apmOptimizer™

BQR
Reliable Engineering
Optimized Maintenance

Next-Gen Asset Maintenance Optimization for Cutting Lifecycle Costs

The Challenge of Crafting an Optimal Maintenance Plan

Devising an optimal maintenance plan is an integral part of building or upgrading assets and fleets, ensuring effective operation and maintenance from Day 1. The challenge is to define a plan that achieves high asset availability at the lowest cost.

Maintenance plans are often based on prior experience and machine manufacturer recommendations that do not account for all aspects of the asset's performance. The result is an incomplete maintenance plan, entailing years of fine-tuning and immense costs.

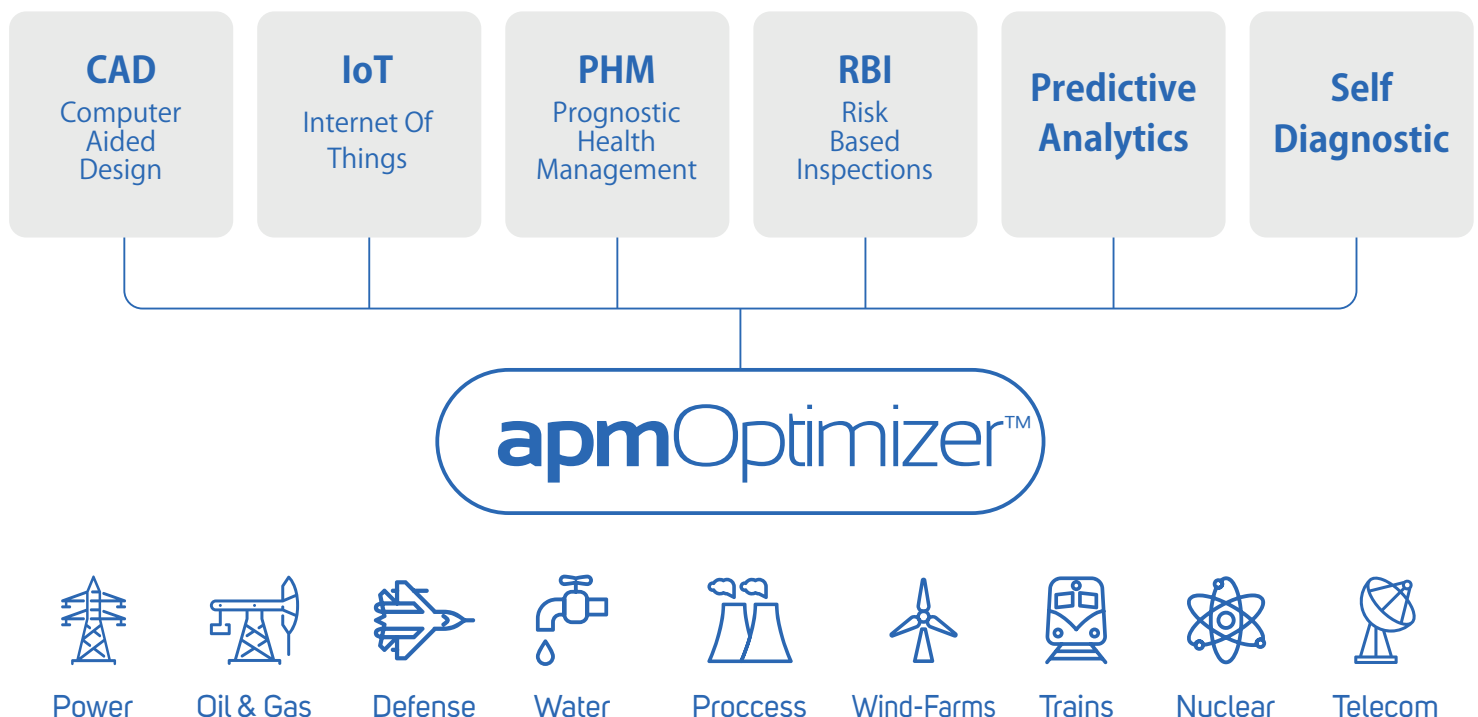### The BQR All-in-One Solution: Consulting & Software

BQR offers a solution combining consulting and unique maintenance optimization software, ensuring that the asset operates according to an intelligent plan, rather than a go-by-the-flow error-prone approach.

Our consulting provides effective maintenance recommendations which are implemented by the customer, and later reviewed to assess their effect. After the first round of optimization, the customer can either continue to enjoy periodic consultation, or purchase BQR's software which performs periodic online maintenance optimization for new or existing assets.

BQR's solution can be implemented in any industry.

Results

Over the past 25 years, BQR's software and consulting have helped many enterprises to significantly improve asset performance and reduce life-cycle cost (LCC). Furthermore, BQR's maintenance policy transformed the daily routine from reactive to proactive, thereby achieving better asset operability and management.

CAD Computer Aided Design	**IoT** Internet Of Things	**PHM** Prognostic Health Management	**RBI** Risk Based Inspections	**Predictive Analytics**	**Self Diagnostic**

apmOptimizer™

Power   Oil & Gas   Defense   Water   Proccess   Wind-Farms   Trains   Nuclear   Telecom

Planning a New Facility?
Get a Cost-Effective Maintenance Plan from Day 1

Planners of large assets are required to provide maintenance plans, LCC calculations and performance analysis. BQR provides consulting and software (apmOptimizer™ and CARE®) for optimal architecture design, ensuring high availability and low asset costs, LCC calculations, optimal maintenance and logistics planning. BQR's solution gives customers a competitive edge from the tender stage up to project completion.

How it Works

BQR tailors each project to client needs, based on the following modular process:

- ☑ Asset requirements discussion – Review of customer needs and requirements, BQR proposal and scope, as well as desired deliverables.

- ☑ Preliminary design architecture - Comparison of system redundancy effects.

- ☑ Preliminary design of monitoring systems – Calculating the benefits of integrating Industrial Internet of Things (IOT) sensors.

- ☑ Preliminary design considerations – Sub-system reliability and safety requirements are allocated and provided to subsystem designers.

- ☑ Data collection – Obtaining data from similar assets of the customer.

- ☑ Modelling - A model of the asset behavior is created, including expected Availability, LCC, failures, maintenance etc.

- ☑ Verification - Customer reviews and comments on the initial model.

- ☑ Refined model and sensitivity analysis – Based on customer comments, comparing the availability and LCC of alternative designs.

- ☑ Optimization of the facility maintenance plan – Including repair/discard policy, maintenance and inspections schedule, spare part provisioning, resources and more.

- ☑ Maintenance optimization report - Including LCC, maintenance schedules and spare parts provisioning.

- ☑ Software operation - Software purchase and training, as well as periodic update of the model using field data. This activity can optionally be supported by BQR.
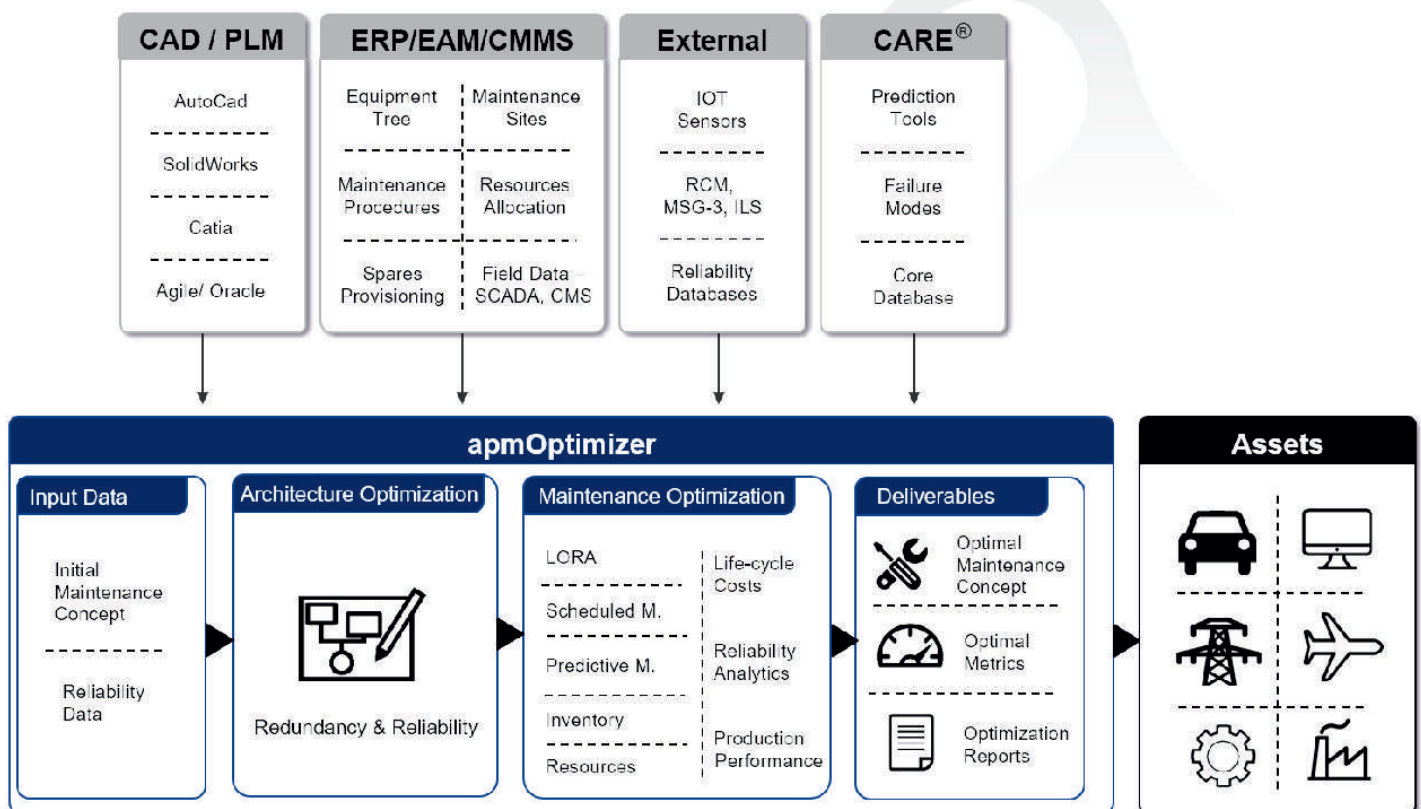
Maintaining an Existing Facility?

We'll Help You Stop the Waste Today

Existing facilities often operate months or years with a maintenance policy that is far from optimal. On the other hand, maintenance optimization by trial and error entails long delays and high costs.

BQR's apmOptimizer™ can optimize existing maintenance plans and predict the outcome of different maintenance scenarios using analytic simulation tools, saving precious time and expenditures.

apmOptimizer™ can also be integrated with the facility's CMMS (Computerized Maintenance Management System), to produce Prognostics Health Management (PHM) data such as Remaining Useful Life (RUL) calculations.

How it Works

BQR tailors each project according to client needs, based on the following modular process:

- ☑ Initial discussions – Covering customer needs and requirements, BQR project proposal and scope, as well as desired deliverables.

- ☑ Facility Survey – Includes a tour of the premises and data collection.

- ☑ Verification - A model of asset behavior is created, including expected availability, LCC, failures,maintenance etc., and customer feedback on the initial model.

- ☑ Refined model – Includes operation profile, asset reliability and redundancy, maintenance tree, turnaround times for repair and procurement, and cost drivers.

- ☑ Optimization of the asset maintenance plan – Including repair discard policy, maintenance and inspections schedule, spare part provisioning, spares location distribution and more.

- ☑ Maintenance optimization report - Including LCC, maintenance schedules and spare parts provisioning.

- ☑ Optional installation of apmOptimizer™ for periodic data collection from the site, RUL calculations, and improved maintenance recommendations based on the latest data.
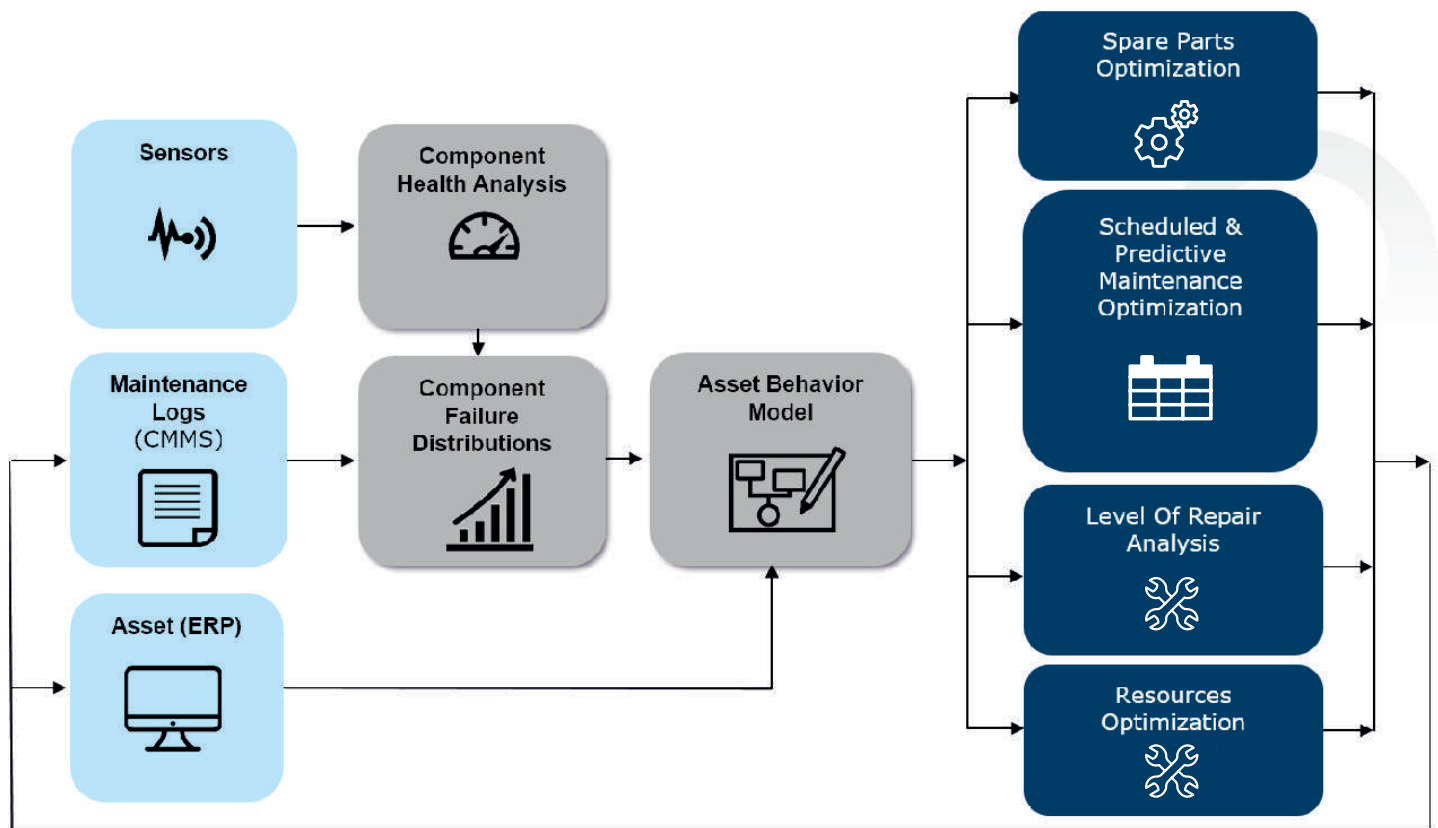
Optimal Policy - Saves Cost

apmOptimizer™ Software Modules

BQR's apmOptimizer™ is a software package that creates an analytical model of the asset behavior over time, and generates the optimal maintenance concept for the asset's. The optimization goal is to maximize the asset availability while minimizing LCC.
The optimization generates user-friendly, easily-implemented reports.
apmOptimizer™ can also analyze field maintenance and failure data, update the asset model accordingly, and provide periodic refined maintenance recommendations.
apmOptimizer™ software includes the following modules, ensuring complete maintenance optimization:

Modules

- ✅ LCC: Life Cycle Cost
- ✅ Reliability, Availability and Sensitivity Analysis
- ✅ LORA: Level of Repair Analysis Optimization, Repair/discard policy, selection of stock, transportation, vendors and repair shops
- ✅ SMO: Scheduled Maintenance Optimization, Optimizing Maintenance Intervals
- ✅ RCM: Reliability Centered Maintenance

- ✅ InveO: Inventory Optimization, Spare parts provisioning
- ✅ Performance: Expected production
- ✅ PdM: Predictive Maintenance Optimization Periodic inspections
- ✅ RUL: Remaining Useful Life using (FDA) Field Data Analysis calculations
- ✅ MSG-3: Maintenance Steering Group for Aircrafts
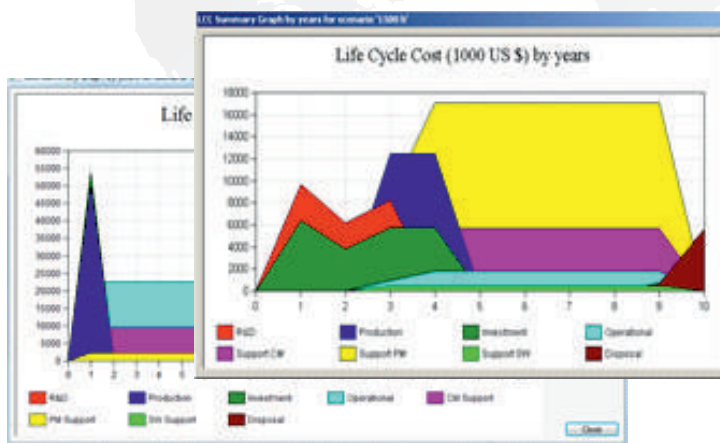
LCC: Life Cycle Cost Graph
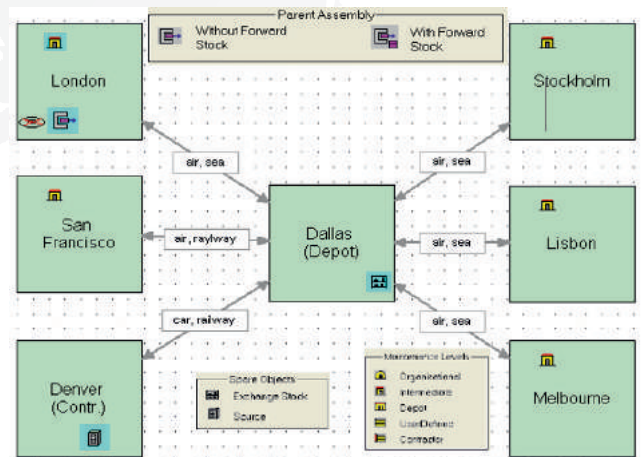
Maintenance sites Map

Customer Testimonials

"Our civil aircraft department demands more apmOptimizer-MSG3 licenses for a major modification on the SAAB 340 and SAAB 2000 aircraft program. The apmOptimizer-MSG3 will provide valuable assistance concerning the updates and establishment of new MSG3 analysis."
S.V, Component Engineer, Saab Aerospace

"I wish to thank you personally for supporting us from the initial purchase and for the experience of apmOptimizer. Your team's contribution to our success is much appreciated."
R. Z, Director, ILS & Maintenance, Elbit

"We are very glad to announce that we have completed our first project using the BQR-apmOptimizer software in the reliability prediction and spares requirements of an important electronic system development with positive results".
Matias Moeira Filmo, Industrial group Manager, Brazilian Navy

BQR: Decades of Reliability & Maintenance Optimization Expertise

BQR is a world leader in reliability analysis and maintenance optimization solutions for the various industries. BQR software tools help engineers create more robust and reliable products, as well as improving the design process.

BQR provides consulting services in the fields of ILS and RAMS to diverse industries such as Utilities, Oil & Gas, Transportation, Defense and Medical.

Throughout its 25 years of experience, the company has served leading companies in Israel and worldwide, including SAAB, Brazilian Navy, Elbit, IAI, DSO, Israel Electric Corporation, Cisco, Baker-Hughes, IBM, Philips, Bombardier, Schiphol Airport, Mobileye and others.