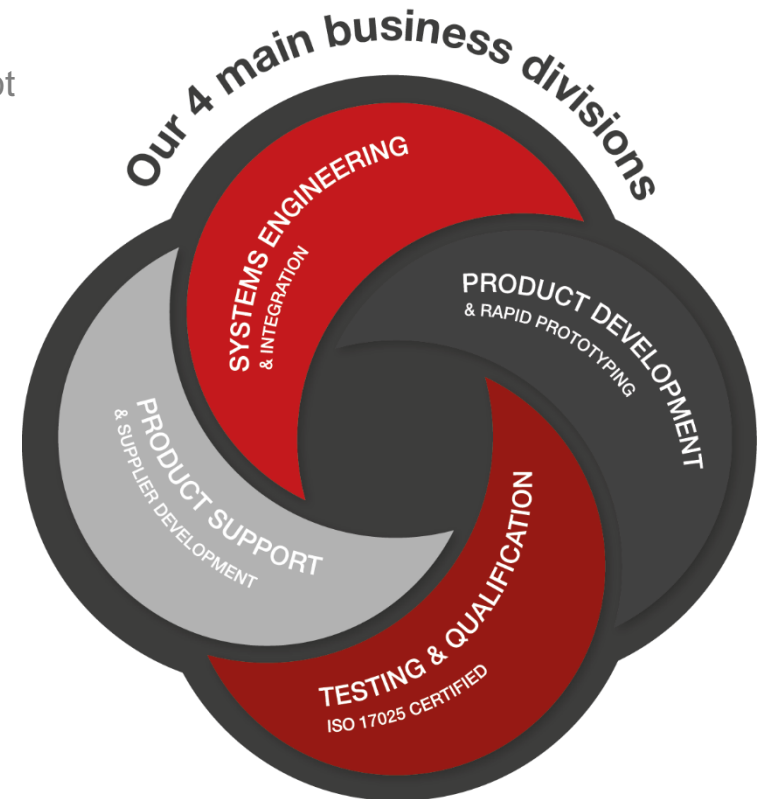


TESTING SERVICES

WHO WE ARE

- Pronex is a leading *independent* development contractor for major *defence and automotive* companies worldwide.
- A single point of entry for the development and testing of landward defence and automotive technologies ranging from system definition to a qualified product baseline.
- Pronex has no vested interest in third-party products and is not in competition with its clients.
- We provide a one-stop service supported by systems engineering, product development, rapid prototyping, testing and product support services.
- Our lean approach to business allows us to provide cost-effective and worldclass engineering services to our clients.



TEST CAPABILITIES

Test Capability Overview

- Qualified and experienced test engineers and technicians
- Qualified and experienced test drivers
- Large network of subject matter experts
- Rapid onsite repair of test item failures and access to rapid repair services
- Dedicated secure workshop at Gerotek to enhance project confidentiality
- In-house data acquisition and test equipment with multi-channel recording
- In-house test and instrumentation lab
- Logistic support services – fuel, storage, transport, support vehicles, tools and equipment
- Selection of numerous existing test instructions and standards
- Post processing, analysis and reporting on data captured during tests
- Ability to process import/export permits to facilitate business

ACCREDITED TEST LABORATORY

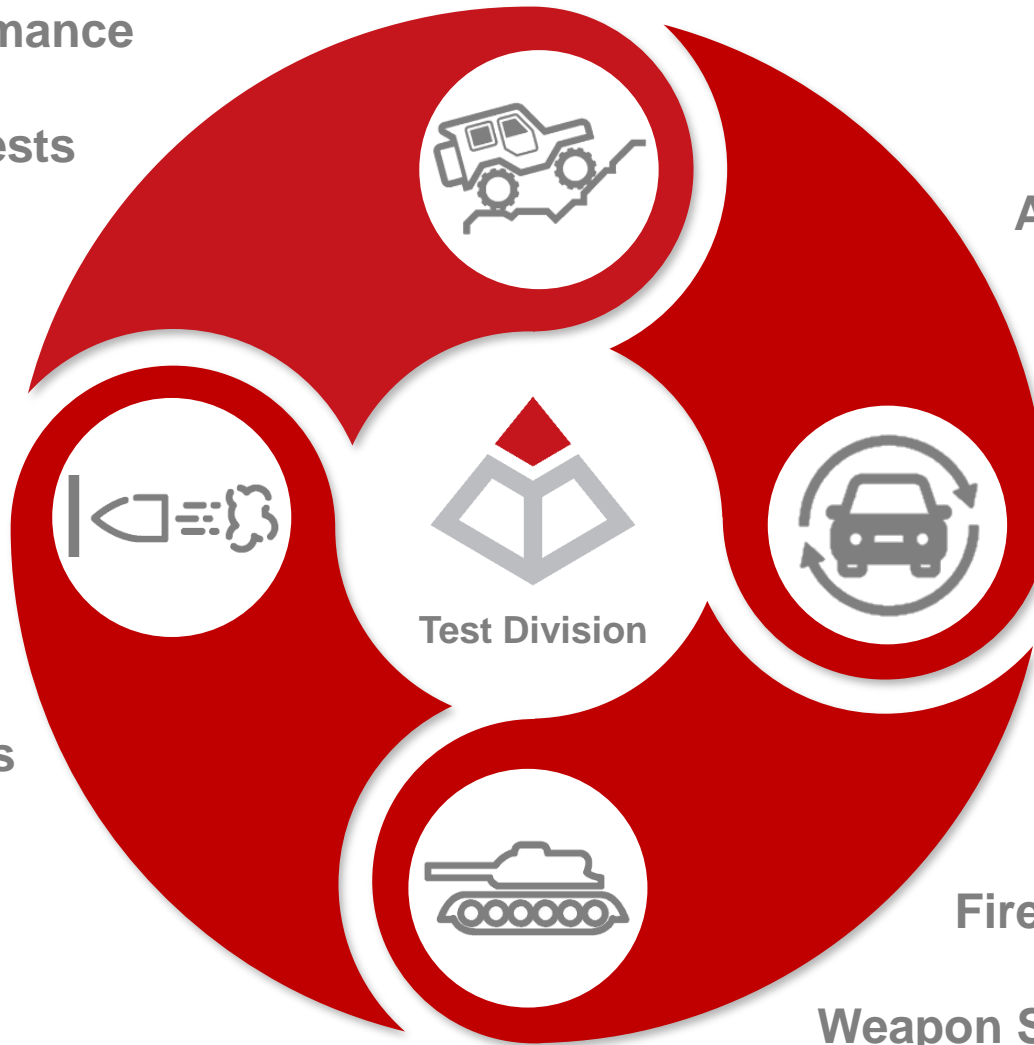
- Pronex is an ISO 17025 certified test authority accredited by the South African National Accreditation System (SANAS).
- ISO 17025 certification is the single most important standard for calibration as well as testing laboratories around the world and proves that:
 - a laboratory has an acceptable quality management system in place, and
 - has the ability and competence to provide testing and test results.
- Pronex is currently accredited to independently perform and report on specific mechanical and automotive performance related tests. In addition, non-specific (but related) work is however still executed in accordance with the requirements of ISO 17025:2017.
- Pronex can, with relative ease, expand the range of accredited tests in order to fulfil customers' specific testing requirements.



TEST DOMAINS

Vehicle Performance
&
Durability Tests

General
Automotive
Tests



Test Division

Vehicle
Protection Tests

Firepower
&
Weapon System Tests

VEHICLE PERFORMANCE AND DURABILITY



Performance & Characteristics

- Gradient & slope hold capability
- Step climbing, ditch crossing & fording
- Acceleration, braking & top speed
- OEM cooling & sign-off tests
- Ride comfort
- Steering tests
- Suspension tests
- Dynamic handling
- Dynamic and static side slopes
- Fuel consumption and range
- EC braking tests

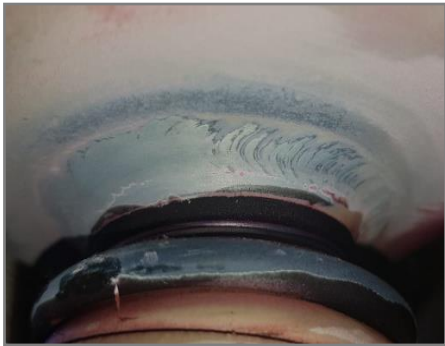
Durability & Reliability Growth

- Mission profile definition of vehicle (paired with test tracks)
- Rapid onsite repair of failures & access to manufacturing services
- Continuous monitoring of vehicle health, structural integrity & POL condition
- Logistic transport & access to test facilities support vehicles
- Test drivers with heavy vehicle license & military vehicle experience

VEHICLE PERFORMANCE AND DURABILITY (Continued)



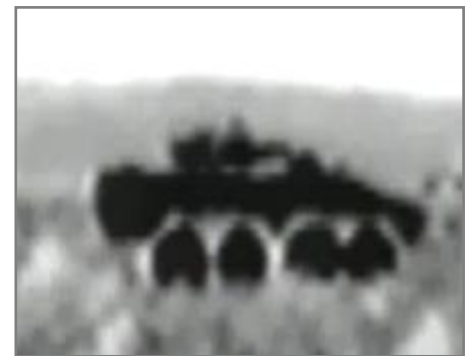
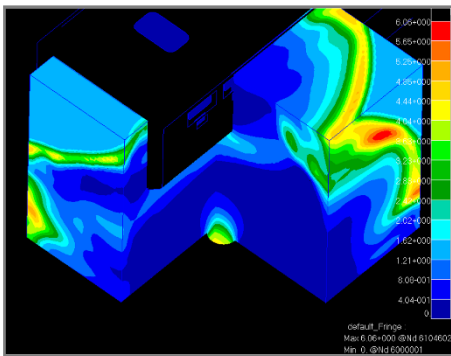
VEHICLE PERFORMANCE AND DURABILITY (Continued)



VEHICLE PROTECTION



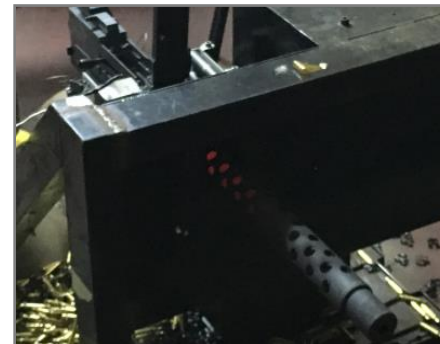
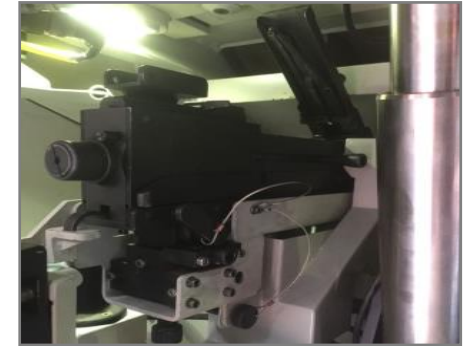
- Ballistic tests
- Vehicle landmine and IED blast testing
- Landmine seat tests
- Arena fragment tests
- Vehicle survivability modelling
- Vehicle protection assessments
- Detection, recognition & identification assessments



FIREPOWER & WEAPON SYSTEM QUALIFICATION



- Test support in guided missile tests
- Hit accuracy & gun jump tests
- Sustained firing capability tests
- Weapon system error budget quantification
- Fire control system evaluations
- Fire safety circuit evaluations

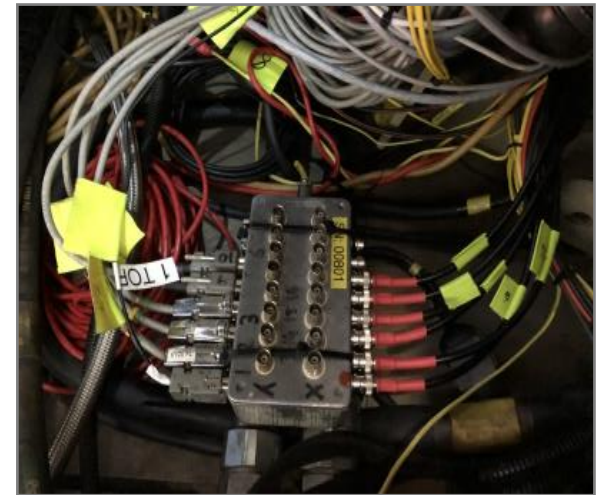
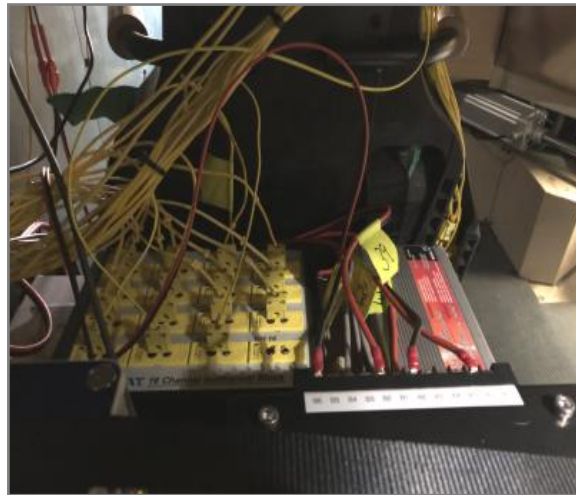




GENERAL AUTOMOTIVE TESTS

General Mechanical Tests

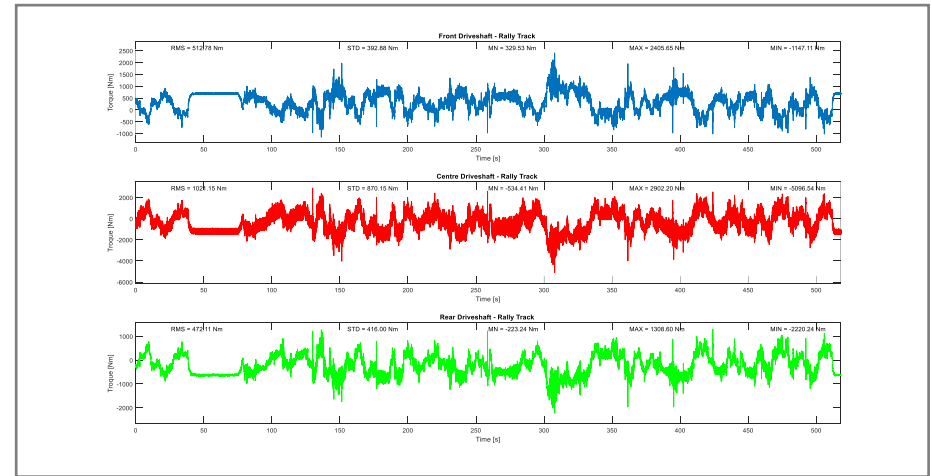
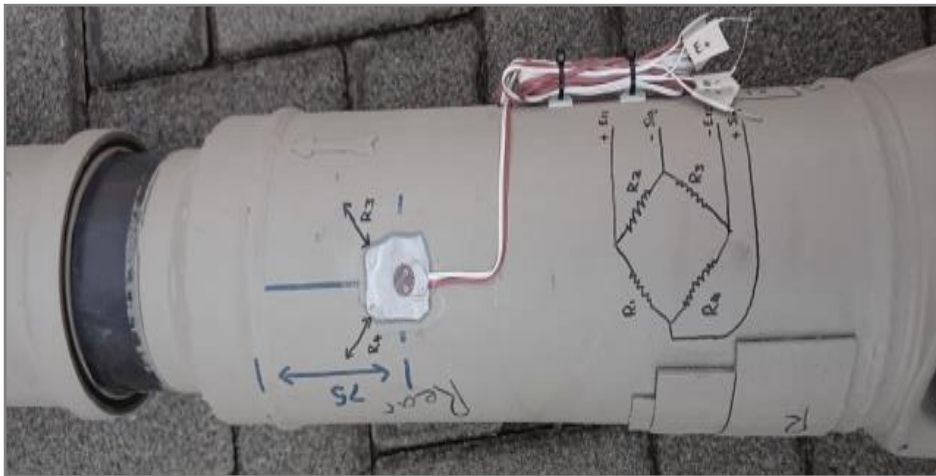
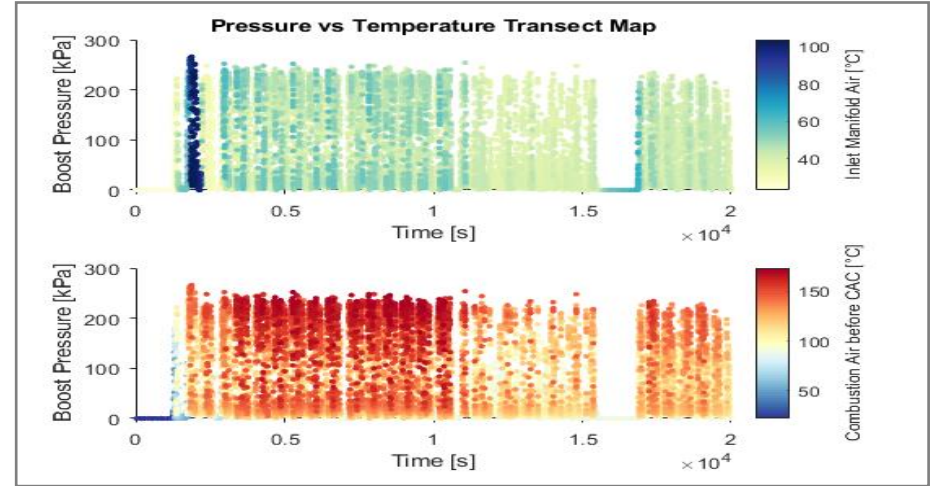
- Stress/Strain
- Torque (Telemetry)
- Temperature and pressure measurements
- Noise, vibration & harshness
- Displacement
- Environmental tests (thermal shock, rain, humidity, salt-spray, blowing sand, etc.)



GENERAL AUTOMOTIVE TESTS (Continued)



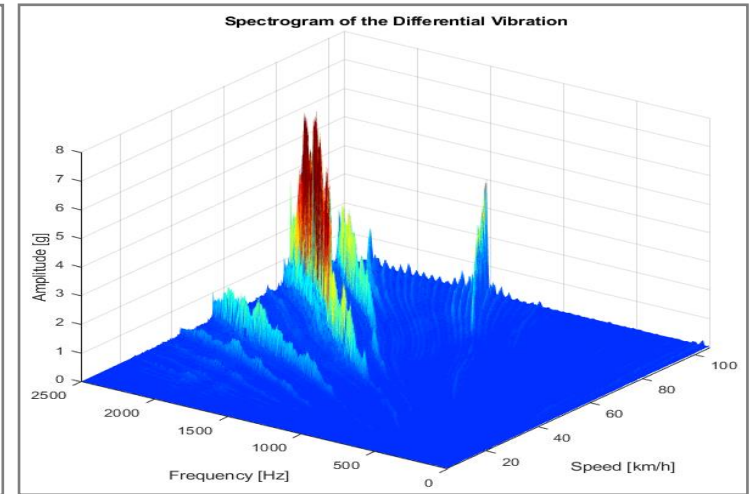
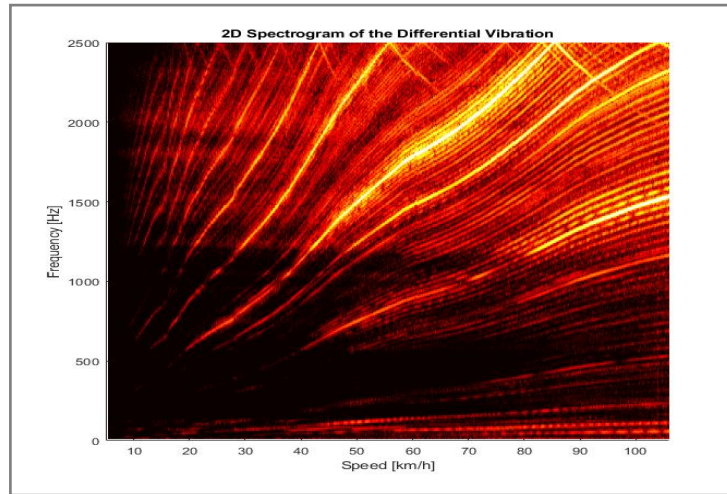
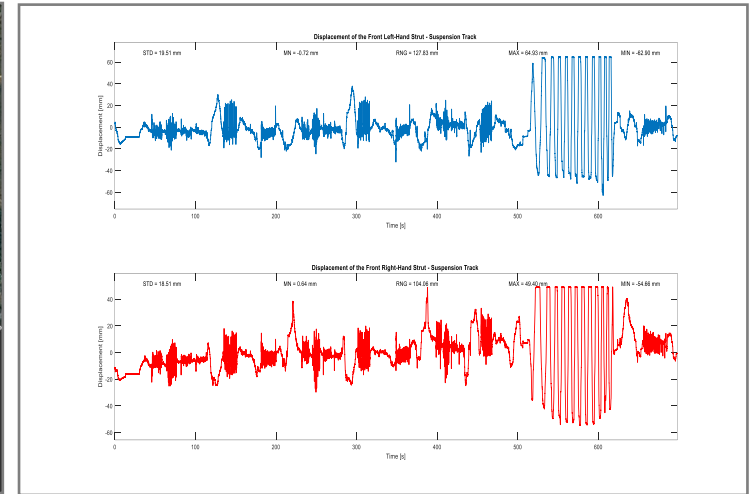
General Mechanical Tests (Continued)



GENERAL AUTOMOTIVE TESTS (Continued)



General Mechanical Tests (Continued)

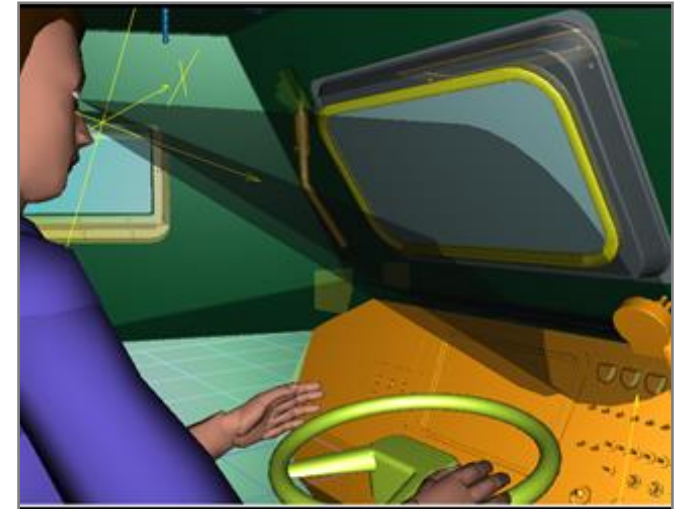
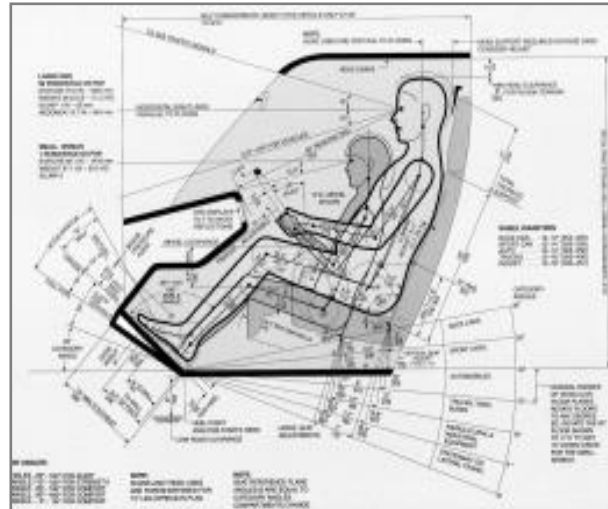
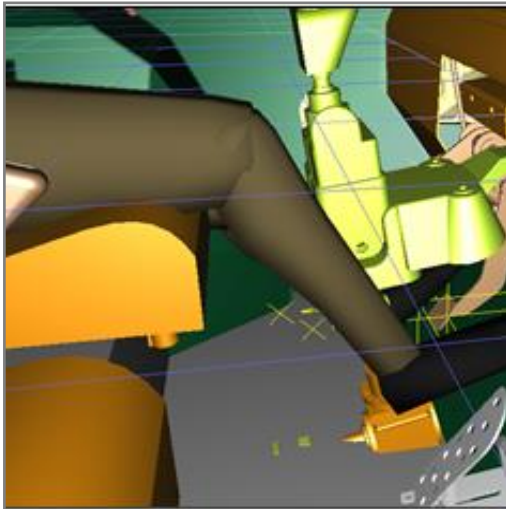




GENERAL AUTOMOTIVE TESTS (Continued)

Ergonomic Testing

- Occupant accommodation envelope
- Controls & displays
- Warnings & warning labels
- Ingress & egress access
- Biomechanics & force requirements
- Fume extraction

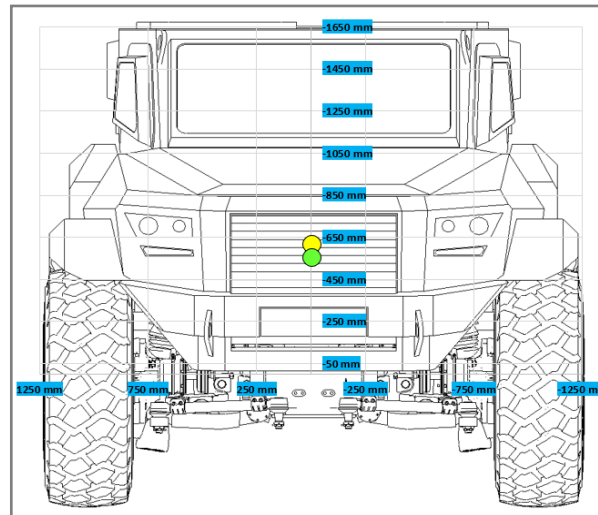
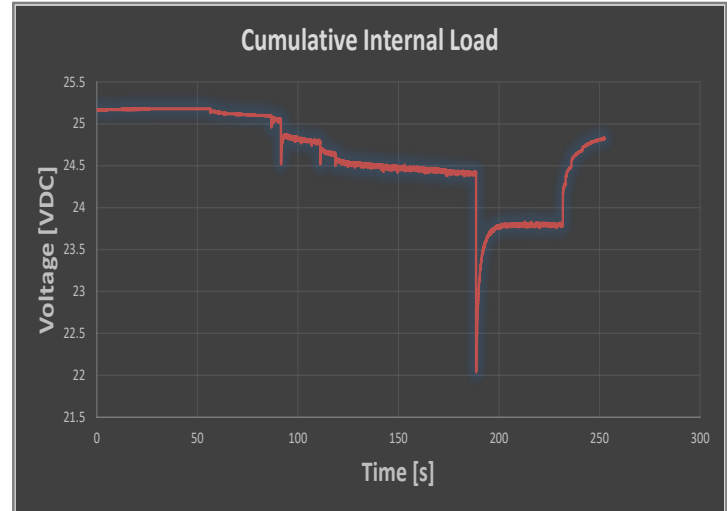


GENERAL AUTOMOTIVE TESTS (Continued)



Characterisation Testing

- Dimensions
- Mass & centre of gravity
- Automotive electrical system tests
- Homologation / road legislation tests



GENERAL AUTOMOTIVE TESTS (Continued)



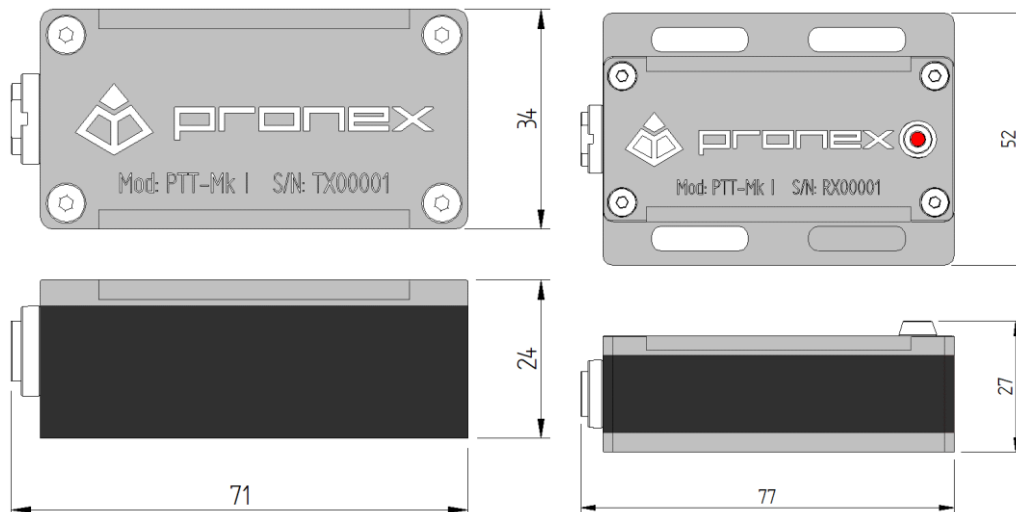
Environmental Tests

- Environmental chamber tests
- Humidity testing
- Corrosion testing
- Sealing capability tests
- Four-poster accelerated fatigue life testing
- HVAC tests
- Overpressure tests



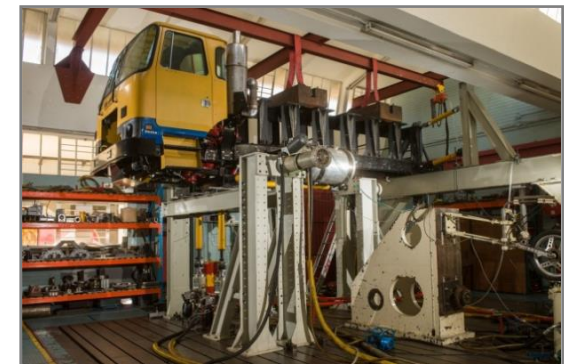
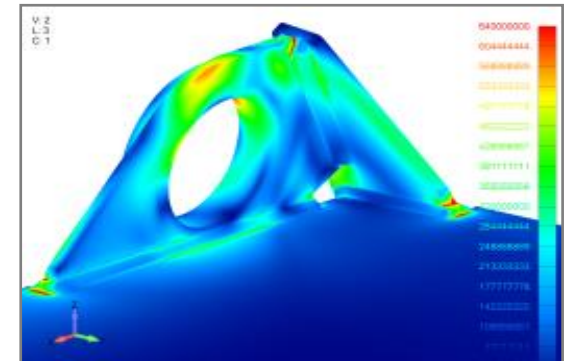
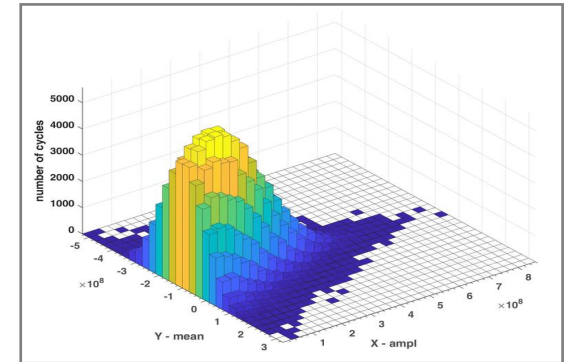
PRONEX TORQUE TELEMETRY SYSTEM

- Designed by test engineers for test engineers incorporating high quality materials and qualified for harsh shock and vibration environments.
- Compact design with multiple mounting interfaces provide for swift instrumentation setup with extended distances between transmitter and receiver.
- Noiseless analogue voltage type output to data acquisition system with high sampling rate that accommodates for multiple additional telemetry setups.



ACCELERATED FATIGUE LIFE ASSESSMENTS & TESTING

- Mission Profile Definition
 - Formulation of Mission Profiles & Pairing with Test Tracks
 - Compilation of a Representative Test Route
- Instrumentation and Testing
 - Instrumentation of the Vehicle (Strain & Acceleration)
 - Recording of Data on the Test Route
- FEM Construction and Analysis
 - Finite Element Modelling
 - Finite Element Analysis
- Analytical Damage Assessment
 - Damage Signal Construction
 - Damage Algorithms (Rain-flow Counting & Palmgren-Miner)
- Accelerated Fatigue Life Testing
 - Linear & Non-Linear Dynamic System ID and Inversion
 - Model-Based Iterative Learning Control
 - Test Execution



COMPANY INFORMATION

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