KXC100at

DNA GENERATOR™
ENGINE & POWERTRAIN COMPONENTS

ALL-IN-ONE RELIABILITY TESTING SOLUTION
MAKING RELIABLE PRODUCTS EFFORTLESS

MAP YOUR **PRODUCT DNA**

DESIGN LIMIT **N**ATURE OF FAILURE **A**CTUAL LIFE

Real-time DNA Map under simultaneous stress interactions using automated stress and performance trending algorithms

KXC INSPIRATION

Risk Control ...

Replicate real world complexity through controlled simultaneous stress interactions.

Replace meaningless test-to-pass with a deterministic and stress focused test-to-limit to map the Product DNA: limits, failures, life.

Use the Product DNA as the baseline to analyze and respond to every field failure, controlling risk while maintaining your credibility, reliability and profitability.

KXC TECHNOLOGY

Simultaneous stress interactions ...

KXC profiles and controls all Stress-Drivers (interfaces) simultaneously.

KXC triggers internal stress interactions to reveal complex failure mechanisms. It monitors and trends failure criteria to determine the real-time gap to failure.

KXC intelligent algorithms map the Nature of Failure on an X-Y plane, correlating the Design Limit with the Actual Life.

KXC PROMISE

Reduce cost and development time ...

Consolidate and combine your development verification plans to save time and cost.

Replicate complex operating conditions in every test to replace multiple, isolated, non-interactive test plans.

Eliminate the need for additional HALT and HASS equipment and resources.

KXC COMMITMENT

Set a new reliability norm ...

Providing OEMs with an All-in-One solution, to develop and demand the Product DNA in their new LASTENHEFTE and SORs.

Providing OEMs, Tier-ones and part suppliers with a common and repeatable reliability measure and benchmark throughout the product life cycle (R&D, production, field).

Providing research facilities and test labs the means to accelerate learning and follow OEM's demands to map the Product DNA.

Rapid integration with powertrain units

- Electronic & Mechanical Oil Pumps
- Electronic Circuit Boards
- Submerged Solenoids & Actuators
- Seals, Bearings & Sensors
- Flow & Pressure Control Elements
- Engine Oil Seperators and Filters

Fluid type

- Mineral and Synthetic oils
- Engine and Transmission oils

Contamination type

- ISO test dusts: ISO 12103-16
- Non-ferrous powder: <150 µm
- Iron powder: <150 µm
- Synform

Contamination measurement

- Range: ISO 14 to 24
- Particle size: 4 to 150 µm
- Accuracy: ± 0.5 ISO
- Standard of measure: ISO 4406

Special monitoring

- Viscosity, Water content
- Unit Under Test noise level

Stress-Drivers (controlled interfaces)

Simultaneous profiling and closed loop control of interface parameters of an atmospheric oil tank:

- Contamination: ISO 18 to 23
- Fluid Temperature: -50 to 140°C
- Ambient Temperature: -60 to 180°C
- Vibration & Shock: 3-axis OEM profiles
- Oil Level: 50 to 400 mm
- Air Content: up to 30%
- Input signal: PWM, current, voltage

Failure Criteria (monitored parameters)

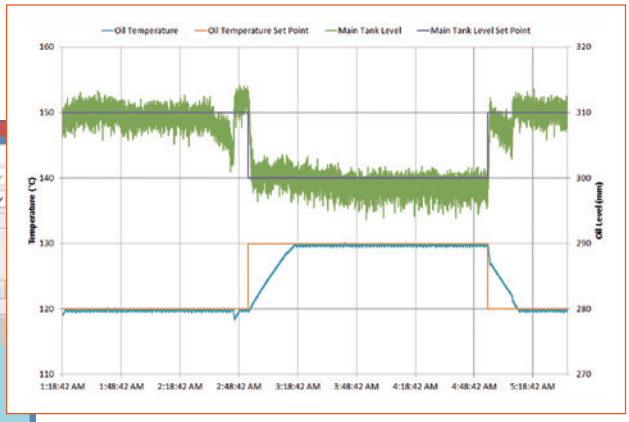
Simultaneous monitoring, measuring, recording and analyzing the failure criteria to determine the real-time gap to failure:

- Electronics: temperature, vibration
- Electrical: resistance, current, voltage
- Hydraulics: leakage, flow, pressure
- Mechanical: strain, force, torque, response

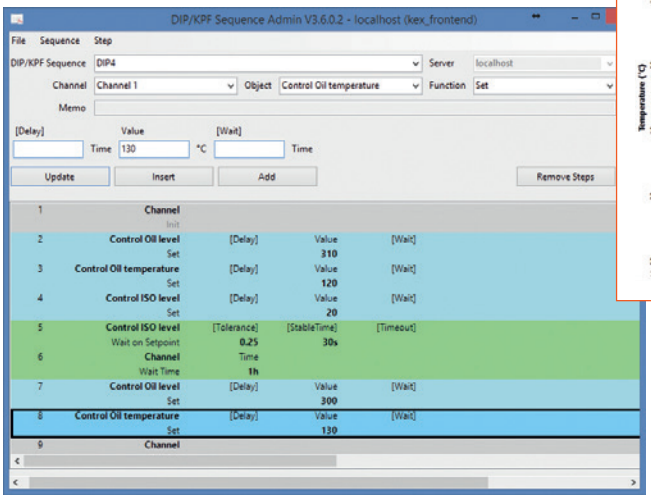
Special interface

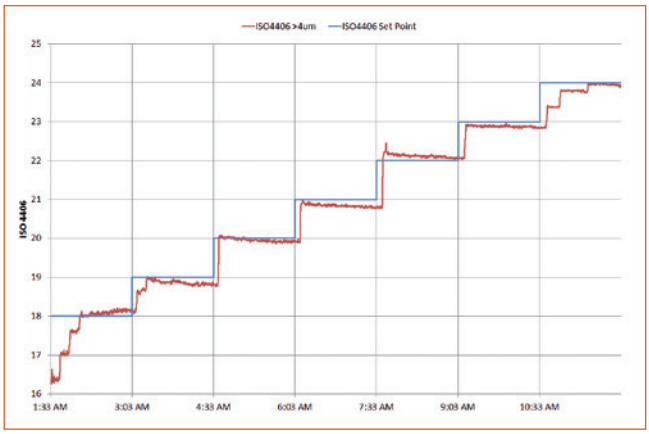
- Soot
- Fuel dilution
- Fluid properties
- Modal vibration

KXC Closed Loop Adaptive Control
(e.g. Temperature, Level)

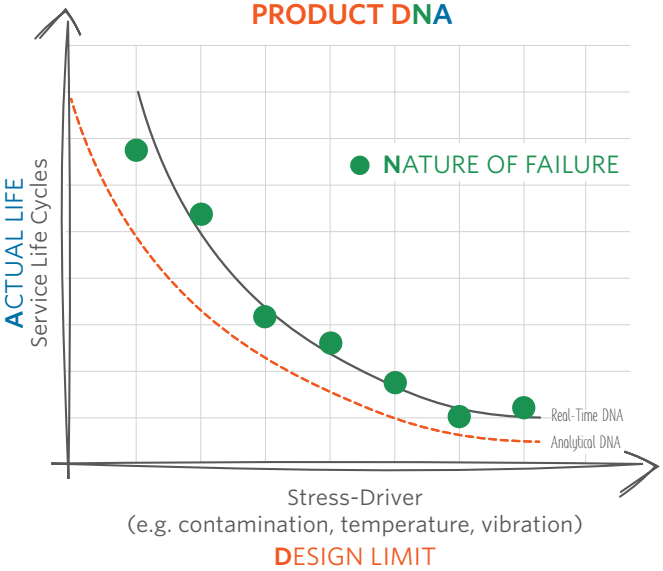


KXC DNA Sequence Profiler (DSP)





KXC Design Limit Test Output
(e.g. Contamination Stress-Driver Profiling)



Design Intent Profile (DIP)

DIP is a user-defined cycle, specifying the Unit Under Test operating conditions.

Design Limit Test (DLT)

DLT is the closed loop controlled Stress-Driver (interface) profiling algorithm.

It is formulated to measure the real-time gap to failure. It automatically adjusts the Stress-Driver setpoints.

The Design Limit and Nature of Failure are generated in a matter of hours.

DNA Sequence Profiler (DSP)

DSP combines DIP and DLT, automating the DNA sequence profiling to map the Product DNA.

- Install the product into KXC
- Upload the DNA Sequence
- Map the Product DNA

Product DNA

Product DNA is generated by an intelligent post processing algorithm operated by DSP.

It analyzes the DLT information to map the Nature of Failure on an X-Y plane, correlating the Design Limit with the Actual Life.

Contamination Stress-Driver technology is the latest controlled interface parameter added to the KXC line of All-in-One qualification units.

KXC Controls Risk to Eliminate Recalls

By using KXC from research to production, you create a repeatable benchmark of product reliability to control risk and eliminate recalls.

KXC is powered by Intelligent Reliability, a proven, stress focused, deterministic methodology to control risk of new designs for high volume production without the need for historical information.

Kepstrum

INVENTOR OF PRODUCT **DNA**
and **KXC DNA** GENERATORS™

kepstrum.com
DNAgenerators@kepstrum.com