Define Maintenance Scorecards
Discuss Required Prerequisites
Explain 10 Common Maintenance Scorecards
Review Your Return-on-Investment
Maintenance Scorecards
What are they?

Organized Logical Method to Measure and Communicate Your Past, Current, and Future Maintenance Performance Against Established Goals
Maintenance Scorecards

What are they?

- Simple and Easily Understood Charts, Graphs, and Tables
- Used to Display Your Maintenance History
- Demonstrate Your Current maintenance Performance
- Communicate Your Maintenance Goals for the Future
## Maintenance Scorecard

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<tr>
<th>Measurement</th>
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<tr>
<td>Backlog Weeks</td>
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Backlog Weeks

Week 1  Week 2  Week 3  Week 4  Week 5  Week 6

Millwright
Electrical
Combined

CE Maintenance Solutions, LLC
Week 1  |  Week 2  |  Week 3  |  Week 4  |  Week 5  |  Week 6  
---------------------------------------------
Millwright  |  Electrical  |  Combined  
Goal
Vision for Maintenance Excellence and Continuous Improvement
Short and Long Range Master Plan
Computerized Maintenance Management System (CMMS)
Maintenance Control Function
Communication Strategy and Techniques
Scorecard Prerequisite: Vision for Maintenance Excellence and Continuous Improvement

- Culture for Training and Knowledge Growth
- Proactive *versus* Reactive Maintenance
- Maintenance of Equipment and Facilities, **not** Repair
- Maintain Assets in a ‘Like New’ Condition
- Strive for Steady Continuous Improvement
Scorecard Prerequisite: Short and Long Range Master Plan

- Develop Long range Plan First – 5 Year
  - What Do You Want Your Maintenance to Look Like in 5 Years?

- Plan Backwards to Develop your Short Range Plan of Action
  - Where Do I Start First?

- Develop Long Term Scorecards and Matrices
  - Proactive vs. Reactive Maintenance
  - Maintenance of Equipment vs. Repair
Scorecard Prerequisite: Short and Long Range Master Plan

If You Don’t Know Where You Are Going, Any Road Will Take You There

Author - Lewis Carroll
Scorecard Prerequisite: Computerized Maintenance Management System (CMMS)

- CMMS is Required for Maintenance Scorecards and Tracking Progress
- Installed Properly
- Populated Completely with Data
- Maintained with Discipline
  - Work Order for All Jobs
  - Properly and Completely Filled Out
  - Minimum or No Standing Work Orders
Scorecard Prerequisite: Maintenance Control Function

Maintenance Functions Needed

- CMMS Administrator
- Planner/Scheduler
- Maintenance Clerk
- Work Order History
- Asset Management
- Maintenance Engineering
- Scorecard and Matrix Development
Scorecard Prerequisite: Communication Strategy and Techniques

- Daily, Weekly, and Monthly Communication
  - Memos, Emails, Charts, and Graphs
  - Intranet Postings
  - Communication and Information Centers
    - Bulletin Boards
    - Visible for All to See
10 Common Scorecards

1. Backlog Weeks
2. Machine Downtime or Uptime
3. Craft Work Distribution
4. Interrupts, Emergencies, or Breakdowns
5. Schedule Compliance/Effectiveness
6. Preventive Maintenance Man-hours
7. % Planned vs. Unplanned
8. Maintenance Cost Savings
9. Total Cost of Maintenance
10. Maintenance Stores Management
Backlog

- Estimated W.O. Time
- Total Backlog Weeks
- Listed By Dept., Craft, Machine, etc.
- List of Older than 90 Days

Weeks of Backlog

0 1 2 3 4 5 6

Machine downtime for maintenance

- Recorded by Production or Industrial Engineering
- Optionally Recorded by Maintenance Department
- Only Downtime Related to Maintenance Problems or Breakdowns

Asset Downtime

- 2010: 7.1%
- 2011: 5.0%
- 2012: 3.0%
- 2013: 3.0%
- 2014: 1.4%
- 2015: 1.4%
Craft Work Distribution

- Electrical, Mechanical, Construction, Millwright
- Listed by: Shift, Department, Area, Machine, or Building
- Listed by Backlog Weeks

![Bar Chart]

<table>
<thead>
<tr>
<th></th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
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<tbody>
<tr>
<td>Electrical</td>
<td></td>
<td></td>
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<tr>
<td>Millwright</td>
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<tr>
<td>Const.</td>
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Backlog Weeks
Interrupts – Emergencies - Breakdowns

- Listed by Department, Machine, Craft
- By Priority E-1-2-3-4
- Tracked in Work Order Man-hours

Emergency Man-hours

2010: 37%
2011: 37%
2012: 25%
2013: 15%
2014: 10%
2015: 10%
Scheduled Compliance / Effectiveness

- Weekly Maintenance Work Schedule
- Work Order Percent Scheduled
- Work Order Percent Completed Against Scheduled
Preventive Maintenance

- PM - Inspections and Lubrication
- PdM - Infrared - Ultrasonic – Vibration Analysis

Listed in % of Total Maintenance Man-Hours Available

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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</thead>
<tbody>
<tr>
<td>PM%</td>
<td>7%</td>
<td>12%</td>
<td>15%</td>
<td>18%</td>
<td>25%</td>
<td>29%</td>
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<td>PdM%</td>
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CE Maintenance Solutions, LLC
Planned Packages

- Planned Work Orders
- Work Orders Kitted with All Parts
- Scorecard Tracked by Planner
  Tracked as a % of Total Man-hours per Planner

Percentage of Planned Work Orders

<table>
<thead>
<tr>
<th>Month</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Aug</td>
<td>60%</td>
</tr>
<tr>
<td>Sep</td>
<td>65%</td>
</tr>
<tr>
<td>Oct</td>
<td>68%</td>
</tr>
<tr>
<td>Nov</td>
<td>61%</td>
</tr>
<tr>
<td>Dec</td>
<td>64%</td>
</tr>
<tr>
<td>Jan</td>
<td>63%</td>
</tr>
<tr>
<td>Feb</td>
<td>67%</td>
</tr>
<tr>
<td>Mar</td>
<td>62%</td>
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</table>
Due to Downtime Reduction From Preventive and Predictive Maintenance Programs

Due to Interrupt Reduction Related to Maintenance Scheduling Improvements

Cost Savings

<table>
<thead>
<tr>
<th>Year</th>
<th>$0</th>
<th>$50,000</th>
<th>$100,000</th>
<th>$150,000</th>
<th>$200,000</th>
<th>$250,000</th>
<th>$300,000</th>
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<td></td>
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Total Cost of Maintenance

- Total Cost of Work Order
  Tracked by Machine, Department, Production Line, or Area
- Supplies and Labor
  Contractor Costs

<table>
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<tr>
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<th>Yearly Maintenance Costs</th>
<th>Estimated Replacement Value</th>
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Maintenance Sores Management

- Turns Per Year, Stock-outs, Service levels
- Slow moving, Obsolete parts, Cost of inventory
- Satellite Storage

![Service Level Graph]
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Scorecard Return on Investment

- **Manpower Adjustments**
  - Increases or Decreases in Staffing
  - Assignment Adjustments

- **Capital Improvements**
  - Justify Equipment Replacements
  - Equipment Overhauls

- **Program Justifications**
  - PM, PdM, Planning/Scheduling
Scorecard Review: What are They and Why Use Them?

- Simple and Easily Understood Charts, Graphs, and Tables
- Used to Display Your Maintenance History
- Demonstrate Your Current maintenance Performance
- Communicate Your Maintenance Goals for the Future
You Cannot Manage What You Cannot Control and Cannot Control What You Cannot Measure

W. Edwards Deming
Mike Cowley’s background includes over 30 years of hands-on experience in the production maintenance, plant engineering, and facility management. He has extensive experience in all aspects of plant management, computerized maintenance management systems (CMMS), contract maintenance, utility operations, project engineering and senior engineering management.

Mr. Cowley spent the early years of his maintenance career in the textile industry working for Burlington Industries. While at Burlington, he was named Director of Engineering and Maintenance for the Lees Carpets Division. Mr. Cowley was instrumental in the successful implementation of Lees’ maintenance improvement program, which took Lees maintenance department from “Chaos to World Class.”

Mike spent several years employed as a District Manager with Aramark Facility Services in their Specialty Markets Group where he managed multiple facility services and maintenance accounts.
He also assisted other groups within Aramark on a National basis with maintenance program assessments, planning, and implementation of improvement programs.

Mike is currently President of CE Maintenance Solutions which provides consulting services to facility and manufacturing maintenance organizations.

Mike speaks at several leading maintenance conferences and facility management conventions each year, and has assisted numerous organizations in developing plans and programs needed to implement and achieve plant-wide maintenance improvement. He currently serves as Regional Vice President and Professional Development committee member with the Association for Facilities Engineering.

Mike can be reached at (434) 738-8484 or mike@cemaintenancesolutions.com or on the web at: www.cemaintenance.solutions.com