

# Accelerated Life-time Test (ALT)

Advanced Product/System Lifecycle Management on Reliability and Safety

Improve product design, system reliability and safety in lifecycle

ALT research is indispensable in reliability engineering and product lifecycle management. The motivation is to ensure product/system meets their reliability requirements while minimizing time-to-market and cost. Unanticipated product failures can result in recall or significant financial losses and damage to a company's reputation. ALT research helps mitigate these risks by providing valuable intelligence on potential failure modes, their causes and mechanism. With this information, companies can assess the extent of degradation across time or product remaining useful life when implement design changes, materials selection, or modify manufacturing processes to eliminate/reduce the likelihood of these failures.

## Temperature and Environment Testing Equipment



High Temperature Oven (with Temperature Cycling)



Temperature and Humidity Chamber (with Temperature Cycling)



Highly Accelerated Stress Test (HAST) Chamber

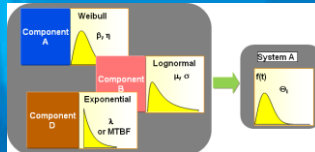


Thermal Shock Chamber

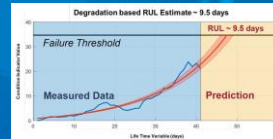
## Reliability Research Output



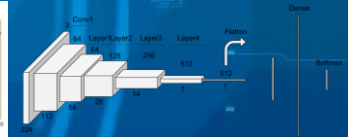
Physics of Failure Analysis



System Reliability Analysis



Remaining Useful Life Prediction



AI Model Prediction

## Key Features:

- Save Resources in Product Development/Warranty Cost
- Identify physics of failure and mechanism

## Benefits:

- Strengthen Product Reliability and Safety
- Shorten Product/System Design Cycle and Time-to-Market

Paper: Marus, Mikita, et al. Reliability and remaining useful life of flexible silver nanowire-based transparent electrodes. META, 2024.  
Patent: System and Method of DC/DC Converter Health Diagnostic and RUL Prediction Using AI Algorithm (30102300 A)



CAIRS official website

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