

Innovative research and technology centre

Providing specialised engineering services

eNtsa is recognised as an innovative research centre at the Nelson Mandela Metropolitan University (NMMU) specialising in design and technology support for the engineering, manufacturing, power generation and nuclear sectors.

This is achieved through provision of research supporting new process and technology development, technology support for optimising existing production processes and infrastructure and advancing the high-end skills level by offering technical training according to international best practices. eNtsa's workforce consists of highly specialised and skilled engineers, office professionals, technical support, postgraduate candidates and interns.

The centre has highly equipped laboratories with specialised and state-of-the-art equipment. More recently eNtsa has entered a sphere of commercialisation of their processes and services.

In 2013 the uYilo e-mobility programme was launched which signified the acclaimed dawn of the renewable era within the group. This programme is a national joint initiative of the Technology Innovation Agency (TIA) and NMMU which aims to support technology development in the fields of Battery Systems, Electric Drive Trains and Charging Infrastructure.

Projects and services linked to eNtsa

Development and design:

- Mechanical design
- 3D Modelling
- Finite Element Analysis (FEA)
- Rapid prototyping

Services (Materials and Mechanical):

- Mechanical Testing (e.g. Chemical, tensile, fatigue)
- Residual stress analysis
 1. Portable x-ray diffraction (non-destructive)
 2. 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

Other specialisation areas and services include:

- **Customised innovative engineering solutions.**
- **Joining Technologies.**
- **Renewable 'green' energy.**
- **Friction Processing (FP)** – in all the FP technologies the material is processed in the solid state (i.e. below the melting point of the material) to produce a high quality joint. These processes are of major interest for applications where the original metal characteristics must remain unchanged as far as possible.
- **Specialised training** - training opportunities offer value to a wide range of delegates providing skill and knowledge in focused areas within engineering presented by experts on the topic at hand.
- **Technology Station Programme** - forms part of the Department of Science and Technology's (DST) broader objective to stimulate and enhance innovation and technology within higher education institutions (HEIs) to improve South Africa's socio-economic benefits.
- **Small and Medium Enterprises Development** - eNtsa provides support for enterprises in the first, second and emerging economies (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.



Friction welding platform and 8metre friction stir weld - the longest weld in Africa



Trifox vehicle student project



Failures of structures and design concepts workshop facilitated at eNtsa



eNtsa Director Prof Danie Hattingh and researcher Ms Nthatsi Koloi working on specialised friction processing equipment



Electric vehicle (EV) at the uYilo e-mobility programme launch at NMMU



To find out more about eNtsa, call **041 504 3608** or visit entsa.nmmu.ac.za or visit the Facebook page <http://www.facebook.com/entsanmmu>