

World Class Reliability (WCR) Benchmark

ABB Reliability Services provides solutions that improve safety, compliance, and profitability. The WCR benchmark is a product of 40 years development. The benchmark process identifies best practices and compares an organization's performance level with other companies and industries. Qualitative and quantitative analyses are conducted of both reliability and maintenance practices, resulting in:

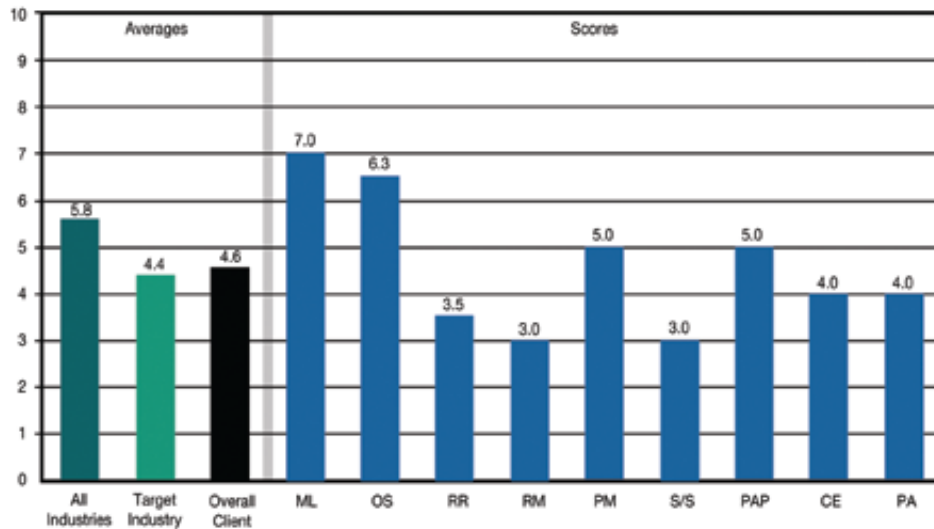
- **Identification of performance gaps** existing in the nine criteria of WCR.
- **Development of strategic and tactical plans** to close the performance gaps.
- **Creation of a business case** documenting the financial impact of addressing areas of opportunity.

Experience has demonstrated that objective evaluation is the indispensable first step in developing a manufacturing process that integrates departments, fosters teamwork, and

promotes employee involvement. The bottom line is measurable performance improvement in:

- Capital and operating costs
- Maintenance labor and materials
- Production throughput
- Equipment availability, run rates and quality
- Safe work practices
- Environmental compliance

World Class Reliability Benchmark Averages/Scores



ML - Management Leadership
 OS - Organizational Structure
 RR - Roles and Responsibilities
 RM - Responsive Maintenance
 PM - Preventative and Predictive Maintenance

SS - Supplier and Services Integration
 PAP - Physical Assets Program
 CE - Continuing Education
 PA - Performance Assurance

World Class Reliability Criteria

Following are the sample items that are investigated as a part of the WCR benchmark:

Management Leadership

- Reliability vision and mission
- Strategy for optimizing reliability
- Culture of empowerment and teamwork
- Focus on continuous and rapid improvement

Roles and Responsibilities

- Recognition of internal partnerships
- Facilitative supervision (team leaders)
- Operator Driven Reliability
- Maintenance multi-skilling

Preventive/Predictive Maintenance

- Equipment ranked by criticality
- PM/PdM established by for all key equipment
- High quality checklists and inspection sheets
- 100% accomplishment of scheduled PM
- Focus on preventable maintenance
- Application of RCFA and RCM

Supplier and Services Integration

- Stores
 - Parts staging and delivery systems
 - Accurate inventory levels (>98%)
 - Low stock outs (<2%)
 - Strong VSP and EDI programs
 - Appropriate min-max levels/reorder points
- Engineering
 - Applied concurrent engineering techniques
 - Incorporation of life-cycle costs
 - Formal equipment handoffs
 - Role in analyzing repetitive failures

Organizational Structure

- Flat
- Broad spans of control
- Appropriate manager/subordinate ratios
- Area focus and ownership

Responsive Maintenance

- Effective response to emergency, breakdown maintenance
- Established work management flow
- Procedures for planning and scheduling work execution and completion
- Allocation of resources (labor, materials)
- Formal analysis of repair costs and causes

Physical Assets Program

- Strategy for modernizing, upgrading plant equipment
- Focus on simplifying, standardizing equipment
- Availability of proper tools and equipment
- Availability of transportation
- Supportive physical plant layout and locations (shops and stores)

Continuing Education

- Balanced technical, managerial, and systems training
- Plant and equipment specific training
- Allocation of 4% of labor hours to training.
- Development of personnel to respond on a “reasoned” rather than “conditioned” basis

Performance Assurance

- Ability to measure the total cost and impact of reliability services
- Management agreement of key reliability indicators
- Availability of user friendly data to supervisors and the workforce
- Application of information technology



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