



TECHNOLOGY STATIONS COVID-19 INITIATIVES



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

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technology innovation
A G E N C Y
Innovating Tomorrow Together

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About TIA

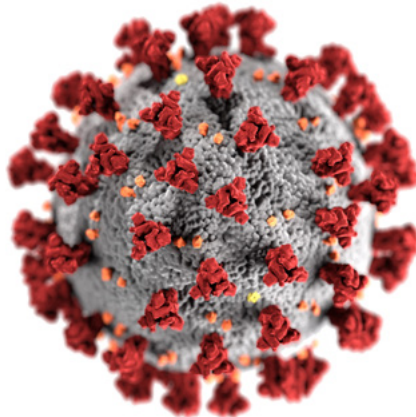
Technology Innovation Agency (TIA) is a national public entity that serves as the key institutional intervention to bridge the innovation chasm between research and development from higher education institutions, science councils, public entities, private sector, and commercialisation. TIA's focus is on technology development; from proof of concept to pre-commercialisation. To achieve this, TIA established a number of funds such as the Seed Fund, the Technology Development Fund and the Commercialisation Support Fund.



Technology Stations Programme (TSP)

The Technology Stations Programme (TSP) was established to enable Universities of Technology to provide technology development services to small and medium enterprises (SMEs). There are 18 Technology Stations (TS) based at 11 Higher Education Institutions in South Africa that focus on a range of services from Agro-Processing, Chemicals, Clothing & Textile, Automotive Industry and Tooling Sector. These centres house technical experts from various universities and industry, with the requisite skills and expertise that render world class engineering services to SME's. The goal of the Technology Stations Programme is to contribute towards improving the competitiveness of industry through the application of specialised knowledge and technology by facilitating the interaction between industry and academia, in order to enable innovation.

The Technology Station Programme (TSP) has contributed R8 378 967 and more than 24 000 hours towards coming up with Covid-19 related solutions ranging from Personal Protective Equipment (PPE) to masks and sanitisers.



Central University of Technology (CUT) - Product Development Technology Station (PDTS):

The Centre for Rapid Prototyping and Manufacturing (CRPM) / Product Development Technology Station (PDTS) based at Central University of Technology specialises in Additive Manufacturing (AM), better known as 3D printing, has now completed the 3D printing stage of the development of a reusable cost-effective respirator mask with insertable disposable N99 filter discs. This initiative is expected to roll out 2000 respiratory units, it is now at tooling stage with mass production and manufacturing, full roll-out commenced in May 2020. This initiative will contribute towards the national roll out of supporting the PPE shortfall of approximately 50 000. The masks produced by the PPE airway project can also double as a Continuous Positive Airway Pressure (CPAP) mask utilized in non-invasive ventilation.



Vaal University of Technology (VUT) - Technology Station for Materials & Processing Technologies (TSMPT):

Technology Station in Materials and Processing Technologies based at Vaal University of Technology in Sebokeng assists small and medium enterprises (SME) manufacturers of metal-based and composite-based products to improve their products, product knowledge, process knowledge and skills. The Technology Station has partnered with Tsidi and Friends, a project incubated under Centre of Footwear and Entrepreneurship (CoFE), in producing face masks for their staff and students. The masks produced are 100% cotton based and are washable for reuse. The initiative has also assisted Tsidi and Friends in receiving training on how to make protective masks and now they are able to produce 200 masks per week.



Nelson Mandela University (NMU) – InnoVenton: Institute for Chemical Technology:

Downstream Chemicals Technology Station incorporated at InnoVenton Institute for Chemical Technology provides technical support services and training to technology based Small and Medium Enterprises and bigger enterprises in the chemical industry sector. They have partnered with Mangosuthu University of Technology in producing 500ml hand sanitisers with the first the 5 000 containers to be distributed to university staff, old age homes, schools in under-privileged communities and also placed at strategic high population points. Further to the production of hand sanitisers, there were also a number of enterprises who were provided with tailor-made training and demonstrations to produce these sanitisers. The production of hand sanitisers will be an ongoing project until the pandemic is over.



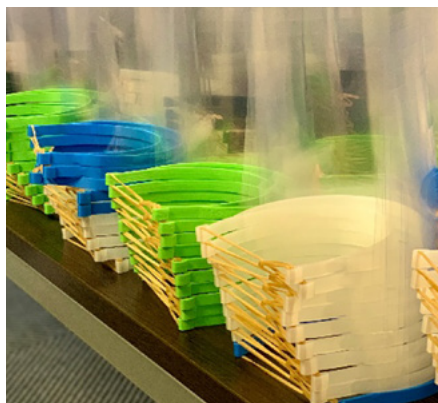
Nelson Mandela University (NMU) – eNTSA:

eNtsa is recognised as a prominent research, design and technology support unit for the advanced manufacturing sector in South Africa, based at Nelson Mandela University (NMU) in Port Elizabeth. Since April 2020 eNtsa has distributed over 7700 face shields to hospitals, South African Police Services (SAPS), Care centres, Emergency Medical Services (EMS), security, private doctors, dentists and physiotherapists. Shields have also been distributed to education facilities, retail stores, care centres, members of old age villages and other individuals as more members of society seek to protect themselves and their employees. A further 500 face shields are being prepared for Nelson Mandela University staff scheduled to return to work.

eNtsa has embarked on a number of activities, guided by the vision of innovation through engineering. Their engineers collaborated with Provolution and Intensive Care Unit (ICU) doctors from Livingstone Hospital to iteratively develop and improve the face shield design. The current face shield design is their 4th revision. The improvements and design features include an improved 3D print speed; improved comfort and fit eliminating the need for clips, holes or adhesives and allows for easy replacement of damaged clear sheet. Face shield utilises standard, cheap, available stationary acetate sheets to allow easy replacement.

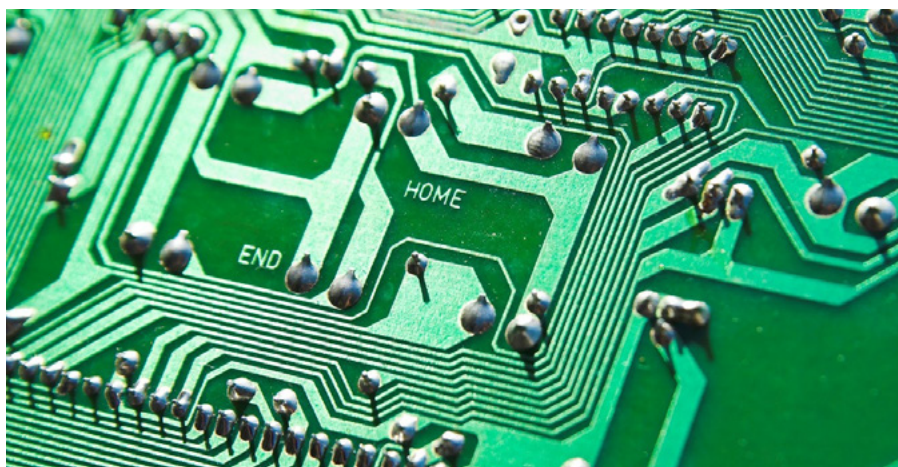
eNtsa is also in consultations with Nelson Mandela University on possible temperature screening solutions for campus facilities. A non-contact, visual and audio feedback system has been installed at the eNtsa reception and all staff and visitors must report for screening. eNtsa is also collaborating with and Livingstone Hospital to set-up Ultraviolet (UV) lamps with the intention of decontaminating goods and materials including Personal Protective Equipment waste optimisation. The technology station will undertake limited research to identify the nature of the need for UV decontamination in South Africa (SA), identify the UV systems that are presently available, and what the testing and approval requirements would be.

In terms of the project initiative to date, eNtsa has completed a series of measurements documenting the relationship between distance and exposure time to compile a reference chart for the internationally recommended UV dosage to be achieved. These recommendations have been provided to Dr. Jehle at the Livingstone Hospital in Port Elizabeth.



Council for Scientific and Industrial Research (CSIR), Tshwane University of Technology (TUT), University of Johannesburg (UJ) – Process Environmental Technology Station (PEETS)

Technology Station in Electronic Manufacturing and Services is based at Tshwane University of Technology (TUT), specialises in the electronic, electrical and information and communication technology industries. Process Energy and Environmental Technology Station based at University of Johannesburg is collaborating with the Council for Scientific and Industrial Research (CSIR) in building printed circuit boards for ventilator repairs and maintenance including new/re-designing. The effort is to identify decommissioned ventilators at public and private hospitals to bring out of service equipment back online, focusing on dealing with e-Waste reduction as part of circular economy to support the medical engineering maintenance programmes at hospitals.



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