
BQR
Leading engineering excellence
Reliable Engineering Optimized Maintenance
You design, we Make it better

About BQR Company

- A **World Leader** in Reliability & Maintenance Engineering (**RAMST**) solutions for the EDA market
- Founded in Israel in **1989** as a **Consulting and Software** development company for implementing RAMST
- Until today BQR performed over ~**3500 projects**
- BQR team includes **Scientists & Experts** in: Mathematics, Programing and Electronics and Reliability Engineering
- **Global** Worldwide **Customers** including leading global enterprises

BQR
Leading engineering excellence

Some of BQR customers

Any Electronic Industries

- Aerospace
- Defense
- Automotive
- Railways
- Medical
- Nuclear
- Telecom
- Oil & Gas
- Energy
- Utilities

Software Solutions Products Portfolio

from **Component/PCBA Level** *through* **System Level** *up to* **Asset/Fleet Level**

Design Error Detection & Electrical Stress Analysis

Computer Aided Reliability Engineering

Maintenance Planning & Optimization

Complete Suite Solution

fiXtress

for Electronics
Single and Multi Boards

- **ASA** **A**utomated **E**lectrical **S**tress **A**nalysis
  - **Rapid** DC Stress Analysis
  - **Precise** DC/AC Stress Simulation
  - **Thermal Analysis**
  - **Stress Derating Analysis**
- **ASR** **A**utomated **S**chematic **R**eview
  - Driven by Electrical Stress analysis
  - Common ready to use Rules
  - User defined Rules
  - Hierarchic and Grouped Rules for Chips and BUS Interconnection
- **MTBF** **M**ean **T**ime **B**etween **F**ailures
  - **Basic** BOM calculation
  - **Pro** BOM + Stress calculation

CARE

***C**omputer **A**ided **R**eliability **E**ngineering*
Including Safety Analysis for Electronic and Mechanical Systems

- **FME(C)A** **F**ailure **M**odes **E**ffects (**C**ritical) **A**nalysis
- **TA** **T**estability (Built-In/Self Test) **A**nalysis
- **FTA** **F**ault **T**ree **A**nalysis (Safety Analysis)
- **RBD** **R**eliability/**R**edundancy **B**lock **D**iagram
  - Basic (Parallel, K out of N, Stand-By)
  - Markov (States Transition Model)
  - Network
  - IEC-61508 (Safety Analysis)

apmOptimizer

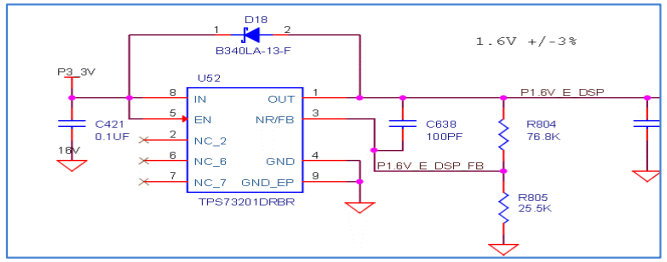
Asset Performance Maintenance Optimizer
Planning and Real Time Optimization

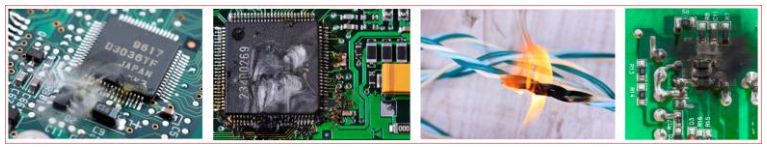
- **LCC** Life Cycle Cost, Operation & Maintenance Model
  Asset Availability & Reliability analysis
- **LORA** Level Of Repair Analysis & Optimization
- **Predictive** Maintenance Optimization
- **Spare** Parts Inventory Optimization
- **RO** Resources Optimization
  (Manpower, Tools & Materials)
- **RCM** Reliability Centered Maintenance
- **MSG-3** Aerospace Maintenance Steering Group
- **FDA** Field Data Analysis
  Real time maintenance records analysis and

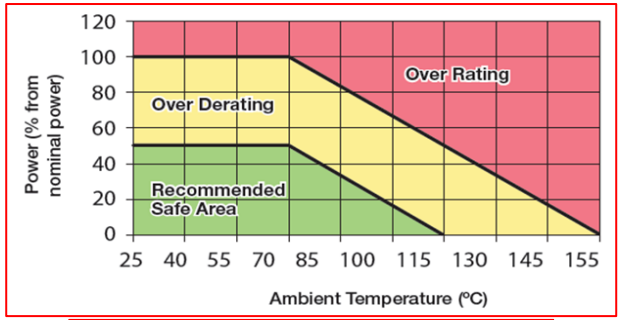
from ***Component/PCBA Level*** *through* ***System Level*** *up to* ***Asset/Fleet Level***

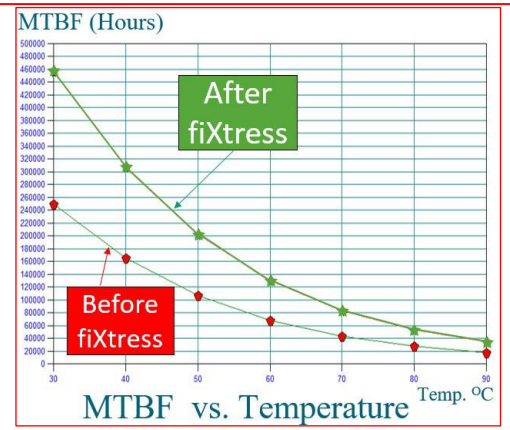
How to assist the Electrical engineer

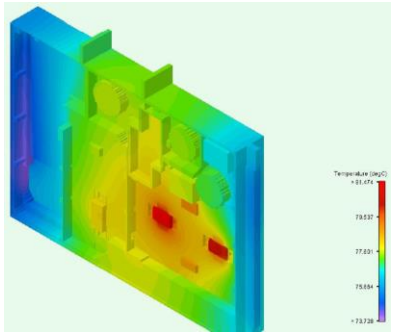
BQR Solution – fiXtress Suits®



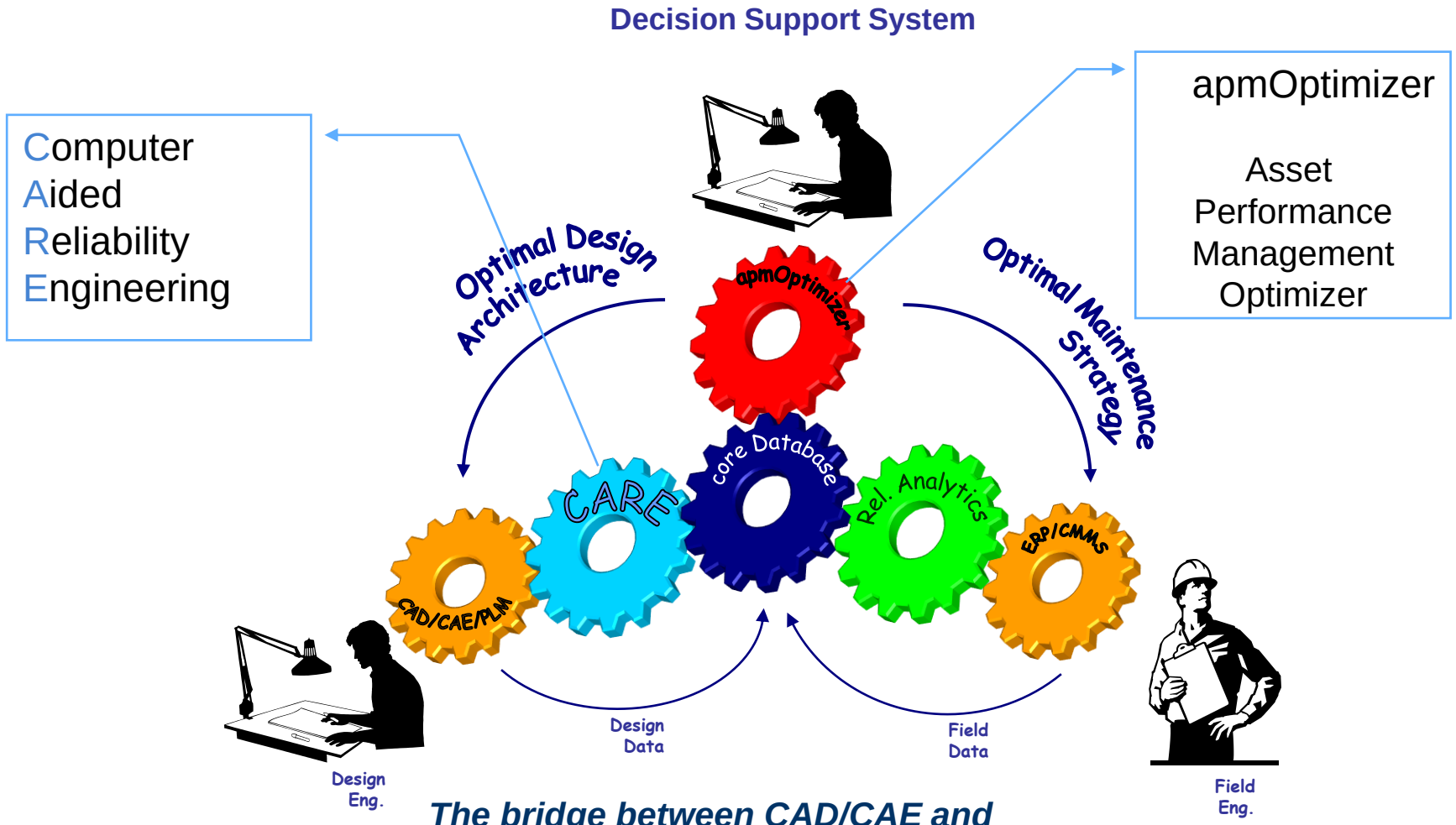








BQR Solution – CARE®+ apmOptimizer®



The bridge between CAD/CAE and PLM/ERP/CAM

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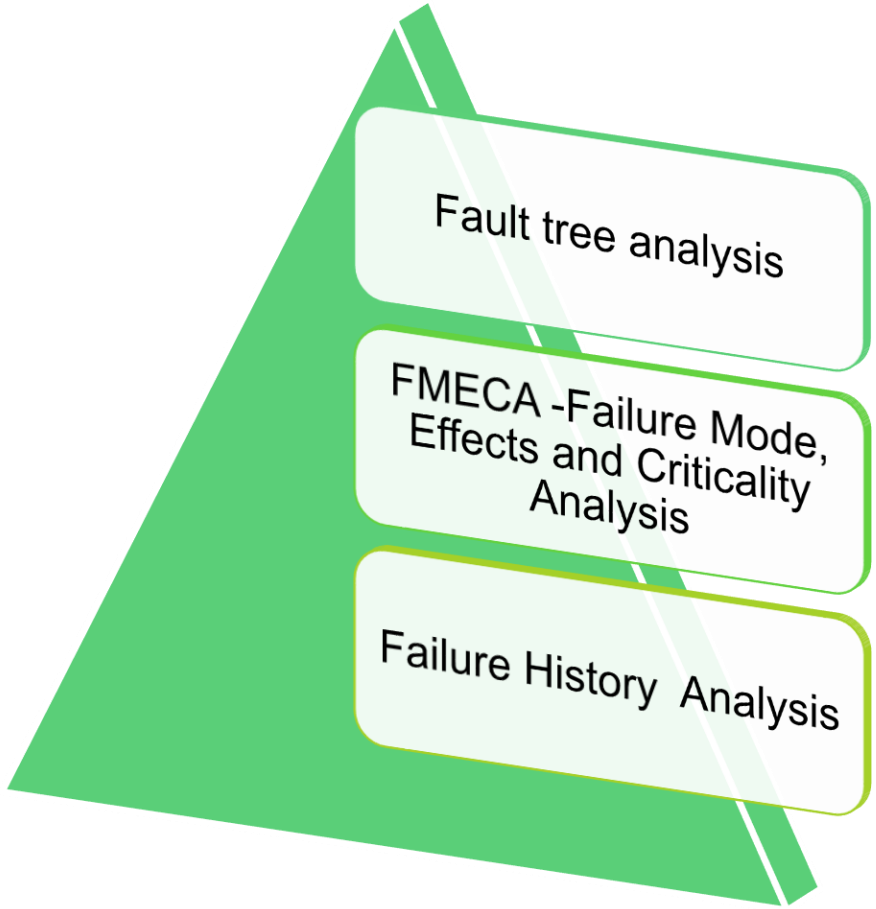
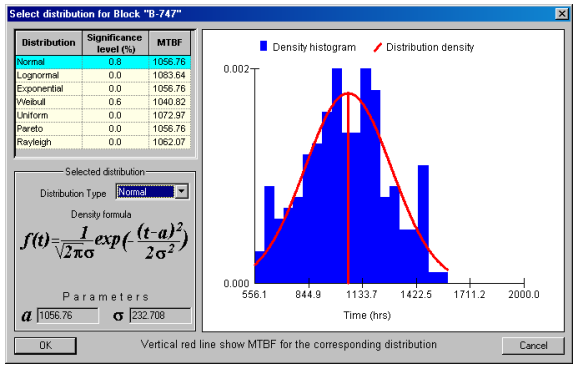
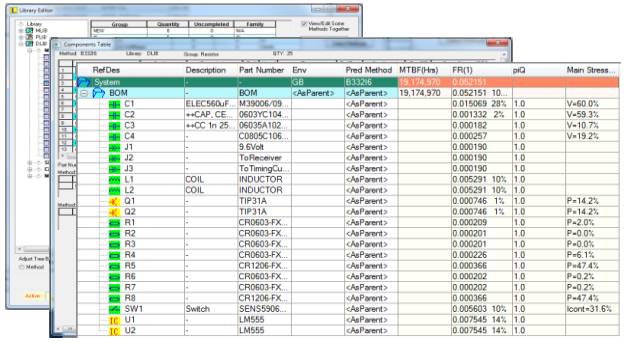
CARE® - Computer Aided Reliability Engineering





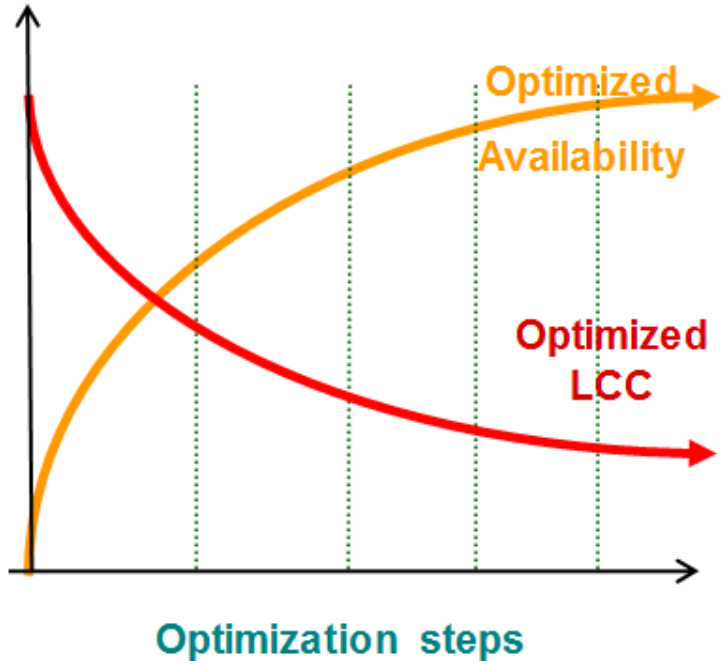


apmOptimizer ® - Capabilities

Model Based Analyses:

- Asset Availability / Performance:
  - Mean Time Between Failure
  - Mean Time To Restore
- Life Cycle Cost
  - Spare Parts
  - Corrective Maintenance
  - Preventive Maintenance
  - Inspections
  - Downtime
  - Collateral Damage
  - Transportation

- Optimize:
  - LORA (level of repair) + Repair / Discard policy
  - Spare parts: Quantity, Shared Stocks
  - Preventive Maintenance: hidden failures, degradation
  - Scheduled Maintenance: ageing

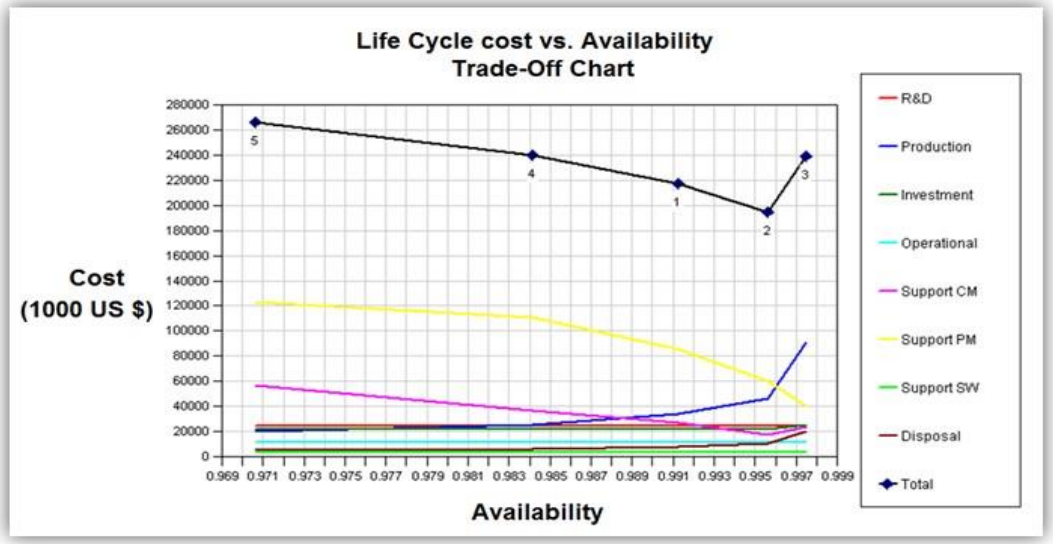


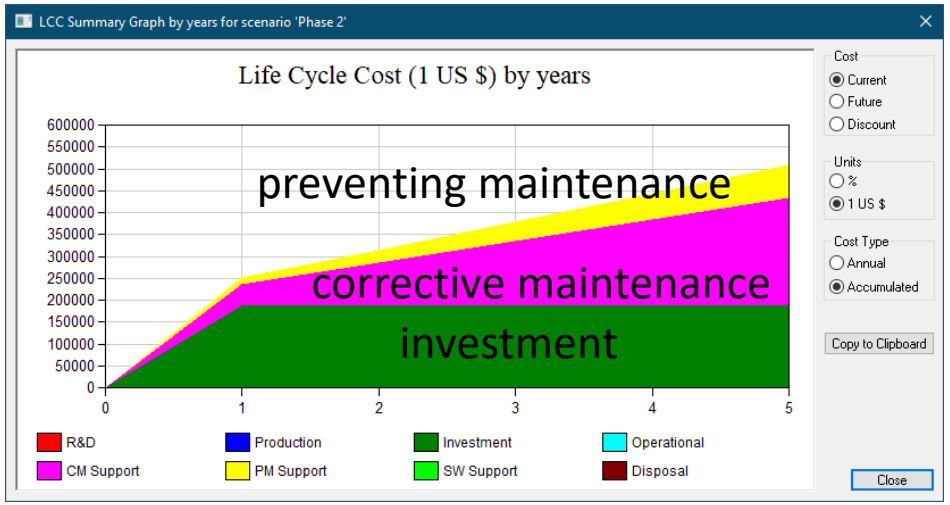
apmOptimizer ® - Reports

Life Cycle Cost breakdown

Cost Elements	Current	% of LCC	Future	% of LCC	Discount	% of LCC	Future & Discount	% of LCC
R & D	0	0	0	0	0	0	0	0
Production	2	5.70337e-06	2	5.70337e-06	2	5.70337e-06	2	5.70337e-06
Investment	2,285,919	6.51873	2,285,919	6.51873	2,285,919	6.51873	2,285,919	6.51873
Operation	0	0	0	0	0	0	0	0
CM Support	20,650,309	58.8882	20,650,309	58.8882	20,650,309	58.8882	20,650,309	58.8882
PM Support	12,130,730	34.593	12,130,730	34.593	12,130,730	34.593	12,130,730	34.593
SW Support	0	0	0	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0
Total (LCC)	35,066,960	100	35,066,960	100	35,066,960	100	35,066,960	100

Optimization Comparison





Summery

advantage

- fiXtress (MTBF +Stress derating + design error detecting)and FMECA and BIT are reliability Suits for complex system these solution can reduce dramatically the risk for failure at the commissioning phase
- apmOptimizer - can save a lot of cost end afford by saving spare parts and maintenance work and all by failure rate and maintenance task