technological services and training, to technology based Small and Medium Enterprises, and South African Industry as a whole.

The institute incorporates amongst its research facilities a pilot plant for R&D and teaching, the Fuel Chemicals Testing Platform, a Small Production Platform laboratory, and a microalgae production platform. Through the Downstream Chemicals Technology Station (incorporated in the institute) it provides technical support services and training to technology based Small and Medium Enterprises and bigger enterprises in the chemical industry sector.

INNOVENTON: INSTITUTE FOR CHEMICAL TECHNOLOGY

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Micro algae technologies**
- **Micro algae to coal fines recovery and agglomeration**
- **Direct liquefaction of microalgae to bio-crude oil**
- **General chemical process development/evaluation**
- **New product development**

- **The three principle service areas are:**
- **Chemical Analytical Services**
- **Chemical Process Technology Demonstration Training**

Chemical Analytical Service provides a comprehensive range of chemical and material testing and analysis services for industry in the areas of general chemical analysis, materials testing; environmental analysis; biofuels and transport fuels analysis and testing. The laboratory carries South African National Accreditation System (SANAS) for specific methods.

Chemical Process Technology Demonstration (Kilo Lab) a facility for the scale up (milligram and gram quantities) of laboratory – developed chemical process and products, to kilogram quantities. The faculty is also used for the demonstration and development of technology on a kilogram scale, as well as for the production of kilogram quantity samples for the industry and for research.

Training is in areas of chemical technology and skills development. DCTS/Innoventon offers a Special BSc Hons programme in Formulation Science and Professional Science Masters courses. It also offers various non-degree applied statistical methods courses, such as data analysis with Excels or analysis scientists and engineers; Statistical process control with Excel or process operators; analysts and engineers and applied biostatistics with Excel.

CONTACT DETAILS

Operations and Technology Station Manager: Ms. Louise Hamilton | **E-mail:** Louise.Hamilton@mandela.ac.za
Business Support Manager: Dr. Melissa Gouws | **Email:** Melissa.Gouws@mandela.ac.za

Tel: +27 41 504 3233
Web: https://innoventondcts.mandela.ac.za/

TECHNOLOGY STATION IN CLOTHING & TEXTILE [TSCT]

The Technology Station in Clothing and Textiles (TSCT) is located at the Cape Peninsula University of Technology (CPUT), Bellville Campus. The TSCT was established to provide innovation support to SMEs in the clothing and textile industry to become more competitive.

TECHNOLOGY STATION IN CLOTHING & TEXTILE [TSCT]

TECHNOLOGY COMPETENCIES AND OFFERINGS

Manufacturing Advisory Services
Manufacturing process assessment and productivity improvement solutions
Provide advice on the acquisition and use of improved technology

Product Analysis and Testing
Materials analysis and testing service to the clothing, textiles and related industries
Provide advice on material usage and care

Product Development
Develop specifications, pattern making, and prototyping, using CAD
Product development advice and services

Technology Platform
A facility to demonstrate range of specialised technology and available to SMEs to develop prototypes. A number of specialised machines available for use of small business on an appointment basis:

- Electronic button-hole machine
- Electronic button-sew on machine
- Electronic bar-tacking machine
- Electronic eyelet button-hole machine
- Embroidery machine and digitiser (for samples)
- Cover seam machine (elasticating)
- Feed off the arm machine
- Hemming machine
- Jet pocket machine
- Merrow edge machine
- Ultrasonic Welding machine
- Walking foot machine

Research
Product and process development
Anthropometry (Body sizing)

Short Courses
Advanced Work Study
Textiles and Fabrics
Textile Testing – Introduction to Textile Testing (1 day)

Training
Programmes are mainly offered on a one-day per week release basis but a number of our courses are also offered after hours to accommodate smaller manufacturers.

CONTACT DETAILS

Station Manager: Mr. Shamil Isaacs | **E-mail:** isaacssh@cput.ac.za
Admin Assistant: Mr. Rushdeen Rose | **E-mail:** RoseR@cput.ac.za
General Enquiries: E-mail: techstation@cput.ac.za

Tel: +27 21 959 6470
Website: http://www.tsct.co.za

AGRIFOOD TECHNOLOGY STATION (ATS)

AgriFood Technology Station (ATS) is well placed in a state of the art complex on the Bellville campus of the Cape Peninsula University of Technology (CPUT). This includes a Pilot Plant with different processing areas for: baked goods, meat products, beverages, chocolate & sweets, spray drying & extrusion and also general heat processing and drying. Besides general and cold stores, there are also a number of laboratory areas such as an R&D lab (for small-scale product development), Research Lab, Instrument Room, Chemistry Lab, Microbiology Lab and a Physical Food Properties Lab.

The mandate of the ATS is to assist small and medium enterprises primarily, but also all other appropriate companies as a secondary goal, to improve their use of technology, implied improvement of efficiencies and also concomitant improved ability to employ more staff and empower such persons in terms of the field of technology in which it operates. Innovation support is the main aim of the game.

AGRIFOOD TECHNOLOGY STATION (ATS)

TECHNOLOGY COMPETENCIES AND OFFERINGS

New product and process development
Baking and milling
Brewing
Canning, bottling and pouching
Chocolate and confectionery production
Freeze-drying and spray-drying,
Fruit, vegetable, meat and dairy processing
Labelling and packaging advisories
Large processing equipment base in 1 700 m2 Pilot Plant
Pasta extrusion
Rental of facilities and expertise for trials
Thermal and non-thermal processing

Food analysis
Chemistry, microbiology, sensory studies, shelf-life determination, texture, viscosity, colour

Research
The Station conducts collaborative research with academics in the following areas:

Auditing of food premises
An initial appraisal may be done by ATS staff but more in-depth audits and implementation of systems may be outsourced to professionals in the field.

Labelling
Considering the national labelling and advertising legislation as amended, it is essential that your product package / label complies. The Technology Stations close contacts with specialists, including the national Department of Health (Food Control), allow us to verify and advise in this regard.

Sensory evaluation
A range of sensory services are available through the Technology Stations own expertise and staff and also via external sensory analysts. Both bench-top analysis and trained panels are available.

Free-standing research projects
In some instances, your company may require free-standing or once-off research to be done on a specific topic. The research may be long or short-term, it may involve bench-work and experimentation or it may just be a literature-based report required. This can be arranged after appropriate consultation and scoping. In some instances, this type of project could also lead to formal qualifications being obtained by students of CPUT or by your own staff involved in the project.

Niche analytical services
ATS offers routine food analytical services such as full nutritional analysis, microbiological testing and testing of food physical properties such as colour, texture, viscosity, etc. More importantly, ATS strives to offer services not available via commercial laboratories. This is done on an agreement basis and may require method development and validation time.

Shelf-life evaluation
Real-time and accelerated studies may be conducted using our facilities for temperature and humidity control. Standard parameters monitored are microbiological safety as well as pertinent chemical characteristics such as water activity and rancidity.

Small-scale trials
Our unique food processing facility and its wide range of modular and mobile equipment allows for tailor-made production trials in many instances. This may be done using ATS as the project manager or the facility may be hired for such purposes provided appropriately qualified personnel are supplied by the user. All of this could be done with appropriate confidentiality in the different areas which include baking, meat processing, spray-drying, extrusion, heat processing (retorting, smoking, can seaming), extrusion and the manufactured foods area.

Training and Compliance
Within constraints and related to numbers and frequency, we can design and offer short courses suited to your company needs. Training with regard to individual instruments or concepts related to food production and analysis can also be offered on a free-standing basis.

CONTACT DETAILS

Station Manager: Mr. Larry Dolley | **E-mail:** dolleyl@cput.ac.za
Admin: Ms. Ntombi Sigwela | **E-mail:** sigwelan@cput.ac.za

Website: http://www.cput.ac.za/ats
Tel: +27 21 953 8615

LIMPOPO AGRO-FOOD TECHNOLOGY STATION (LATS)

Limpopo Agro-Food Technology Station (LATS) was established to achieve the eight anti-poverty targets known as the Millennium Development Goals (MDGs), within the context of the National Development Plans (NDP) Framework. LATS is funded by the Technology Innovation Agency (TIA) in terms of the Technology Innovation Agency Act No. 26 of 2008 is housed at the University of Limpopo (UL), Turfloop Campus.

The Technology Station is well aligned to TIA's connector-service provider strategy. LATS serves as a TIA connector in the Limpopo Province that catalyses partnerships between SMEs, industries and Universities to develop an enabled supporting Agro processing innovation for global competitiveness.

LATS reduces barriers of access to expensive high end skills and equipment for agro processing innovators by supporting technology-based agro-food processing products, processes and services through research and development (R&D) and facilitating the development and improvement of agro-processing, technology innovation and commercialization of agro-food products by start-ups and existing small and micro entrepreneurs in Limpopo Province.

LIMPOPO AGRO-FOOD TECHNOLOGY STATION (LATS)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Food product testing and analysis**
- **New product development**
- **Product and process improvement**
- **Research and development**
- **Technology audit and training**

Food product testing and analysis
LATS tests food products and diagnoses the presence of pathogenic and spoiling microorganism in food products that are ready for markets, using high-tech equipment like Vitek 2 and ICP. Chemical analysis involves minerals and proximal analysis. Tests on food products includes fats, crude fibre, protein, ash, moisture, carbohydrates by difference, energy, vitamins, minerals, antioxidants, polyphenols, tannin and mineral elements.

New product development
SMEs can be assisted from idea generation through to product design and detailed food "engineering". The Station ensures that the newly developed food products meet SABS standards and that health risks are eliminated.

Product and process improvement
This involves improving the quality of substandard products or processes already in use to the standards required by SABS and the Departments of Health and Agriculture. The SMEs are introduced to management systems in which food safety is ensured through the analysis and control of biological, chemical, and physical hazards all the way from raw material production, procurement and handling to manufacture, distribution and consumption of the finished product.

Research and development
The Station ensures that research questions related to SME agro processing are addressed through the use of the university's research academics. Research projects include chemical and microbial profiling of indigenous food product, new product development and food product shelf life.

Technology audit and training
Food technologists visit SMEs in order to audit food-product processing equipment and processes onsite. The SMEs are trained in good manufacturing practice (GMP) and hazard analysis and critical control points (HACCP).

CONTACT DETAILS

Station Director: Prof. Maboko S. Mphosi | **E-mail:** maboko.mphosi@ul.ac.za
Admin and Finance: Ms. Daphney Malobe | **E-mail:** mantsim@ul.ac.za

Website: http://www.ul.ac.za
Tel: +27 15 268 3359

TECHNOLOGY STATION IN CHEMICALS (TSC)

The Technology Station in Chemicals (TSC) offers a wide range of services designed to assist SMEs in the Chemical sector. The Station is located at the Tshwane University of Technology (TUT), Ga-Rankuwa campus and is supported by the Chemistry and Chemical Engineering Departments of TUT. TUT's experienced staff, consisting of Scientists, Technologists, Technicians and external service providers, participate in product development of various projects.

TECHNOLOGY STATION IN CHEMICALS (TSC)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Development of material safety data sheets (MSDS)**
- **Formula development**
- **Hazards and operability studies**
- **Product analysis**
- **Product development**
- **Product evaluation and quality test**

Development of material safety data sheets (MSDS)
The MSDS is a very important official document reflecting the hazards and reactive reaction required in time of emergencies during the process of handling the product.

Formula development
TSC has the capability of developing new formulations that will meet the customer's needs. Development or revision of existing formulations is part and parcel of reformulation. N.B. It is extremely important to note is that the Station does not sell formulations.

Hazards and operability studies
The Station can conduct Hazards and Operability studies to identify risks and hazards in settings of SMEs, including the process of manufacturing, raw materials handling and packaging.

Product analysis
TSC conducts both routine and non-routine speciality inorganic and organic analysis and testing.

Product development
Products are developed to meet the customer's need or South African Bureau of Standards (SABS) specification. Developments include pH adjustments, viscosity balancing emulsification, preservation and other corrections of physical and chemical parameters required to render the approved quality product.

Technologies available
Bar Soap Making Technology
Cosmetic Technology
Detergent Technology
Electroplating Technology
Essential Oils Technology
Perfume Making Technology
Surface Coating Technology
Manufacturing different types of paints & vanishes

Product evaluation and quality test
TSC provides specialized testing services to analyse and evaluate existing products.

Product research
TSC conducts research on developing new products and also on improving and optimizing existing products. The research also involves conversion of ideas into prototypes.

Training
- Basic Cosmetic Technology
- Batch adjustments, filling and flushing
- Detergent Technology
- Emulsion Technology
- Large Manufacturing
- Quality Management System (QMS)
- Safety Health and Environment

CONTACT DETAILS

Station Manager: Mr .Vincent Tau | **E-mail:** tauvr@tut.ac.za
Marketing Officer: Ms. Tsholofelo Mogonediwa | **E-mail:** mogonediwatv@tut.ac.za

Tel: +27 12 382 0503

TECHNOLOGY STATION IN CHEMICALS (TSC)

The Technology Station in Chemicals (TSC) is situated at Mangosuthu University of Technology (MUT) in Umlazi. MUT provides technological support and promotes innovation for Small Medium Enterprises in the Manufacturing and Chemical sector.

TECHNOLOGY STATION IN CHEMICALS (TSC)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Environmental Pollution Control**
- **Pilot Batch Processing Unit**
- **Process Design and Development**
- **Product Design, Development and Improvement**
- **Setting Product Quality Standards**
- **Technology Audits**
- **Technology Information Support**
- **Training**
- **Waste and Effluent Management**

Environmental Pollution Control
Conduct Environmental Impact Assessments.
Provide Quality testing services on water (and wastewater), effluent and soil samples.
Tests conducted include; BODs, CODs, DOs, inorganics (metals and salts); presence of microorganisms, algae and organics.

Pilot Batch Processing Unit
Demonstrate optimal batch mixing techniques for high-quality production. Production of soaps and detergents and cosmetics.

Process Design and Development
Assist in designing new processes to gain a competitive edge and develop (improve) existing processes for increased efficiency and throughput.

Product Design, Development and Improvement
Provide assistance in designing 'tailor-made' products for specific markets (Product Formulation Services) and improve performance and characteristics of existing products for increased competitiveness.

Setting Product Quality Standards
Improve quality standards through product testing and product formulation services.

Technology Audits
Provide assessment on the status of technologies in use and provide strategic direction for technology upgrading and/or acquisition where necessary.

Technology Information Support
Provide information and advice on new trends in product quality, product and process developments, local and international markets, and viable technologies.

Training
Internship

Waste and Effluent Management
Small and Medium Enterprises receive training on techniques and methods that can be used to control effluent volumes (move towards zero effluent) and reduce contaminant levels.

CONTACT DETAILS

Director: Ms. Veronica Ngubane | **E-mail:** veronica@mut.ac.za
Station E-mail: tia@mut.ac.za

Tel: +27 31 907 7453

REINFORCED AND MOULDED PLASTICS TECHNOLOGY STATION (RMPTS)

Reinforced & Moulded Plastics Technology Station (RMPTS) is located in the Durban University of Technology (DUT) in KwaZulu Natal, Durban at the Steve Biko Campus.

RMPTS is the technology transfer mechanism for the Centre for Advanced Material, Design & Manufacture with a mission of advancing the reinforced and moulded plastics sector through technological innovation, forward thinking and research & development.

The department specialises in composite materials and plastic tooling technology and this saw the decision to formalise the technology transfer of the department in the TS with a focus on reinforced and moulded plastics.

The Station is very well equipped currently and is able to assist industry with respect to design, specimen testing, prototype construction, tooling fabrication, metrology, limited production runs and general machining.

The main focus of the TS is to provide companies within the reinforced and moulded plastics sectors with assistance in product design, prototype development and tooling design, development and manufacture.

REINFORCED AND MOULDED PLASTICS TECHNOLOGY STATION (RMPTS)

TECHNOLOGY COMPETENCIES AND OFFERINGS

Generally, the Station specializes in conceptual design, design analysis, optimization and verification of non-metallic and metallic:

- **Aerospace and other advanced structures**
- **Custom fabrications**
- **Pressure and vacuum vessels**
- **Process tanks and vessels**
- **Specialized process equipment**
- **Piping and ducting systems**

Technology Station Services:

- Design and fabrication of injection moulds and tools
- Design and fabrication of mechanical parts and systems, jigs and fixtures
- Failure analysis
- 3, 4 and 5-axis CNC milling
- CNC turning
- Metrology
- 3D printing

CONTACT DETAILS

Station Manager: Prof. Mark Walker | **E-mail:** walker@dut.ac.za
Design Engineer: Mr. Ryan Hamilton | **E-mail:** rynh@cut.ac.za

Tel: +27 31 373 2543
Website: www.dut.ac.za/

INSTITUTE FOR ADVANCED TOOLING

The Institutes for Advanced Tooling (IATs) are positioned to be occupational centres of excellence for Skills Development; Technology Transfer and Diffusion to accelerate the country's growth in the Tool, Die & Mould (TDM) making sector (Tooling sector), through the core business of promoting sustainable tooling in collaboration with international leading tool making private institutions, academia and the local tooling industry.

The aim is to change tool manufacturing from a resource-driven process to a knowledge driven process by offering a well - balanced combination of technology enablers for all steps of the extended product life cycle to SME's in the tooling sector.

INSTITUTE FOR ADVANCED TOOLING

THE FOCUS OF THESE INSTITUTES

- **Tool Design**
- **Tooling Technology Transfer**
- **Research and Innovation**

There are three IATs within the Technology Stations Programme, located at three different Higher Education Institutions.

Institute of Advanced Tooling (IAT-TUT)
Tshwane University of Technology
Soshanguve
Operations Manager: Mr. Jeff Makhubela
Tel: +27 12 382 9227

Institute of Advanced Tooling (IAT-WSU)
Walter Sisulu University
East London
Station Manager: Mr. Kerryn Newey
Tel: +27 43 709 4751

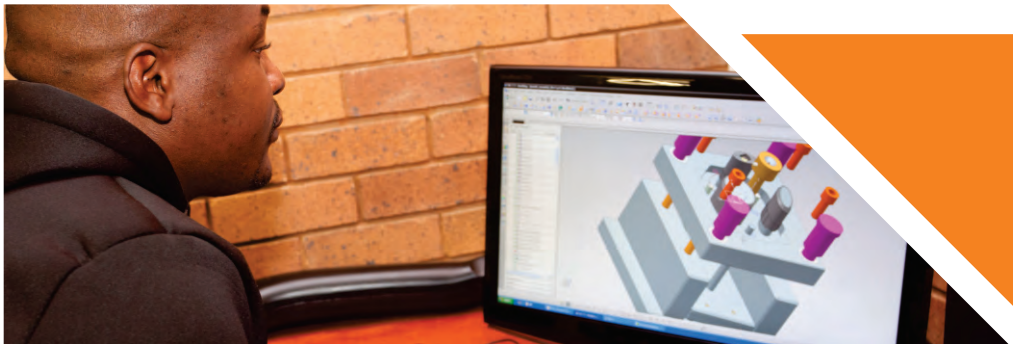
Institute of Advanced Tooling (IAT-SU)
Stellenbosch University
Stellenbosch
Acting Operations Manager: Prof. Natasha Sacks
Tel: +27 21 808 9531

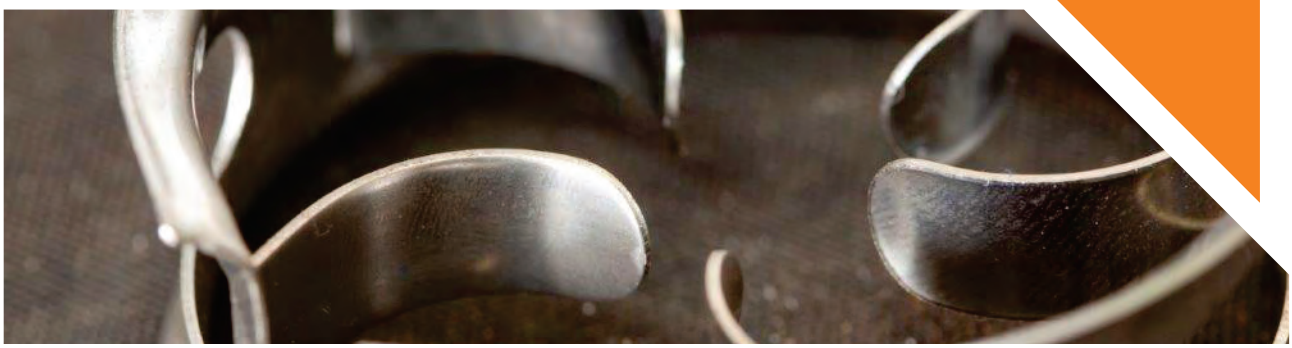
INSTITUTE FOR ADVANCED TOOLING TSHWANE UNIVERSITY OF TECHNOLOGY (IAT-TUT)

The Institute for Advanced Tooling (IAT) is based at the Tshwane University of Technology (TUT), Soshanguve South Campus.

IAT-TUT key objectives are to:

- Improve the competitiveness of SMEs in the tooling industry through the growing of highly skilled and educated workers with challenging jobs, which are capable to deliver quality products and processes that meet the OEM requirements.
- Deliver a new paradigm of high added value tools and tool making business models that will reposition tool and die makers as key strategic partners in the value chain in accordance with relevant industry needs.
- Contribute to the improvement of global competitiveness of the South African manufacturing industry.





INSTITUTE FOR ADVANCED TOOLING TSHWANE UNIVERSITY OF TECHNOLOGY (IAT-TUT)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Engineering Change Requests (ECR)**
- **Part Inspection/Measurement**
- **Product Development/Design/CAD/CAM Technology**
- **Computer Aided Design (CAD)**
- **CNC Machining**
- **Tool Design & Manufacturing**
- **Tool, Die and Mould (TDM) Training**

Engineering Change Requests (ECR)
Injection Moulds modifications for the automotive sector. The work involves making changes to existing moulds as a result of changes to parts or components designs.

Part Inspection/Measurement
2D and 3D part inspection and/or measuring using the Coordinate Measuring Machine (CMM).

Product Development/Design/CAD/CAM Technology
Any product design and/or development for tooling in any of the three specified tool design specialisation.

CAD (design) the following software are used
- AutoCAD
- NX
- PowerSHAPE (Tool Maker)

CAM (machining) the following software are used
- PowerMILL (CNC machining on the 5-Axis & 3-Axis machines)
- FeatureCAM (CNC machining on the Wire EDM machine)

CNC Machining
High precision machining with the following machines:
- 5-Axis High Speed milling
- 3-Axis milling
- Turning
- Wire EDM
- EDM Die Sink

Tool Design & Manufacturing
- Jigs & Fixtures
- Press Tools
- Injection Moulds

Tool, Die and Mould (TDM) Training
- Internship Programme in the TDM field
- CNC (Turning & Milling) training in both programming and machining – specialised training for National Tooling Initiative Programme (NTIP) students
- On-Job-Training (OJT) for NTIP students
- Specialises in Tool, Die & Mould modules as part of the Work-Integrated-Learning (WIL) for Mechanical Engineering students
- Skill Development & Transfer

CONTACT DETAILS

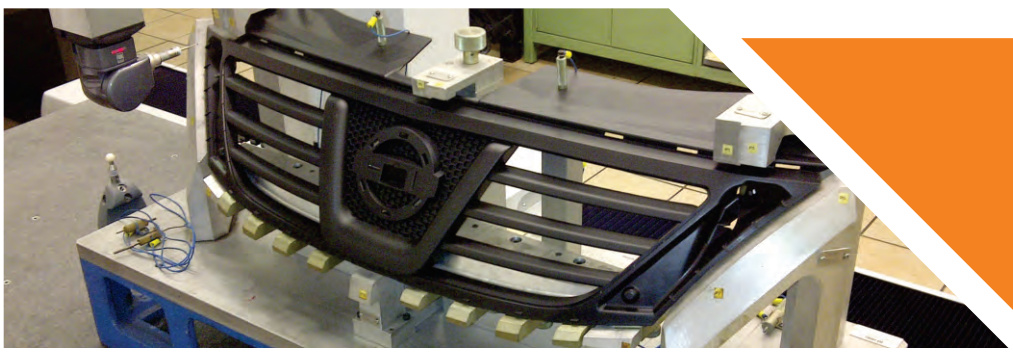
Operations Manager: Mr. Jeff Makhubela | **E-mail:** makhubelamj@tut.ac.za
Training Coordinator: Mr. Patrick Marasi | **E-mail:** marasip@tut.ac.za
Administrator: Mrs. Tebogo Tsomele | **E-mail:** tsomeletg@tut.ac.za

Tel: +27 12 382 9227

INSTITUTE FOR ADVANCED TOOLING WALTER SISULU UNIVERSITY (IAT-WSU)

This Institute of Advanced Tooling (IAT) is based at Walter Sisulu University (WSU) Buffalo City, satellite Campus in East London. IAT-WSU focuses mainly on mechanical design, concept and product development, metrology (3rd party measurement), analysis, skills development and more recently, advanced manufacturing and reverse engineering.

The strategic objectives of the Station are to provide technology support services and training to the (predominantly) regional manufacturing sector, SME's, inventors, individuals, academic partners and in some cases large companies.



INSTITUTE FOR ADVANCED TOOLING WATLER SISULU UNIVERSITY (IAT-WSU)

TECHNOLOGY COMPETENCIES AND OFFERINGS

Advanced Manufacturing
3 & 3+2 Axis CNC Milling (Digital Tool & Work Piece Setting)
Large Formant CNC Robotic Milling (Pattern/Plug Machining)

Analysis / Simulation
FEA (Linear Static, Buckling & Dynamic)
CFD (Static & Transient)

Applied Research and Development
Renewable Energy and CNC Robotic Milling

Consultancy Services
Technology Audits and Industry Surveys

Design
The IAT is equipped with Siemens NX CAD/CAM/CAE software modules including:

- 3D Solid &Assembly Modelling, 2D Layouts
- 3D Surfacing (engineered & free-form shapes)
- Basic Plastic Injection Mould Design
- Basic Jigs & Fixture Design
- Computational Fluid Dynamics (CFD)
- Component Design (Mechanical Design)
- General **CAD**, Component Design, Core & Cavity
- Extractions & Model Optimisation
- - Solid & Surface Modelling (Advanced CAD)
- Product Design, Development, Prototyping and Mould Design
- Quality Assurance (CMM, 3rd Party Measurement)
- Research & Development & renewable energy projects
- Sheet Metal Design
- Mould Wizard (plastic injection mould design)
- Motion Simulation
- NX Nastran Simulation (FEA linear static, buckling & dynamic analysis)o
- NX **CAM** (NC programming for milling & turning)
  - 3 Axis NC Programming
  - 3+2 Axis CNC Programming
  - NC Robotic Milling Programming & Simulation (Kuka CNC)

General Manufacturing
Mechanical Fabrication and Steelwork Fabrication

Metrology / CMM
3rd Party Measurement, Metrology & Conformance

Reverse Engineering
Digital Laser Scanning & CAD Model Development

Technology Demonstration & Training
AutoCAD Basic & Advanced
Internship
Introduction to CNC Programming/Machining
Jigs & Fixture Module
Plastic Injection Design Module
Press Tool Module
Siemens NX

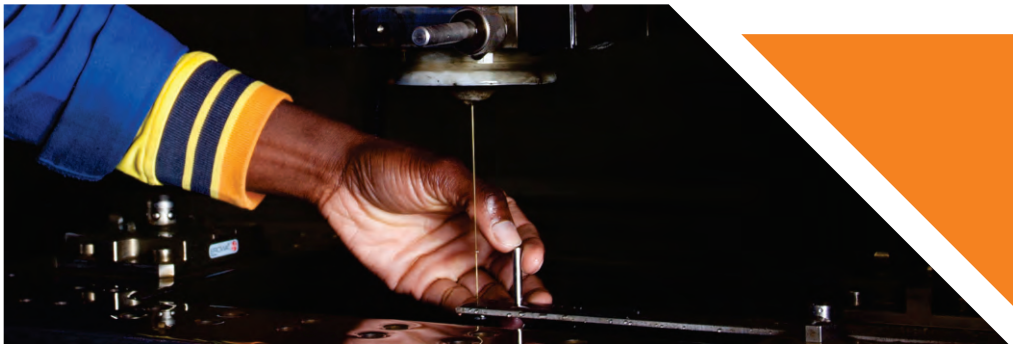
CONTACT DETAILS

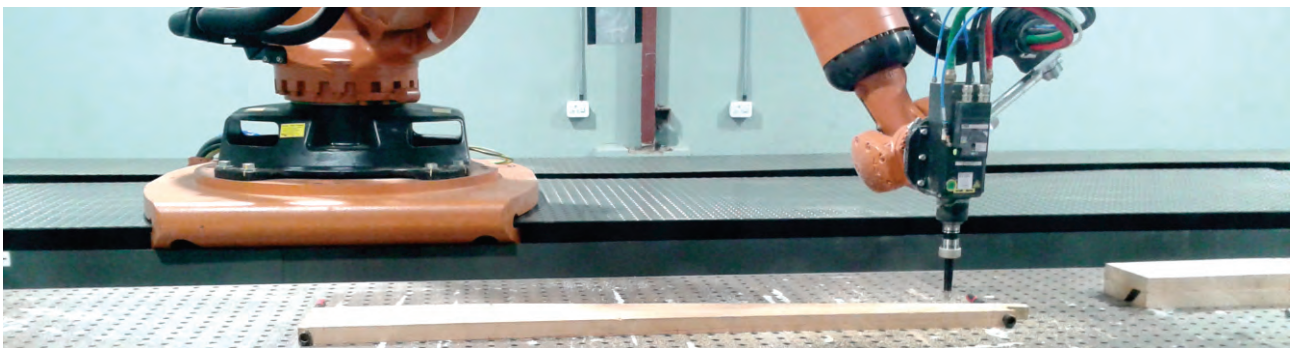
Station Manager: Mr. Kerryn Newey | **E-mail:** knewey@wsu.ac.za
Operations Manager: Mr. Masakhane Mapoloba | **E-mail:** mmapoloba@swu.ac.za

Tel: +27 43 709 4751

INSTITUTE FOR ADVANCED TOOLING STELLENBOSCH UNIVERSITY (IAT-SU)

IAT – SU vision is to work towards a national effort to build the innovation capacity of the South African tooling industry. The IAT works with companies aiming to improve their competitive position towards domestic and international competitors; change tooling manufacture from a resource driven to a knowledge driven process by offering a well-balanced combination of technology enablers for all steps of the extended life cycle to small medium enterprises (SME's) in the tooling sector. The IAT aims to create a foundation for a new mould making business concept based on technology innovation which, concerning the particularities and the typical dimension of the South African SME's, pushes the sector towards a new position as high added value engineering service providers. The IAT further stimulates the shift of the tooling industry, which is traditionally less R&D intensive, to a high-added-value sector.





INSTITUTE FOR ADVANCED TOOLING WATLER SISULU UNIVERSITY (IAT-SU)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **3D Digitizing and Reverse Engineering**
- **Additive Manufacturing**
- **Aluminium Components Forming Assemble**
- **Conformal Cooling Design and Realisation**
- **Five Axis High Performance Machining**
- **Sheet Metal Simulation**
- **Quality Control**

3D Digitizing and Reverse Engineering
Reverse Engineering is the process of digitizing a physical object to obtain computed data for further development. From a 3D scanning system, digital data is obtained. This digital data can then be taken into appropriate CAD software whereby it can be used to recreate a surface or solid model. The CAD data can be exported in various formats. This is a very efficient way to obtain a component model especially when CAD drawings or other information is not available.

Additive Manufacturing
Metallic powder is fully fused by laser beam to produce a 100% component density to conform to a design of complex cooling configurations. This gives rise to productivity improvements of the moulding process.

Aluminium Components Forming Assemble
Machining of various aerospace aluminium components forming an assembly. Undercut regions and small corner radii make simultaneous 5-axis machining a necessity. Each component is machined in a single setup using a fixture. High material removal rate using 5-axis HSC. Innovative Work Holding for machining of aerospace components made of light metals.

Conformal Cooling Design and Realisation
Conformal cooling improves cooling behaviour. Additive technology allows cooling configuration design to conform to component geometry.

Five Axis High Performance Machining
Machining challenges due to material characteristics of difficult to machine materials, i.e. titanium alloys. Used mainly in Aerospace industry due to its strength to weight ratio. Components have difficult geometries, including undercuts and thin walls. Development of CAM programming strategies to improve machinability and efficiency.

Plastic Flow Simulation
Plastic flow simulation through Moldex 3D, Moldflow Part and Mould Adviser, analysis of plastic flow during the injection moulding process. Plastic flow simulation is aimed at helping clients to foresee and solve problems in the design of moulds in the first stage of product development.

Sheet Metal Simulation
Offers simulation services, to make process and die design choices before committing to the manufacture of the tool. This often reduces the try out time, costs and risk associated with the tooling design and the development cycle.

Quality Control
Part inspection of large and small objects on CMM Mitutoyo Bright 710. Part inspection of large and small objects by GOM Digitising camera or Cimcore Infinite Measuring Arm.

CONTACT DETAILS

Acting Operations Manager: Prof. Natasha Sacks | **E-mail:** natashasacks@sun.ac.za

Tel: +27 21 808 9531
Website: http://www.tia.org.za

ADAPTRONICS ADVANCED MANUFACTURING TECHNOLOGY LABORATORY (AMTL)

Adaptronics Advanced Manufacturing Technology Laboratory (AMTL) is located at the Cape Peninsula University of Technology (CPUT), Bellville Campus.

The primary objective of the unit is to specialise as a national manufacturing, research and educational resource centre for Adaptronics Technologies in South Africa. Adaptronics is the technology that integrates sensor and actuator functions into materials, components and structures so that they may react to environment stimuli thus making them intelligent.

Four Research and Technology focus areas of specialization have established.

ADAPTRONICS ADVANCED MANUFACTURING TECHNOLOGY LABORATORY (AMTL)

TECHNOLOGY COMPETENCIES AND OFFERINGS

- **Adaptronics Technology**
- **Automotive Technologies**
- **Ocean Engineering**
- **Universal Design**

Adaptronics Technology
Research and Technology projects into the development of intelligent structures, MEMS and Nano-Sensing Devices.

Automotive Technologies
Research and Technology projects related to motorsport and alternative/green propulsion systems.

Ocean Engineering
Research and Technology projects related to maritime applications.

Universal Design
Research and Technology projects providing access to physically challenged individuals.

These areas form the foundation of the Adaptronics AMTL's Human Capital Development Programme, and include student R&T projects ranging from Internships, Bachelors, Masters, Doctoral and Post-Doctoral activities. AMTL has dedicated staff of Technologist, Technicians, and Artisans involved in industry related activities ranging from design, prototyping, testing; and process and programme development.

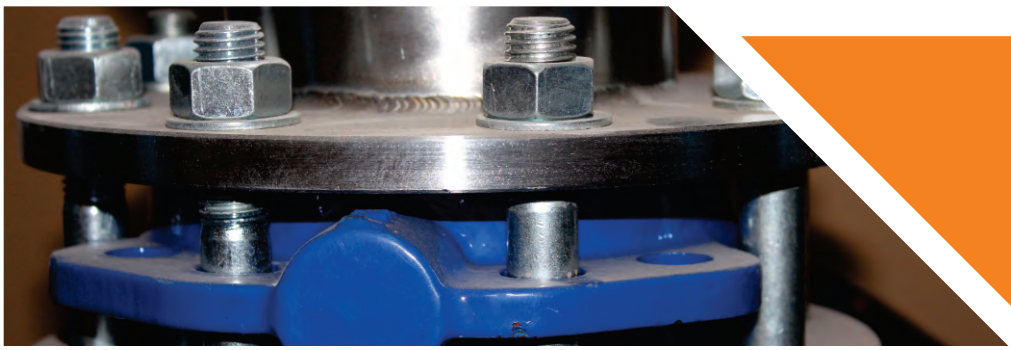
CONTACT DETAILS

Station Director: Prof Oscar Philander | **E-mail:** philandero@cput.ac.za
Operations Manager: Mr. Eugene Erfort | **E-mail:** erforte@cput.ac.za
Administrator: Ms. Leigh-Anne Davids | **E-mail:** davidslan@cput.ac.za

Tel: +27 21 953 8435
Website: www.cput.ac.za/academic/faculties/engineering/research/amtl

PROCESS ENERGY & ENVIRONMENTAL TECHNOLOGY STATION (PEETS)

Process Energy and Environmental Technology Station (PEETS) is located at the University of Johannesburg (UJ) Mapulong Building, Doornfontein Campus. The primary mandate for the PEETS is to contribute towards improving the competitiveness of industry through the application of specialised knowledge, technology and facilitating the interaction between industry (especially SMEs) and the academia in order to enable innovation.



PROCESS ENERGY AND ENVIRONMENTAL TECHNOLOGY STATION (PEETS)

FOCUS AREAS

- **Environment &Water (Solid Waste Management, Waste Water, Clean Water, Air Pollution)**
- **Renewable & Solar Energy (Bios-gas, Energy and Energy Efficiency)**
- **Photovoltaic Cell Bio-energy Bio Diesel**

TECHNOLOGY COMPETENCIES AND OFFERINGS

- Air Quality Auditing
- Energy Auditing
- Engineering Consultation
- Environmental Impact Assessment
- Process Optimization
- Product and Process Development / Improvement
- Prototype Assembling
- Testing /Analysis
- Technology Research and Development
- Training and Demonstration
- Waste Characterization

PEETS is committed to provide the highest level of quality and professionalism in interaction with stakeholders. We pride ourselves in stating that we are the only organization that serves as a catalyst to shorten the gap between Academia and Industry in the Energy and Environmental sector.

CONTACT DETAILS

Station Manager: Ms. Nickey Janse van Rensburg | **E-mail:** nickeyjvr@uj.ac.za

Tel: +27 11 559 6541
Website: http://www.uj.ac.za

TECHNOLOGY STATION IN RURAL SUSTAINABLE DEVELOPMENT (TSRSD)

The Technology Station in Rural Sustainable Development (TSRSD) is located at Upington in the Northern Cape. The Station is affiliated to the Vaal University of Technology (VUT) Sebokeng's campus. It forms part of the VUT's Technology Transfer and Innovation Directorate. As such, it is supported by an Enterprise Development Unit (EDU); Iscor Innovation Centre (IIC); Engineering Manufacturing Centre (EMC) and Institute for Chemical and Biotechnology at the Sebokeng Campus.

TSRSD offers two types of consulting and training services. The first type focusses on product development, and the improvement of product knowledge and skills. The second type concentrates on process improvement, and the improvement of process knowledge and skills.

The aim is to create a sustainable Station, which can be used to broaden the applied research base of VUT, build research and innovation capacity, facilitate technology transfer skills to the Upington community – including commerce, industry, agriculture, rural/urban and informal community settlements.

TECHNOLOGY STATION IN RURAL SUSTAINABLE DEVELOPMENT (TSRSD)

TECHNOLOGY COMPETENCIES AND OFFERINGS

Services

- Business Support
- Entrepreneurship support
- Manage the execution of projects to fulfil identified needs, through the collaboration between TSMPT and TSRSD and other stakeholders.
- Product Development (partnership with TSMPT)
- Technology auditing and identifying the needs within Upington and the surrounding districts
- Technology facilitation agent and coach clients in the optimal use of developed resources and technology platforms
- Transfer identified needs into executable and fundable projects and business plans

Training

- E-skills training facility
- Solar Energy Products (Manufacturing and Installation)
- Artisan Training (Welding, Renewable Energy,
- Mechanical and Electrical Engineering)

CONTACT DETAILS

Station Manager: Mr Martin Lotz
Administrator: Ms Mariaan Steenkamp

Tel: +27 54 331 3268
Website: http://www.vut.ac.za

science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

Higher Education Institutions affiliated with the Technology Stations Programme

DUT Durban University of Technology

Central University of Technology, Free State

WSU Walter Sisulu University

VUT Vaal University of Technology

University of Johannesburg

University of Limpopo

Nelson Mandela University

Tshwane University of Technology
We empower people

Universiteit Stellenbosch University

Cape Peninsula University of Technology

MUT Mangosuthu University of Technology

science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

TECHNOLOGY INNOVATION AGENCY

Head Office:
TIA House
83 Lois Avenue, Pretoria
Tel: 012 472 2701
Postal Address: P.O. Box 172, Menlyn, Pretoria, 0063

KwaZulu-Natal Regional Office:
4th Floor Office
102 Stephen Dlamini Road (Previously Essenwood), Musgrave, Durban
Tel: 031 220 3100
Postal Address: P.O. Box 30603, Mayville, Durban, 4058

Western Cape Regional Office:
4th floor, Central Park
Black River Business Park, Fir Road, Observatory, Cape Town
Tel: 021 442 3780
Postal Address: P.O. Box 13372, Mowbray, Cape Town, 7705

Web Address: www.tia.org.za | **Email:** services@tia.org.za

technology innovation
A G E N C Y
Innovating Tomorrow Together