Arrelic Insights

PLANT RELIABILITY AND READINESS ASSESSMENT

Overview

The phrase "improve reliability" is often used to describe potential development attempts and establish goals for workers and managers. However, not everyone is familiar with the word. Most of us have a general understanding of what a reliable plant is, but when the word is used to drive a project improvement, it must be explained precisely what we say.

While a company's mission statement can read, "To improve profitability through improved reliability," this is a very ambiguous statement. Expectations must be described clearly, with measurable and time-bound targets and action plans, as well as consistent definitions of reliability.

Introduction

Plants use reliability as a criterion for potential development measures and to set goals for workers and managers. It is said like "to maximize profitability through improved reliability" in some recently published mission statements. When businesses are asked to describe what the terms mean, what reliability is, and how it is calculated, they seldom have a detailed response. While the manufacturing and process industries have yet to define the term "reliability," you'd think the service industry would have done so by now. It hasn't happened. Consultants start patterns and use these terms to sell a new idea to the market.

Any plant's aim is to improve overall production efficiency, which means maximizing performance with current resources by minimizing waste in equipment and process reliability (the latter is also used in process industries; in discrete manufacturing, it's called "manufacturing reliability"). When equipment and processes are both reliable, the result is reliable output.

The probability that the actual system will successfully operate at any given point in time under real environmental conditions is known as the readiness of the production system.

Overall Production Reliability (OPR)

The term "overall equipment effectiveness" has been used to describe this assessment in the past (OEE). The terms OEE and OPR both apply to the same measurement, but I prefer OPR because it more accurately defines what is being measured. It should be called OPR as it encompasses all types of production waste, not just equipment waste.

OPR is calculated as: **OPR = Quality (%) x Speed (%) x Time Availability (%)**

All losses in a production or process line are defined by speed, time availability, and quality. As a result, when setting reliability targets for processes, maintenance, and engineering together, OPR is an excellent metric to use. The primary duty of operations is process efficiency, which means that the process, or production, runs as efficiently as possible.

Maintenance is primarily responsible for equipment durability. A lack of equipment reliability results in waste due to failing components, performance losses due to equipment problems, or speed losses due to component wear or breakdowns.

Engineering should focus on supporting equipment and process reliability through life cycle cost (LCC) design. The LCC approach is used to figure out how much it costs to buy and own a piece of equipment. Engineering departments are also solely concerned with completing a new installation on time and on budget.

Plant Reliability in Oil and Gas Industry

Plant reliability is critical in these ongoing challenging economic times to maintain high oil and gas output levels and avoid unplanned maintenance work. Plant reliability also plays a role in ensuring that oil and gas activities cause as little environmental harm as possible. Reliability and protection go hand in hand, ensuring that significant accidents affecting the workforce and local society happen as infrequently as possible.

Plant reliability issues often create confusion among investors and consumers, which has a negative effect on the bottom line. It is known that, regardless of economic

circumstances, we must continue to enhance operational safety and reliability, plant performance, and shareholder returns while also investing in new technologies.

Technical problems that lead to unplanned maintenance work are both expensive and unavoidable in several instances. Understanding why these things happen and when they're most likely to happen will help improve plant uptime.

Operator safety, working inside secure operating envelopes, prompt and comprehensive inspections, and a detailed maintenance plan for each piece of equipment are only a few examples of the attention and coordination needed to maximize up-time while minimizing unwanted disruptions and risks. Due to their fast response time, gas turbines are expected to continue to play an important role in coping with renewable power supply outages, according to experts. Because of recent changes in the gas industry, liquefied natural gas is likely to be used as a substitute for pipeline gas in certain cases.

Power producers are looking for high-efficiency gas turbines with quick loading times that can achieve environmental goals while retaining operating strength in the face of fuel price fluctuations." As a result, fuel flexibility is a critical condition for the potential reliability of gas turbine plants.

Features of Reliable Plant

A reliable plant is a protected plant, a cost-effective plant, and an environmentally sustainable plant," according to compelling evidence from operating plants. It was also shown that an unreliable plant is less safe, more expensive, and less environmentally friendly. This is supported by a number of the statistics in this paper.

There are less failures and process upsets when a plant is reliable, resulting in increased output capacity as measured by asset utilization (AU) or overall equipment effectiveness (OEE). As a result, the risk of injury is reduced. There are fewer accidents when plant equipment is cared for in a disciplined manner by performing preventive maintenance (PM), and when equipment is regularly monitored to identify problems early and those problems are handled by proper job planning.

Working toward a common goal yields a plant that is dependable, nutritious, cost-effective, and environmentally sustainable. Reliable plants optimize advantages such as manufacturing capacity, on-time delivery, efficiency, lower prices, and higher gross income, which can be used to fund potential market and product development investments. Development in customer loyalty, market share, earnings per share, and stock price, to name a few. And dependable plants reduce the chances of damage, lost output, higher costs, and major accidents. Cost control by enhanced procedures and the removal of defects and waste are crucial to your success.

Actually, better maintenance will help, but if that's all you do, you'll be doing work that you shouldn't be doing in the first place. You cannot achieve reliability by performing good maintenance; however, you must perform good maintenance in order to achieve reliability. As a result, it's crucial to remove flaws in all fields.

Conclusion

Many businesses have safety plans, but few, if any, have paired them with a core principle of reliability. Furthermore, if the CEOs of these companies really believe that safety is a top priority, they will implement reliability policies that connect reliability and safety. If they really care about safety, they will pay just as much attention to organizational discipline and reliability as they do to high-powered consulting firms. The reality is that they don't, and their dedication to a holistic approach to safety is shaky. As a result, the corporation and its employees are in jeopardy.