2018 Reliability Program of the Year Award Competition

2018 Questionnaire For:

Facility: _____

Company: _____

Address: _____

_____

Sponsoring Sales Rep: _____

For office use only:

ID #: _____

All responses will remain completely confidential.
The Reliability Program of the Year committee assigns a unique ID number to each application and all company information remains anonymous.

Entry Deadline is June 1, 2018

Instructions:

The following questionnaire is divided into eight categories, each with a series of questions regarding your facility's operations and performance.

- **Section A: The Facility**
- **Section B: Organization**
- **Section C: Asset Management Activities**
- **Section D: Stores / Inventory Management**
- **Section E: Use of Technologies**
- **Section F: Investment in Training**
- **Section G: Reliability Management**
- **Section H: Benchmarking**

Please write legibly. Scoring for the selection of finalists will be based on a numeric summation of the answers given to each of the questions. We ask that you use this booklet to provide your answers, and that each of the questions be filled out in the booklet. You may attach items to the questionnaire, but please do not refer to them (i.e., see attached) as a means of giving a response. Questions must be answered in the booklet, unless otherwise noted, for your facility to be considered as a finalist. In cases requesting budgetary and savings information, please try to indicate a number for the entire plant/facility. If you do not have this number, please indicate your department/division numbers, and note that the information is for a department/division only.

Finalists will be asked to participate in the promotion of their programs through articles, press releases, and the like. No confidential information will be included, and all materials are subject to approval by the Finalist.

Respondent Information:

Name _____

Title _____

Phone _____ Fax _____

Email address_____

Signature _____

Date _____

Questions: Bruce Hawkins, Telephone: 843.743.5962

Return Questionnaire to Bruce.Hawkins@Emerson.com or mail to:

Reliability Program of the Year Award Competition
c/o Emerson Process Management
Attn: Bruce Hawkins
1100 Buckingham St.
Watertown, CT 06795

SECTION A: THE FACILITY

1. Type of Industry (Please check one):

☐Mining
☐Rubber/Plastics
☐Power Trans & Distribution General
☐Oil & Gas Extraction
☐Oil Refining
☐General Manufacturing
☐Food/Beverage
☐Gas Transmission
☐Facilities
☐Textiles
☐Pharmaceuticals
☐Aerospace
☐Pulp & Paper
☐Primary Metals
☐Government
☐Printing
☐Fabricated Metals
☐Maritime
☐Chemical
☐Automotive
☐Petrochemical
☐Pipeline Distribution
☐Wastewater
☐Power Gen-- Fossil
☐Power Gen – Nuclear
☐Power Gen—Hydro
☐Other:_____

2. Shifts per day (Please circle one): 1 2 3

Days per week (Please circle one): 1 2 3 4 5 6 7

3. Plant age: _____years

4. Plant Replacement Asset Value (RAV): $_____

RAV or Estimated Replacement Value (ERV) is the dollar value that would be required to replace the production capacity of the present plant assets. The value should include all production & supporting utilities equipment and the replacement value of buildings & grounds (if maintained by plant maintenance expenditures). Do not include the value of the real estate - only improvements to the real estate. Do not use depreciated asset value as a substitute for the RAV. Insured Value may be used if the Insured Value is for full replacement value. Make sure you add the value of recent capital expansions into your reported RAV once they are commissioned and maintenance is being performed on these assets.

5. Annual Maintenance Spending:

	2017	2016	2015
Labor:			
Material:			
Contractors:			
Maintenance Capital:	_____	_____	_____
Total Maintenance Spending			

6. Does your plant have a formal method to determine equipment criticality?

☐Yes
☐No
If yes, describe the criticality ranking process:

7: Annual Plant Availability Percentage:

This is typically the number of hours the assets were available to run / 8760 (If an alternate definition is used, please provide the definition of the calculation used for availability) If the plant has more than one business unit or area, please use additional paper to provide availability for each unit or area.

8: Maintenance Related Plant Downtime:

What Percentage of the total plant downtime can be attributed to maintenance/reliability related problems? Example: If availability = 90% then total downtime = 10%. How much of the 10% is attributable to unscheduled mechanical, electrical or instrument downtime problems? Provide a best estimate if the value is not normally tracked.

SECTION B: ORGANIZATION

1. Do you have a documented Maintenance Department mission statement?

☐Yes
☐No

2. Is reliability expressly stated in the mission statement?

☐Yes
☐No

3. Full-Time Maintenance Personnel

Maintenance support staff	**Employees**	**Contractor FTE**
Managers (without direct craft reports)		
Supervisors		
Planners		
Schedulers		
Maintenance / Reliability Engineers		
Storeroom Personnel		
Clerical Support		
Others		
Total Maintenance Support Staff		
Direct Maintenance Personnel		
Lead persons		
Crafts personnel		
Unskilled (helpers, janitorial, building and grounds)		
Other		
Total direct maintenance personnel		

4. Maintenance Overtime percentage: **2017** **2016** **2015**

5. Shift Maintenance Support: Describe the shift support distribution (percentage of resources on first shift, second shift, etc.)

6. Number of craft classifications:

7. How does the organization promote environmental, health and safety awareness with employees and contractors?

SECTION C: ASSET MANAGEMENT ACTIVITIES

1. Please categorize (by percent based on work order hours) the types of maintenance performed in your plant:

Maintenance type	Percentage
Reactive (Respond to failures as they happen):	%
Preventive (Conduct planned maintenance inspections or preemptive repairs on a scheduled basis prior to reaching functional failure). Include corrective work identified from a preventive inspection:	%
Predictive (Monitoring to identify equipment problems for corrective action prior to reaching functional failure). Include corrective work identified from a predictive inspection:	%
Proactive/Root Cause (Actively look for ways to systematically remove sources of equipment failure):	%
Total	100%

2. Are there any formal programs in place to improve these percentages? (If yes, please describe the program.)

☐Yes
☐No

3. Is a Computerized Maintenance Management System (CMMS) being utilized as part of the Reliability program?

☐Yes
☐No

IF YES,

(A) Please check the system used:

☐Infor
☐Maximo
☐SAP
☐Other: _____

(B.) Check the appropriate boxes:

Are tasks scheduled through the CMMS?
☐Run-to-failure
☐Preventive
☐Predictive
☐Proactive

Are work results entered into the CMMS?
☐Run-to-failure
☐Preventive
☐Predictive
☐Proactive

Who uses the CMMS?
☐Planners
☐Maintenance Supervisors
☐Operations
☐Maintenance Crafts
☐Other

Are failure rates trended?
☐Yes
☐No

Are all repairs entered into the CMMS?
☐Yes
☐No

Can storeroom inventory levels be accessed through the CMMS?
☐Yes
☐No

Is the CMMS integrated with labor reporting?
☐Yes
☐No

Is the CMMS integrated with storeroom inventory management?
☐Yes
☐No

Is the CMMS integrated with Procurement?
☐Yes
☐No

Is the CMMS integrated with any Predictive Maintenance software?
☐Yes
☐No

List the CMMS reports used:

4. Are procedures documented for the following work management process elements?

	Yes	No
Work Request	☐	☐
Work Approval	☐	☐
Prioritization	☐	☐
Planning	☐	☐
Scheduling	☐	☐
Work Execution	☐	☐
Work Documentation	☐	☐
Closure and Follow-up	☐	☐
Analysis and Continuous Improvement	☐	☐
Backlog Management	☐	☐

5. Describe the planning process:

6. Describe the scheduling process:

7. Describe the process used to maintain and improve reliability:

8. Describe how individual equipment maintenance strategies are developed:

How are they documented?

9. How often are equipment maintenance strategies reviewed and updated?

10. Describe any maintenance activities performed by the Operations staff:

11. How is corrective work identified from the Preventive and Predictive programs documented?

12. How does the organization ensure that the time-based maintenance program is current?

13. Describe the process for including reliability and maintainability in the new asset acquisition program:

- Equipment selection / standardization
- Preventive and predictive maintenance
- Spare parts
- Training requirements
- Maintenance access and maintainability
- CMMS data

14. What are the criteria for determining overall maintenance manpower requirements?

15. Do you measure craft productivity? If so, how?

16. What are the criteria for determining how, when and where to use outside contractors?

SECTION D: STORES / INVENTORY MANAGEMENT

1. What is the storeroom inventory value?

2. How many Stock keeping Units (SKUs) are in inventory?

3. How are inventory levels for a particular item defined?

4. How are obsolete stores items identified?

5. Describe any access limitations to the storeroom:

6. How are items requisitioned from the storeroom?

7. What percentage of equipment in the CMMS has a Bill of Material (BOM)?

8. Do you have a kitting and delivery process? If so, describe:

9. Are any "advanced" procurement processes in place (vendor consolidation, consignment, vendor-managed inventory, etc.)? If so, describe these processes.

SECTION E: USE OF TECHNOLOGIES

1. Please indicate the types of online monitoring system(s) your plant is currently using:

☐ Shutdown (Protection)
☐ On-Line Diagnostic (Vibration)
☐ On-Line Diagnostic (Instrument/Valves)
☐ Wired
☐ Wireless
☐ Do not currently use an online system

2. Is your current online/continuous monitoring system data being integrated with other Predictive activities in your facility?

☐ Yes
☐ No

3. Please check the types of predictive maintenance techniques currently practiced by your plant (check all that apply).

Estimated number of assets monitored:

☐ Vibration Analysis_____
☐ Tribology/Oil Analysis_____
☐ Thermography (electrical)_____
☐ Thermography (mechanical)_____
☐ Motor Current Analysis_____
☐ Ultrasonic/Leak Detection_____
☐ Contact Ultrasonics_____
☐ Electrical Analysis_____
☐ Imaging (Radiography) _____
☐ Valve Signatures_____
☐ Instrumentation Diagnostics _____
☐ Process Parameters (speed, flow, etc.) _____
☐ Other: _____

The next series of questions refer to Corrective Technologies only:

4. Do you perform the following and by whom?

Alignment
☐In-house
☐Service

Balancing
☐In-house
☐Service

Are these done by the Predictive Maintenance resources?
☐Yes
☐No

5. What are your acceptance criteria for:

Alignment _____

Balancing _____

Were these established from:
☐In-house
☐Outside specialist

6. Are the results of your alignment and balancing programs entered into an equipment history file in the CMMS?

Alignment
☐Yes
☐No
Balancing
☐Yes
☐No

7. Do you incorporate alignment and balancing requirements into your new and rebuilt equipment specifications?
☐Yes
☐No

8. Do you have a formal root cause failure analysis program?

☐Yes
☐No

9. What determines when a piece of equipment goes through a root cause analysis process?

SECTION F: INVESTMENT IN TRAINING:

1. Describe the entry level qualification or education requirements for:

- Crafts
- Predictive Technicians
- Supervisors
- Maintenance Management

2. Describe the training provided to new crafts persons:

3. Describe the training provided to existing crafts persons:

4. How are skill-based training needs determined?

5. What are the annual hours invested in each employee for skill-based (non-regulatory) training?

6. Which of the following do your Predictive Technicians regularly attend? (Check all that apply)

☐User meetings
☐Free seminars
☐University courses
☐Vibration Institute meetings
☐Predictive workshops
☐Internal Reliability training/awareness program
☐User conferences
☐Other: _____

7. Please list any certifications that members of your Predictive Technicians currently hold:

8. Does your company/department require any of the above certifications?

☐Yes
☐No

9. Is there a program for cross-training of craftsmen at your plant?

☐Yes
☐No

10. Do have specific Reliability Specialist? (Check all that apply)

☐Vibration Specialist
☐Alignment Specialist
☐IR Specialist
☐Instrumentation Specialist
☐Other:_____
☐Oil Specialist
☐Motor Specialist
☐Ultrasonics Specialist
☐Electrical Specialist

SECTION G: PROGRAM MANAGEMENT

1. Have you undertaken any maintenance optimization initiatives in your plant? If so, please describe:

2. Is your predictive technologies program formalized, directed by a single manager/supervisor?

☐Yes
☐No

3. Do you have a formalized performance tracking system in place for your Reliability program?

☐Yes
☐No

4. Would you describe your leadership support for the Reliability Program as:

☐Outstanding
☐Good
☐Average
☐Poor

5. Have you undertaken a plant-wide orientation training effort that includes exposing production, management, maintenance and operations personnel to your program efforts?

☐Yes
☐No

6. Have you changed any of your internal processes within the organization as a result of your program?

☐Yes
☐No

7. Do you use any of your outside vendors (e.g., oil supplier, motor rewind contractor) for any elements of your program?

☐Yes
☐No

8. Which of the following statements is true for your plant? (Check only one)

☐Most personnel at my plant understand the fundamentals of Predictive/diagnostic technologies and are willing and eager to react to the results of diagnostic tests.

☐Some people at the plant understand and support regular diagnostic testing.

☐Some diagnostic testing is conducted at the plant, but only for troubleshooting.

☐Only outside contractors are used for diagnostic testing, and the plant personnel are not made aware of the findings.

☐No diagnostic testing is accomplished at the plant.

SECTION H: BENCHMARKING

1. Has your company benchmarked its maintenance practices within the last 3 years?

☐Yes
☐No

If yes, was this internal, external or both?

2. What overall performance measures do you use to measure plant or production performance (e.g., automotive labor hours per car, electric power $/MWHr, Overall Equipment Effectiveness, etc.)?

3. Please complete the following table for any of the applicable metrics for the last full year.

Metric	Actual/Measured	Goal
Uptime (% Availability)		
Unscheduled Downtime		
Maintenance $/Unit		
Percent Planned Work		
Percent Scheduled Work		
Percent Schedule Compliance		
Percent PM Compliance		
Percent Proactive (PM & PdM) Work		
Percent Corrective from PM & PdM		
Storeroom Stockouts		
Total Backlog Levels		
Ready Backlog Levels		
Lost Time Injuries / 200,000 Hrs		
OSHA Recordables / 200,000 Hrs		
Other Metrics:		

4. Do the above metrics provide a clear picture of your overall plant performance?

☐Yes
☐No

5. What types of benchmarks are used to compare your performance?

6. What is the bottom line impact of one hour of downtime?

7. What is the cost of the loss of 1% Overall Equipment Effectiveness?