Sustainable Asset Management Strategy Achievable Today with Adaptable Services Plans

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ABSTRACT

Whatever your understanding of the word "Sustainability", consensus recognizes the 3 pillars sustainability stands for: environmental, economic and social resources. Asset Management relies on an efficient framework that includes: Setting vision, being pragmatic, defining achievable goals and quick wins as well as a long term strategy in order to guarantee continuous improvement. Only then can achieving proper asset management mean achieving a sustainable management of assets.

This paper explains how Service Plans bring sustainable maintenance strategies taking into account resources, customer needs, applications and constraints. It also describes to what extent a customizable Service plan can help to avoid downtime due to unexpected failures and enhance people safety while improving sustainability in customer installations and business processes.

Service Plans supported with digitization capabilities are one of the ways to optimize asset life cycle management.

INTRODUCTION

Industry context and stakes

Industries and Schneider Electric customers are constantly looking for rationalization, optimization and productivity. Whatever the critical segments (electro-intensive, electro-sensitive, power generation and distribution, manufacturing), industries are setting corporate objectives in order to:

1. Maximize production levels,
2. Optimize maintenance budgets,
3. And, increase return on investment.

In this framework, the whole company "asset" is under focus because its role is to deliver on the business objectives. **Here "asset" means: equipment, Operation & Maintenance process and related organizations**.

To tackle this Asset Management concern, ISO standard issued early 2014 ISO: 55000, ISO:55000-1 and ISO:55000-2 "Asset Management overview, principles and terminology".

ASSET MANAGEMENT AND DIGITIZATION

Vision and benefits for customer

The Asset Management offer portfolio in Schneider Electric serves both Operations and Maintenance activities. It enables Consulting services, Software solutions and Service Plans. According to the content level of digitization capability, **Service Plans provide several degrees of maintenance delegation as well as a deeper integration to customer Operation & Maintenance process**. Schneider Electric has defined a wide range of asset management offers in order to allow customers to realize maximum value from their assets.

To illustrate the benefits of leveraging digitization in maintenance approaches, some common use cases are described below:

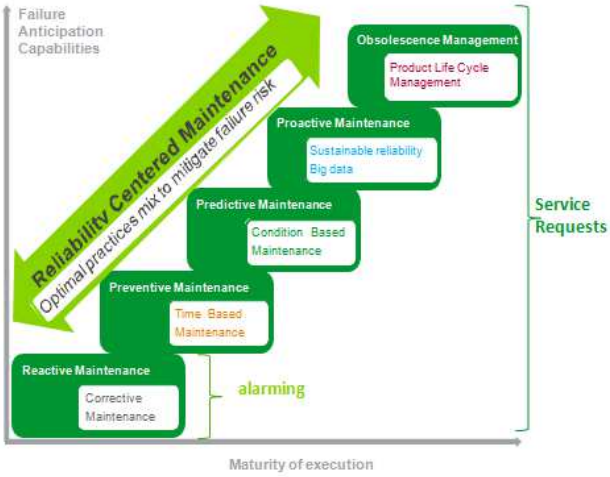

Figure 1: 4+1 maintenance approaches

1- Starting from Corrective Maintenance break-fix, one of the benefits of digitization is reactivity for action. By detecting the event right away and by being connected to the relevant Support organization for quick and efficient decision-making, digitization in Corrective Maintenance is a fast and secure way to meet customer objectives.

2- When tackling recurring preventive maintenance tasks that must be performed according to a defined schedule, digitization eases the organization of the on-site maintenance actions as the time based maintenance plans have already been registered into the maintenance software of the site.
3- Going a step ahead in maintenance using digitization leads to Condition Based Maintenance or CBM: when the software takes the guesswork out of maintenance tasks definition for the maintenance manager. Thanks to a permanent connection of the assets and collecting proper data, maintenance algorithms and rules define the best suitable timeframe, tasks, spare-parts and skills to perform the maintenance. The maintenance plan becomes directly linked to the conditions of usage and to the environment of the assets. Digitization optimizes any mandatory shutdown caused by preventative maintenance in terms of tasks, frequency and duration. A further benefit of proactive maintenance is when statistical treatment (big data – pattern recognition) of equipment data adds value to anticipate any deviation to any nominal point in order to act intentionally. For example, software capabilities from InStep make this possible today.
4- Obsolescence management (including Product Withdrawal Process) comes in parallel to the above approaches and aims to optimize reliability while deciding between maintenance expenses and new equipment investments. Digitization automatically triggers Obsolescence management recommendations such as:
   - Evaluation of ageing according to usage / environment (thanks to CBM),
   - Providing information regarding End of life / end of commercialization of equipment and spares and,
   - Cost / risk trade-off analysis.

Then, describing the different maintenance approaches and benefits brought by digitization, it is illustrated that effective asset management requires **real-time maintenance planning and execution** retrieving data from connected products. So maintenance tasks can be planned and performed when needed based on actual operating and asset conditions. **This helps avoid critical equipment failures and associated unplanned equipment downtime.**

Combining maintenance approaches involves integrating technologies, people, and processes to provide the right information at the right time and in order to execute properly.

Service Plans through digitization are then a requirement to efficiently tackle Condition Based Maintenance (rules & algorithms), statistical treatment of information (analytics) and obsolescence management (Asset life cycle management).

SERVICE PLANS FOR ASSET MANAGEMENT

Digitization is available today to construct Service Plans adapted to customer business constraints, offering the right level of accountability.

According to the criticality of assets for process and budget constraints, customers will constantly adapt maintenance approaches to serve his or her business process, balancing costs, risks, opportunities and performances benefits. **An efficient Service offer serving Asset management strategy must be capable of offering the entire Reliability Centered Maintenance approach from basic corrective maintenance through Obsolescence Management such as the Advantage Ultimate Service Plans offered by Schneider Electric**. **This offering adapts the Service Level Agreement (SLA) to customer needs using the right digital capabilities** such as Condition Based Maintenance, Alarming, dynamic data treatment, maintenance service bureau, etc.

Service Plans supported by digitization should focus on maintenance delegation and customer process integration. For customers who need maintenance sub contractor commitments to reach the requested degree of peace of mind (SLA-Service Level Agreement), Schneider Electric offers Service Plans ranging from delivering baseline level services with actionable maintenance information to a complete maintenance managed services offer. In addition, as part of a sustainable maintenance strategy and process, Schneider Electric Service Plans directly interoperate with any customer maintenance software, also known as EAM (Enterprise Asset Management). Customers are then able to anticipate any financial and technical decision being natively integrated into his or her daily process and tool without adding any additional costly user interface or software.

Value is generated both through the rules and algorithms harnessing data and the Maintenance Service Bureau.

The Maintenance Service Bureau is a key success factor in delivering the right Services Level. The Service Bureau organization supporting Schneider Electric Service Plans with SLA's (Service Level Agreements) is relevant and efficient because of our:

- Having strong expertise in equipment & maintenance,
- Management of legal aspects and ensuring contract management and,
- High level technical capabilities, including digital ones such as Asset Operation Solution platform, to deliver the end-to-end Reliability Centered Maintenance approach.

In order to ensure customer success, Schneider Electric Service Plans rely on:

- Customer Operation & Maintenance process focus with deep understanding of business stakes and requested Services Levels with documented KPI's (Key Performance Indicators),
- High levels of customer intimacy to implement proper Service Plans' content in order to reach customer requested Services Levels and,
- Skilled and experienced teams.

Schneider Electric manages many types of SLA's related to business availability and reliability including but not limited to: guarantee on restoration time, on-site response time, and lead-time delivery of spare parts.

Customer Story

A current user and Director of Facility Operations in the US Health Care industry recently stated:

*"Our objective was to develop an **enhanced maintenance services program** based on a combination of hardware, software and intelligent analytics to **provide a complete picture of our maintenance plan and execute it**. This information is critical to **optimize labor utilization, identify critical conditions** such as generator starts, low battery voltage, and over temperature conditions etc. **The ability of the Schneider Electric system to cross multiple platforms** such as SCADA, BMS (Building management System), DCIM (Data Center Infrastructure Management) **and report to a CMMS system was exactly what was needed to monitor our large number of diverse assets**. This **flexibility is key** to **our ability to run plant operations with a greater degree of "real time" knowledge**, improved reliability with much faster response times when critical events occur. Previous response times were predicated on physical observations of equipment condition which did not meet our needs and are not a **component of high performance organizations**."*

Technical description overview

The appropriate IT/OT* (Information Technology / Operational technology) infrastructures connected to the customer organization and installed base are an obvious complement to deliver the right Service Level Agreement. The objective is to deploy a relevant solution to retrieve equipment data, proactively collect and analyze, deliver and execute the right actionable maintenance procedures.

Schneider Electric Service Plans using the Asset Operation Solution digital platform can be interoperable with any customer existing communication and connectivity architectures. The Asset Operation Solution is scalable and open enough to integrate to any customer IT architecture (both communication and connectivity):

1- Capturing data from any source, any acquisition system (SCADA, RTU, PLC…) including on-visit data acquisition,
2- Treating data through relevant software bricks including analyses rules, algorithms, and analytics resulting in relevant analyses for recommendation of maintenance actions and,
3- Feeding customer maintenance system (EAM-Enterprise Asset Management) with relevant actionable maintenance information (resulting in data treatment or a "Service request")

Asset Operation Solution communication architecture is really customizable according to installed devices and sensors and existing infrastructure layout. Three delivery models are available including Cloud-based platform, Hybrid as a mid way, and lastly, On-premise model.

With cloud-based architecture, Installed base and equipment are connected to a cyber secure services digital platform. Equipment data is stored and treated using specific algorithms and rules engines. The outputs are information (including alarming) which is sent to a Service Bureau, where experts check the content before triggering actionable maintenance information, formalized through the Service Request, to the customer's existing maintenance software (EAM-Enterprise Asset Management).

Advantage Ultimate Service Plans offer the maximum of value and peace of mind to the customer. Relying on cloud based architecture, Schneider Electric maintenance

technicians act at the customer's site according to system recommendations. In the case where the customer is using our cloud based software offer, Schneider Electric can trigger actionable maintenance information for the on-site customer maintenance team. This software offer is also available with on-premise architecture for data center and IT rooms should the customer wish to further integrate their IT and OT systems.

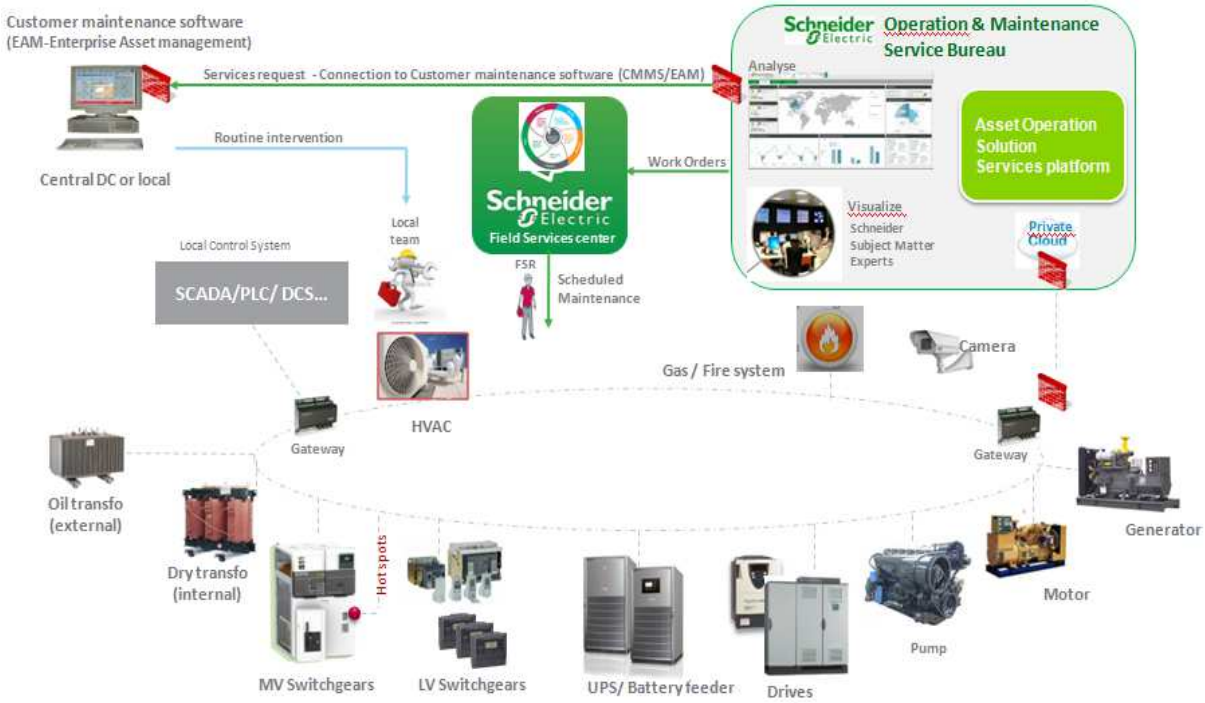

Figure 2: On site Services actions based on connected products to Schneider Electric cloud –Time Based Maintenance and Condition Based Maintenance

CONCLUSION

Digital trends are helping customers realize the value of the plethora of data available to them. Now, powerful algorithms and analytics capabilities can deliver the right information to the right people with enough time in advance to anticipate and optimize uptime.

With Service Plans, Schneider Electric is going further by delivering coordinated maintenance on-site actions resulting from equipment data analysis.

Schneider Electric Advantage Ultimate Service Plans deliver both Digital and Field services for real peace of mind using cutting-edge technology to deliver on our committed Service Level Agreements.

Business process continuity and installed base reliability are the main values of sustainable Service plans offers based on digitization capabilities.

REFERENCES

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