

## Maintaining Sustainability in the Manufacturing Environment

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### Abstract:

This presentation outlines the management of a successful sustainability program from concept to implementation, focusing on strategies that minimize environmental impact. A discussion on the sustainable commissioning process, a concept that utilizes both human and artificial intelligence to maintain sustainability is reviewed. The integration of artificial intelligence (AI) is now critical for analyzing large volumes of data to make informed decisions within the manufacturing operations environment including maintenance, reliability, and quality functions.

Energy management system deployments such as the ISO 50001 system which guides human awareness and encourages energy reduction strategies are critical to program success. Deploying the plan, do, check, act (PDCA) cycle has proven effective in context of well-established organizations. A critical element evaluated is the organization's governance and obtaining interactive feedback during the ISO 50001 process. This is a vertical that confirms the energy management process is effectively working and progress in being made on reducing energy for significant energy users. It is critical to optimize both culture and building energy consumption as transparent communication is required, a shift away from siloed management with more visible program leadership.

The main drivers for sustainability include business and stakeholders which assist in driving needs and expectations. The completion of the program strength, weakness, opportunities, threats (SWOT) analysis is assessed. Definition of SEUs (Significant Energy Users) is one of the most critical parts of the system. Integration of AI to track past energy usage, push data through algorithms to understand anomalies, and make recommendations assist in the preventive and corrective maintenance planning. In conclusion, AI now plays a critical role in the sustainability process along with human interface of building operations and culture. The sustainable commissioning process incorporates all of the above discussed attributes.

### Keywords:

Sustainability, energy conservation, artificial intelligence, maintenance, reliability, internal rate of return, net present value, simple payback, leadership, productivity.