



Total Process Reliability

An Overview of Total Process Reliability (TPR)

Maintenance relies on superior leadership providing direction, focus and support. This almost always means changing the status quo rather than preserving it. This requires management to establish a clear mission and vision supportive of the organization's direction and goals. The goal of maintenance is to enable operations to do their job in an efficient and cost productive manner by providing equipment in a reliable state. But, to do this, operations, must in turn, accept some responsibility to maintain their equipment. Only senior leadership can make that happen. Leadership, in this case, is not confined to the Equipment or Fleet Manager. It includes his/her superiors and how they provide visible and focused support for improving equipment system efficiencies.

Leadership is also responsible for establishing the policies and expectations that serve to guide maintenance and the organization in supporting maintenance activities. Once policies are developed, they must be deployed, communicated and monitored. Policies are the “law” of the organization, and are therefore, the foundation to what we hold dear and expect. We know that unposted speed limits leave much to interpretation and, therefore, we have those little “policy reminders” posted along the side of the road. That is why we clearly communicate rules and expectations.

Part of the responsibility of leadership is to set the framework for maintenance to improve its effectiveness and efficiency. This may often be in the form of formal improvement efforts or programs. Improvement does not usually occur without goals and a focused plan. We always recommend a formal Steering Council be launched, made up of the key stakeholders, to lead a major improvement drive. Management support is not optional, it is required to launch and support a significant maintenance improvement process. A ten percent reduction in maintenance costs is a direct addition to the bottom line. This requires management support and conviction to drive those efforts because it will require a major cultural change in the organization to be successful. People use to being reactionary need to “unlearn” those practices in exchange for proactive ones. World Class fleets constantly reduce their maintenance costs by 3-5% each year.

TPR's development sprang from Total Productive Maintenance (TPM). TPM began with a Japanese engineer named Seiichi Nakajima. Nakajima began studying American preventive maintenance in the 1950's and spent the next 20 years refining his ideas and developing Total Productive Maintenance. Even though Nakajima is credited with TPM's development, its major components were originated in the United States. TPM was introduced to the US in the mid-1980s. Total Process Reliability is the next generation after TPM in that it uses more contemporary tools like Lean Manufacturing concepts, Six Sigma elements and Breakthrough Strategy. It makes up for some of the shortcomings of TPM that was entirely focused on equipment uptime and availability, even if the equipment was not needed or if the improvements were not cost-justified...

TPR is a process to improve equipment efficiency by enrolling the entire organization in incident management. The TPR philosophy differs from traditional maintenance in that traditional maintenance generally places the burden of maintenance on the maintenance department or service personnel. The intent for this original arrangement was to provide specialized skills and knowledge to a select few who would assume the responsibility of equipment upkeep. However, it often did not engage operations personnel, management, supervision or other support departments in that task. TPR engages those people in asset management.



The TPR philosophy is reflected in 5 major focuses...

1. Focusing on improving equipment uptime and reliability
2. Sharing equipment maintenance responsibilities with the operator—Frontline Maintenance (Basic Care)
3. Engaging people in improvement teams
4. Improving skills and knowledge of operators and mechanics
5. Improving how equipment is designed, produced, and installed



Part of the process is to charter a TPR Steering Council to focus support and direction for the TPR process and to engage leadership in the process. At this point we help the group set the vision, mission, goals and metrics for the process. A **Steering Council Workshop** is conducted where the council members become grounded in TPR and develop their charter. Implementation obstacles are identified and means are developed to address them. We also charter **Breakthrough** and **Focus Teams** to work on specific issues and systems during that time.

The Steering Council would be responsible for: providing oversight of the TPR process, developing a common vision and mission for maintenance and reliability, developing supportive goals and metrics (KPIs) to measure those goals, ensuring proper alignment between TPR and business goals and objectives and ensuring adequate resources are available.

At the next phase, we develop a plan of action from strategic and tactical implementation steps. Steps are listed, resources identified and dates agreed upon. Pilot equipment is also selected. We use the corporate strategic plan to help guide the strategy. This may also include the formulation and adoption of a Reliability Policy as one does not exist. This would also include setting up benchmark visits to study exemplary performance. The equipment strategy will primarily be formulated during the Steering Council workshop with refinements made afterwards.

Steps will include educational sessions, training events, team identification to work on specific issues and Focus Teams and Breakthrough Teams chartered to work on recurring problems. Equipment Improvement Team Workshops (EITW) is conducted on critical equipment to restore it to design limits and to gain ownership and knowledge of the equipment. Specific areas of maintenance practices and systems are targeted and addressed through Focus Teams. Breakthrough Teams are chartered for 45-60 days to work on specific “laser sharp” issues.

Typical savings from TPR are 23-30% reduction in maintenance costs, emergency maintenance less than 5% of total maintenance activity and availability improvements to 95%. Also, other benefits include better teamwork, closer relations between maintenance and operations, better morale and less a cleaner and safer workplace.