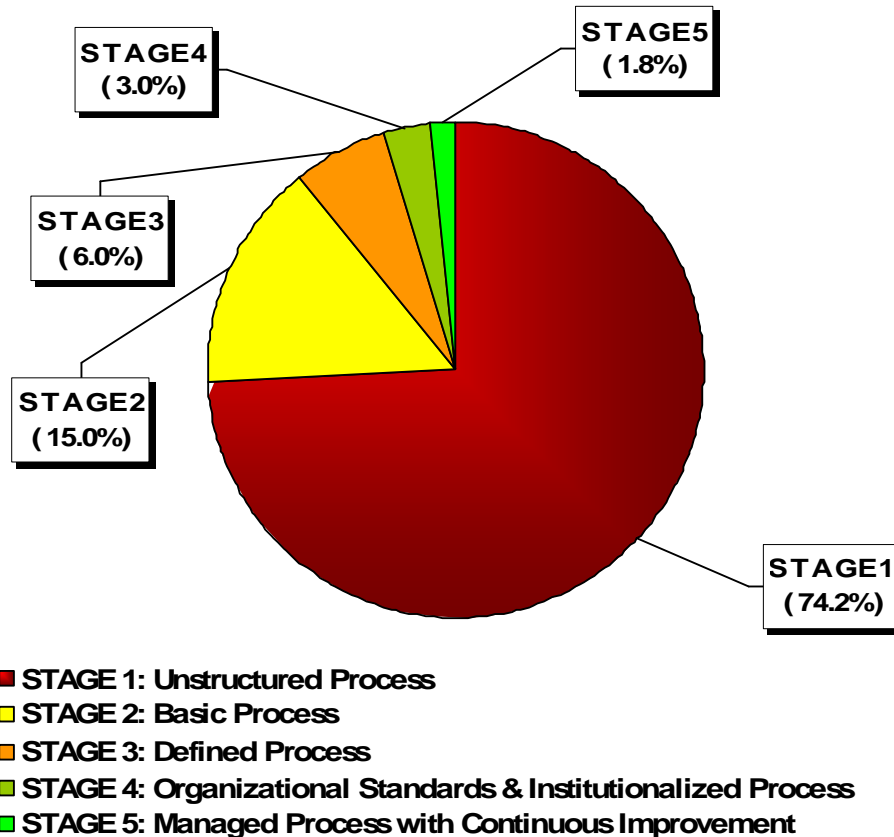


All plants will fit into one of the following five Outage/Shutdown Development Stages



Stage One: Unstructured Process (74.2% of all plants)

- ◆ No standardized or documented Outage/Shutdown management processes are in use.
- ◆ Management states that Outage/Shutdowns are critical to business successes and expect effective Outage/Shutdown execution but don't provide appropriate support.
- ◆ The Outage/Shutdown manager is selected from plant maintenance or operations just a few weeks before the planned Outage/Shutdown. He is expected to manage the Outage/Shutdown in addition to usual responsibilities.
- ◆ The temporary Outage/Shutdown manager is given the Outage/Shutdown duration and budget. He is expected to identify the work to be performed, make sure all necessary resources are available and coordinate all Outage/Shutdown activities. There are usually several projects to be performed during the Outage/Shutdown. These projects are typically performed by several different outside contractor or perhaps by a company-wide service group.

- ◆ The plant and each contractor work from their own individual schedule. A single integrated Outage/Shutdown schedule does not exist.
- ◆ Outage/Shutdown status reporting is very informal and often includes only percent complete on groups of activities or on highly visible projects.
- ◆ Scope growth, schedule extensions, and cost overruns are commonplace.

Stage Two: Basic Process (15.0% of all plants)

- ◆ Several basic Outage/Shutdown management processes have been established within the organization, but they may be different at each plant across the fleet.
- ◆ Senior management only becomes involved in the Outage/Shutdown when major problems occur. Schedule extensions and/or significant cost overruns are reported to management only after they have occurred.
- ◆ A temporary Outage/Shutdown team is established several months before the planned Outage/Shutdown. The size of the team varies based on the complexity and duration of the projects.
- ◆ The team is asked to identify the Outage/Shutdown scope and required resources. Large projects may have their own budget and schedule. The team is expected to complete all the Outage/Shutdown work within a schedule time period. The Outage/Shutdown lacks schedule coordination between contractors. Only high level milestones are set. Each contractor is left to schedule his portion of the entire Outage/Shutdown.
- ◆ Outage/Shutdown performance reports are more formalized but much of the data is gathered manually and may not be completely current or accurate. Progress is still reported as percent complete rather than by number complete. (Example: % welds completed rather than number of welds completed during a time period.)
- ◆ Scope growth, schedule extensions and cost overruns are still commonplace.

Stage Three: Defined Process (6.0% of all plants)

- ◆ Outage/Shutdown management processes are standardized, accurately documented, and are usually computerized. Most Outage/Shutdowns across the fleet use similar processes. Customers as active members of the Outage/Shutdown team.
- ◆ Senior Management provide regular input and approval of key decisions and documents. Key Outage/Shutdown issues are discussed with management.
- ◆ Each plant has a full-time Outage/Shutdown department.
- ◆ Multi-year Outage/Shutdown scope and schedules are established based on long-range reliability and production strategies. Outage/Shutdown schedules and planning become part of long-term planning.
- ◆ Outage/Shutdown performance reporting is automated and quantity based progress reporting is the norm. Project “change order” processes are in place to avoid scope growth
- ◆ Scope growth, schedule extensions and cost overruns are less frequent.

Stage Four: Organizational Standards and Institutionalized Process (3.0% of all plants)

- ◆ Outage/Shutdown data and processes are integrated with plant and organization systems to make more comprehensive business decisions. The integration of Outage/Shutdown Management processes with other plant and company processes is very clear.
- ◆ Management actively participates in Outage/Shutdown management to help solidify use of Outage/Shutdown Management processes and standards. Management sponsors a “playbook” for use across the fleet. Management uses “lessons learned” from previous successes and failures to continually fine-tune the processes.
- ◆ Plant Outage/Shutdown teams actively shares ideas and resources with other plant/company teams.
- ◆ System and process experts participate in detailed scope and schedule reviews. Systems with functional redundant equipment and non-critical equipment are not included in the Outage/Shutdown scope. Critical path schedules are scrutinized and “scrubbed” to minimize Outage/Shutdown duration and or cost. Change control processes are rigorously enforced to minimize scope growth.
- ◆ Cost estimates, baseline estimates and earned value are used to evaluate Outage/Shutdowns, scope growth, and other issues. Management encourages the use across the fleet of successful techniques and processes developed at individual plants. Labor utilization studies are used to benchmark labor productivity. Likewise, appropriate metrics are implemented to determine the effectiveness of planning, scheduling, pre-Outage/Shutdown preparation logistics, execution processes, and other aspects of Outage/Shutdown management.
- ◆ Scope growth, schedule extensions and cost overruns seldom occur.

Stage Five: Continuous Improvement (1.8% of all plants)

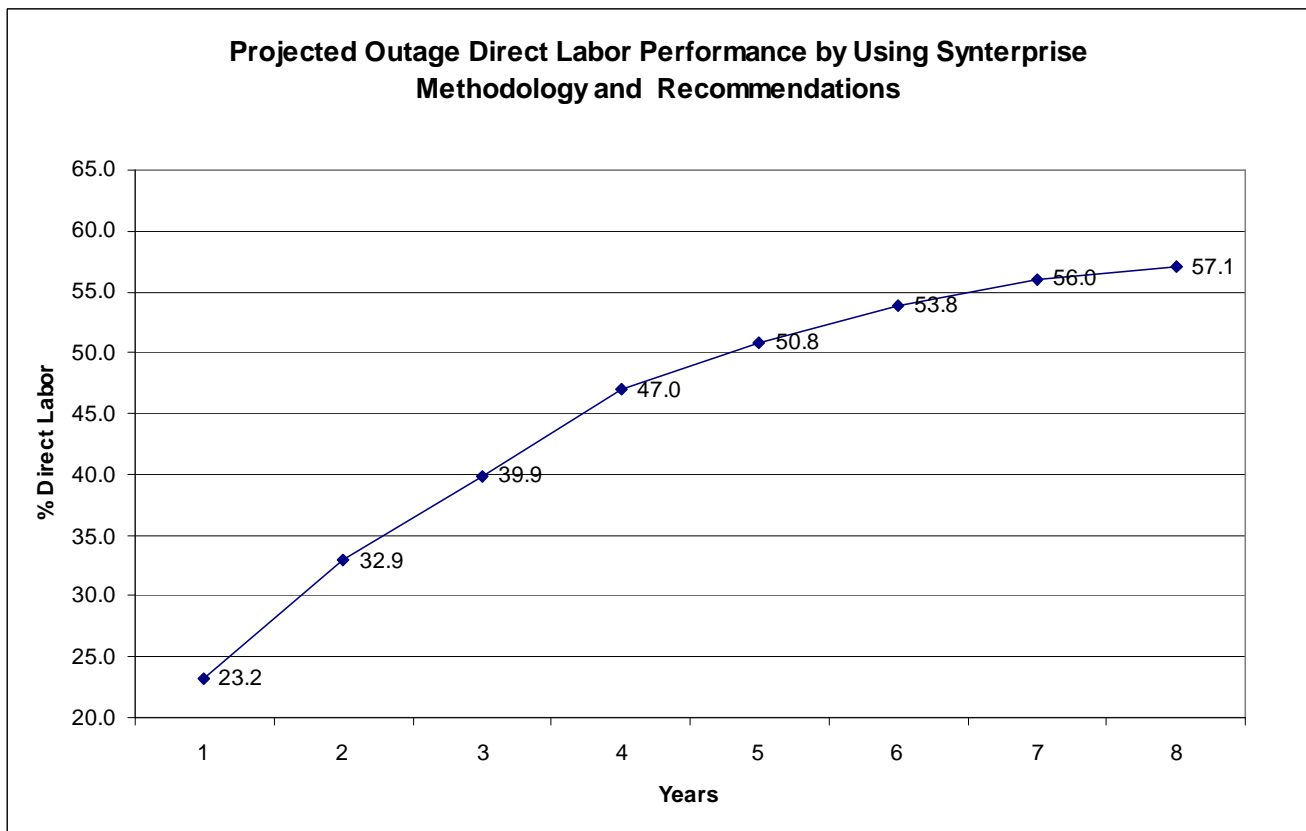
- ◆ Outage/Shutdown Management processes and standards are used to manage Outage/Shutdowns and facilitate continuous improvement.
- ◆ Management expects opportunities for improvement to be identified through the continuous collection of “Lessons Learned” from all participating organizations.
- ◆ The Outage/Shutdown department analyzes all Outage/Shutdown performance metrics to help identify possible areas for improvement.
- ◆ Employee and customer feedback are used to help develop long-term strategies and/or projects to reduce Outage/Shutdown scope, duration, and cost.
- ◆ Accurate and complete Outage/Shutdown status is available at the daily meetings and immediate action is taken as required. Potential problems are averted and opportunities for decreased duration are implemented immediately. Continuous improvement is part of the company culture.
- ◆ Scope growth, schedule extensions or cost overruns are very rare.

The Synterprise Comprehensive Outage & Performance Evaluation (SCOPE)

SCOPE utilizes advanced technology to collect and analyze the data needed to optimize resources and perform cost-effective outages. **SCOPE** then presents best practice strategies to overcome measured performance shortfalls. Implementing these suggestions not only solves problems but makes them less likely to occur again. **SCOPE** lowers outage cost and increases operating profit.



SCOPE Impact on Wrench Time



Outage/Shutdown Improvement Tools

- ✓ Planned Outage Labor Utilization Studies
- ✓ Coaching and Staffing
- ✓ Outage/ Shutdown Readiness Assessments
- ✓ Gap Analysis Against Industry Standards
- ✓ Capital Project Labor Utilization Studies
- ✓ Routine Maintenance Labor Utilization Studies