

Aladon

The Risk & Reliability
GLOBAL NETWORK

RELIABILITY-CENTRED DESIGN™ (RCD)

MEETING BUSINESS
OBJECTIVES AND DESIGN
INTEGRITY:

Increases Reliability
Improves Integrity
Manages Risk
Lowers Cost

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RCD – LOWERS COST, INCREASES RELIABILITY AND INTEGRITY

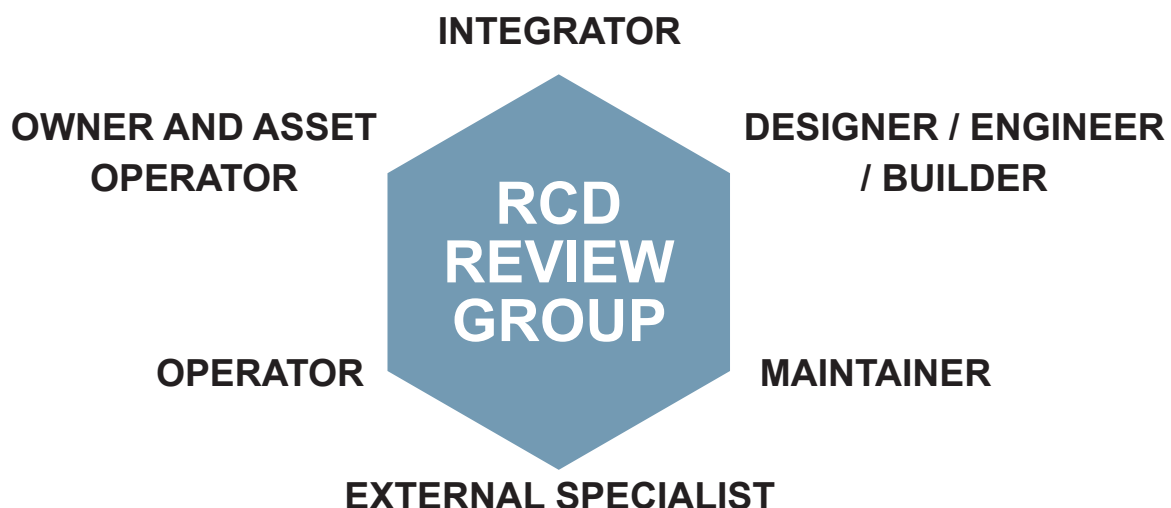
Aladon and the Aladon Network have been assisting customers improving reliability of their physical assets for more than 30 years. The Aladon Network has been applying RCM-based reliability improvement projects in more than 100 countries on every type of asset known to mankind. Aladon is the leading global RCM Network. We had been applying RCM on operating assets for many years, and this experience made us realize that the most cost-effective manner to achieve reliability is to engineer reliability into assets right from the start. Whether it is about achieving functional requirements, allowing safe operation or meeting the desired business objectives (holistic view), reliability must be addressed very early on. Our methodology addresses all these important requirements and is supported by world-class integrated software.

WHY USE ALADON?

Aladon worked on all continents in every endeavor known to mankind and is now using that experience to offer industry-centric solutions. Reliability-Centred Design™ is based on years of experience implementing reliability improvement programs across the globe and focuses on equipment capability, design integrity and operational sustainability. The Aladon track record speaks volumes and includes references from leading industries around the globe. Aladon understands the challenges faced by all industries and offers a comprehensive experienced-based solution which includes templates and information to expedite an RCD project.

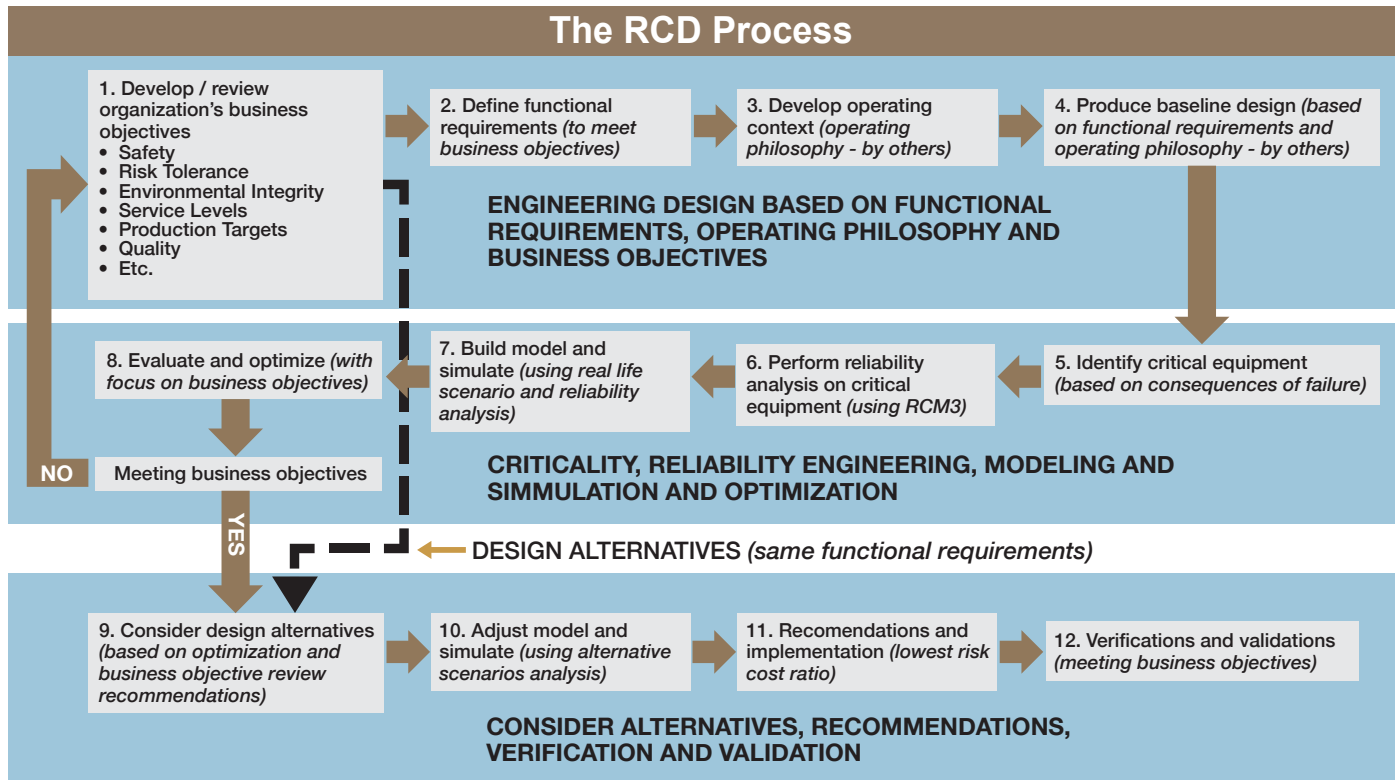
THE ALADON RCD PROGRAM OFFERS THE FOLLOWING:

- *Robust Design Process* for all equipment and processes including valuable input from *Engineers, OEMs, Manufacturers, Operators and Maintainers*
- *Defined Business Objectives and Business Risks*
- *Defined Operating Context* - design to meet specific requirements
- *Optimized Design* leading to *Optimized and Sustainable Operations and Maintenance*
- *Critical Maintenance and Spare Parts* to support operations at all levels
- *Modeling and Simulation* based on experience and real life scenario
- *Implementation and Sustaining Results*



A ROBUST DESIGN PROCESS:

This ensures that not only are engineers responsible for process and equipment designs, but also that the valuable and important input from Operations and Maintenance are captured during the process. The people who know the equipment best and who will ultimately be responsible for equipment health are involved from the start and ensures that all stakeholder needs are considered. The core of the RCD process still follows a traditional design approach, (from conceptual design to final design), but adds a more robust process through adding comprehensive stakeholder involvement. The RCD process does not replace the traditional design process but adds the due diligence for ensuring user requirements are met. The RCD process runs parallel to the design process and does not add additional time to the process. In fact it is our experience that the Design-Build-Operate process is streamlined through early involvement by Operations and Maintenance.



The RCD process starts by defining **BUSINESS OBJECTIVES AND BUSINESS RISKS** and ultimately ensures these objectives are met, and the business risks are eliminated or at least reduced to a tolerable level. RCD reduces the number of Change Orders required during the Build phase. The RCD process has these important objectives in mind throughout the process, and stakeholders are continuously involved to ensure these objectives are satisfied or amended. The RCD process eliminates surprises by ensuring important stakeholder involvement throughout the process.

The **OPERATING CONTEXT** is developed from real life data and ensures the design integrity based on information that would impact asset reliability and performance. The Operating Context is further important when the Maintenance program is developed for critical equipment following the build phase.

The Operating Context should include the following:

The Operating Environment & Environmental Regulations
Safety & Safety Regulations
Market Demand & Raw Material Supply
Product Quality Standards
Duty Cycles

Seasonal Demand
Duty / Standby Arrangements
Shifts and Shift Arrangements
Logistics
Skills and Skills Availability

Spare Part Policies
Protection
Batch or Flow Process
Work in Progress
Repair Times

DESIGN OPTIMIZATION leads to optimized and sustainable Operations & Maintenance (O&M) right from the start. Our experience shows that the RCD process leads to less change orders during the build phase and because of O&M's involvement throughout the process, more effective operations and maintenance immediately after start-up. There is no need for modifications after Operations take control of the plant and the maintenance requirements are met right from the start.

The RCD process not only delivers a robust design which meets Stakeholder objectives, but it also provides the basis for continuous improvement. Operations and Maintenance don't start with a clean slate, they have the critical information available to be effective and efficient right from the start. The RCD process places as much emphasis on documentation as it does on the actual hardware design. Every manual and data book is available, and O&M staff don't have to run around looking for O&M manuals. Operational Readiness Review addresses important issues such as documentation, manuals, standards, regulations, maintenance programs, maintenance and operating procedures, spare part requirements and protective systems. The RCM-based **MAINTENANCE PROGRAM** and **SPARE PARTS** requirements are available and loaded in the Work Management System, and performance monitoring and analyses can be done immediately.

The RCD process of **MODELING AND SIMULATION** allows quick and inexpensive design evaluation and verification. It further allows for quick evaluation of alternative designs and design configurations. Once the design has been optimized (through modeling and simulation), the design team can verify that all business objectives are met, risks are eliminated or reduced to tolerable levels, the maintenance program and spare parts support the operations, and adequate protection (protective devices, redundancy and buffer capacity) is available to ensure continuous safe operation of the assets.

BENEFITS OF RCD

- *Stakeholder involvement throughout the design, build and operate phases*
- *Robust design, reliability-based modeling and simulation*
- *Operational Readiness (OR) guaranteed – efficient handover between phases*
- *Less change orders during all phase*
- *Complete asset strategy and documentation to support*
- *Transparency, elimination of personal preferences*
- *Designs to fulfil functional requirements*
- *Maintenance including critical spare parts and operating parameters defined at the start*
- *Well defined protective systems and maintenance of the same*

