Maintenance in China

siveco | compete with maintenance
运营之争 始于维护

Siveco China Newsletter September 2010

Process Industry

This is the printed edition of Siveco China's monthly email newsletter "Maintenance in China". To subscribe to the electronic version of the newsletter or to read previous issues, please register online at www.sivecochina.com. 本期内容另有中文版可供参阅

Ancient wisdom

"When trouble is solved before it forms, who calls it clever?

When there is victory without battle, who talks of bravery?"

Du Mu (late Tang Dynasty), commenting on Sun Tzu's Art of War

While reading an article the other day, written by a so-called China expert for an international magazine, I realized that quoting Sun Tzu goes a long way toward establishing your credibility, especially to a Western audience. As I researched ancient quotes, I was amazed once again to see how prevalent the concept of preventive action was in traditional Chinese wisdom, the same concept that proves so problematic in today's industrial environment! One of our international clients, newly arrived in China, told me recently of his shock to find out that their machines, once opened, bore little resemblance to the "as-built" drawings he had been given... making his maintenance job "impossible" until everything was re-drawn properly (good luck with that). This inadequacy of as-built drawings, our manager will learn, is the rule rather than the exception with local contractors. What would the honorable Sun Tzu think of that?

I have come to think that this lack of foresight is a product of the times, rather than something more fundamental: times of fast growth at any cost. Times are quickly changing. So quickly in fact that we are happily skipping what may have been considered essential steps, such as implementing basic time-based preventive maintenance programs, jumping directly to Sci-Fi tech (that's the impression I get when looking at our own eHand and Mtv solutions for mobile workers, which are already used by customers in remote parts of China!) and innovative fail-safe or high-maintainability designs.

I see our work at Siveco as addressing the need for a maintenance strategy, i.e. a conscious choice of tactics (from the old run-to-failure to advanced remote monitoring) based on scientific criteria (cost benefit analysis). We use technological tools to create the necessary structure and discipline, to give concrete substance to what most of our interlocutors would otherwise perceive a very abstract concept: "strategy". We are not consultants, though we sometimes call ourselves that way for want of a better word: we are engineers (I personally prefer this term, which many find underwhelming) working alongside our customers' technical teams (the only real experts of their process and facilities) in maintenance improvement projects. The valuable knowledge and insight we gain from our many projects we can, in turn, be shared with others. Many of our clients are leaders in their field, often among the largest investors in the cities they operate in, with enormous industrial know-how, albeit underutilized from a maintenance improvement point-of-view. What we can learn from them seems unlimited: thanks for working with us!

This September edition of our "Maintenance in China" newsletter will be distributed at the 5th Annual Process Industry Engineering & Maintenance Congress held in Shanghai on September 14-15, where I have been invited to present a paper on my pet subject: "Leveraging technological tools to deliver sustainable maintenance improvement in China". This month's printed version differs markedly from the online version (read it at www.sivecochina.com/en/maintenance-in-china), as we chose to re-print several previously published case studies (with partners Areva 01dB-Metravib and ABB), along with new articles taking a deeper look into IT support for maintenance (with a piece on the implementation of SAP PM and a case study of the CMMS audits we performed for chemical producer Arkema).

This newsletter aims at sharing ideas between our customers: I hope you enjoy reading it and gain some useful insight from new projects, as well as inspiration from ancient wisdom!

Bruno Lhopiteau

General Manager

Siveco China

Getting the most out of SAP PM

Introduction

Many large-scale multinationals have chosen to implement SAP across all locations and business processes. This is particularly true in the petrochemical industry, with virtually all majors using SAP. Somewhere down the line, these companies are then faced with the need to implement the SAP Plant Maintenance module ("SAP PM") to support their Chinese operations.

While deploying SAP PM anywhere in the world involves challenges, most notably the high cost of implementation and ongoing support and the usability of the system for plant workers, these challenges become especially acute in China, where the specificities of the local maintenance market come into play.

SAP decisions are made at board-level and suffer no discussion afterwards. Throughout this article, we assume there is no alternative to SAP: replacing SAP is out of the question. *On the contrary, the question is how to get the most ROI out of it, in the specific context of maintenance in China.*

Some characteristics of SAP PM projects in China

Due to the very nature of SAP, projects are driven by finance and IT departments. This, although sometimes frustrating from a plant management point of view, is unavoidable. It is in fact a necessity, considering the complexity of the system.

With IT running the show, the customer is requested to provide its knowledge of operations, first of all to help design and validate the "blueprint" defining how the system should be implemented. While IT suppliers in other countries may have a significant industrial experience and, conversely, plant managers may also be well-versed in IT, this is far from true in China where such versatile resources, especially in the area of plant maintenance, are almost impossible to find. Not to mention the acute shortage of SAP PM consultants: all of them with IT background, often recently recycled from "more difficult" SAP modules like MM (understand: "maintenance is simple"), not familiar (and often unwilling to learn) about real-life maintenance. Most are anyway already engaged in giant projects such as those of State Grid and Sinopec, leaving smaller customers ("smaller" as in below the 100 million RMB project range) to fend for themselves… Such is the market we find ourselves in!

As a direct consequence, customers are faced with IT consultants who are barely able to communicate with their maintenance team: SAP is often implemented based on a standard blueprint, taken from elsewhere (in the best case, from corporate back home) or written entirely from a finance or IT perspective, hence focused on administration and cost control, without relation to actual maintenance improvement needs (where the true ROI potential lies). More often than not, the customer's maintenance team has very limited ability to influence this blueprint, as they lack similar experience.

Overall PMS workflow in CCPG

This typically results in never-ending projects, spanning multiple fiscal years (in practice leading to unlimited budgets, as the implementation is spread across as many budget years as needed). The initial objectives of the project (when there was one, other than "we must deploy SAP") have long been forgotten. The whole chain of SAP consultants is then offered a free ride: in-house consultants, implementation companies, contractors and freelancers (sometimes moonlighting from another project or company), none of them being able to take responsibility for the project. Industrial managers on the customer's side are left to deal with this extremely frustrating experience.

In the end, failure is blamed on the customer "lacking maturity". We have seen the failure of a 100-million RMB rollout blamed on the company being disorganized (probably true, but not at all unexpected for a large Chinese asset-intensive enterprise with no previous exposure to such projects): in the end, the customer agreed to spend a few additional tens of millions RMB and has been doing so on a yearly basis ever since. This is the true miracle of SAP! To reformulate the question that we think plant managers should ask themselves: *how to use this miracle to fulfill our own improvement objectives?*

What to do?

First of all, if that is your company policy, acknowledge that SAP PM is the only tool at your disposal. Do not fight: the heavy politics involved may drain your energy (although in one case we have seen a reluctant plant manager getting promoted to a nicely paid SAP project manager position!). Realize at the same time that it is a very good tool, fully functional: corporate knew what they were doing, although neither plant management nor China was their priority.

Second, understand that the role of the various SAP consultants will be limited to IT – setting up, configuring the system, guiding you through its intricacies, making it work in the IT sense. This is necessary, considering how complex the whole thing is. Let them enjoy the unlimited budget provided by corporate to make the tool work, as you are going to need it! Do not, however, expect more than that from the consultants.

Based on a long experience dealing with maintenance projects in China, Siveco has developed two angles of approach to ensure the SAP implementation can achieve its objectives, on time, and to obtain ROI just like any other engineering project. Those two angles are summarized below.

Add a usability layer to SAP

Depending on the situation, this consists in adding another layer of software, designed for maintenance engineers by maintenance engineers, acting as a "user interface". Solutions designed by Siveco include the smartphone-based eHand and the tablet PC-based Mtv, both running seamlessly on a SAP platform.

The benefits of this approach are:

- A strong involvement of your maintenance engineers in the project, while they were often not really involved in the SAP implementation, providing an opportunity to work on maintenance improvement.
- A considerably improved usability of the system by technical team, ensuring consistent and high-quality input (failure reports, work completion, etc.) into the SAP database, as well as more usable output (reports, know-how, diagnosis support etc.).
- No conflict with SAP, in the sense that the proposed features (with strong focus on mobility) do not exist in SAP. This is usually proposed as an "inspection management mobile solution".

This approach should however be introduced with care, as the IT department will have to be involved (software and hardware, interface with SAP PM). We have sometimes experienced strong resistance by IT (which could take the form of a quote for interfacing services worth more than the project itself, immediately killing the deal).

Siveco's involvement as "owner's engineer" in the project

Siveco will involve in the SAP PM project in a role usually devolved upon the customer: project management (or assistance to), design of blueprint, data collection, definition of reports and KPIs, coaching and regular audits, and related improvement projects (e.g. the reorganization of spare parts inventory or workshops). Siveco's engineers are all maintenance specialists, operational from day one without any learning curve. Siveco boast China's most successful track record of delivering maintenance improvement through implementing maintenance systems. Unlike traditional SAP projects, but in line with normal engineering practice, the scope of work is clearly defined and performed under the responsibility of Siveco, with back-office support in Shanghai (data processing, specific expertise, access to centralized computer system and resources).

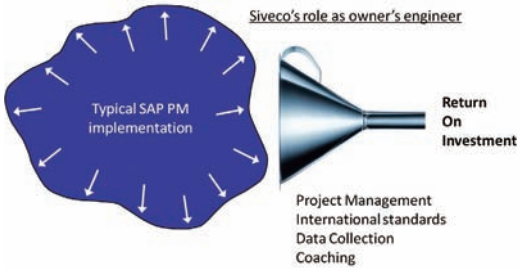
The benefits of involving Siveco are:

- A clear definition of your plant maintenance goals and the alignment of the SAP PM implementation with them, from blueprint to implementation and long-term follow-up.
- The streamlining of services offered by the various implementation parties, leading to a direct cost reduction and shorter project time. This is achieved through strong project management, a clear definition of each activity and quality control by experienced engineers familiar with both SAP PM and maintenance.
- High quality and relevance of master data uploaded into SAP PM (functional locations, equipment hierarchy, bill of materials, task lists, etc.) including the codes used (based on international standards[1]) and the data itself.
- A better utilization of the system, through coaching of the users by maintenance experts, more particularly during regular maintenance meetings (planning, analysis).

Allowing customers to achieve excellent ROI, this approach is also easier politically, as the services provided do not encroach on SAP services: this should be seen as a pure engineering project, Siveco engineers will not touch the system itself other than as end-users. The cost of such services is marginal compared to the total SAP implementation cost. For companies already using SAP PM or in the advanced stages of a project, Siveco's involvement can also take the form of audits (see Arkema case study in this newsletter).

The two angles of approach can obviously be combined depending on actual needs and, mostly, on the political the situation on the ground. Contact Siveco for advice!

Conclusion



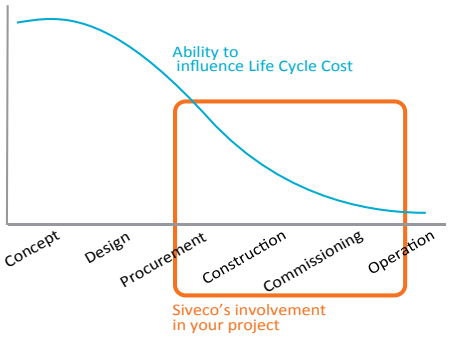
In a market like China where most managers are not familiar with IT projects and IT consultants totally unaware of maintenance realities, the two approaches described in this article can provide tremendously ROI with very little additional cost. In fact, the cost of Siveco's involvement will most likely be recovered immediately by the resulting reduction in additional services, rework and unexpected support required by the various implementation companies. The cost of additional software layers, if needed, will also be lower than the equivalent SAP user licenses. All it all, this also demonstrates that SAP projects, although miraculous in many respects, can (partly) be managed like engineering projects, with clear goals, deadlines and measurable ROI!

Link: (1) http://tinyurl.com/internationalstandardsEN

Preparing maintenance from the construction stage

The earlier the better

Experience has shown that the earlier reliability and maintainability are taken into account in a construction project, the better. These should be specifically addressed from the design stage of a project, as illustrated below.



Ability to influence Life Cycle Cost over time

This approach, which consists in paying more attention to maintenance earlier in the project, to reduce future operation cost, differs markedly from that of Chinese engineering and construction companies, which emphasize cost control during construction with progressive adjustments and modifications of the design as the project moves ahead. Local EPC companies still lack an overall lifecycle perspective, hence the difficulty to obtain as-built drawings or preventive maintenance recommendation from them.

While the resulting speed and cost advantage has proven critical to support the country's fast development, this construction-driven approach has also led to problems – most notably in terms of safety (deadly accidents at various construction sites have made headlines in the past few years) and maintenance (early replacement of major equipment, spiraling cost and reliability problems after a few years of operation). Partly as a result of this lack of preparation, maintenance is often purely reactive (firefighting) in the operation phase.

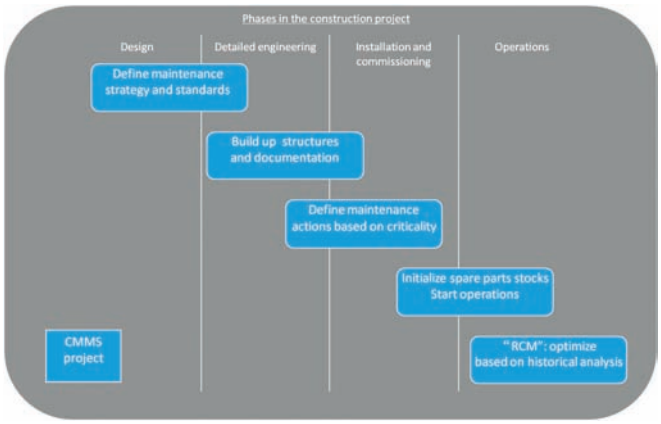
As a direct consequence of this lack of early concern for maintenance during construction, we observe that the quickest reliability improvements obtained during Siveco project in China are those related to design or installation problems, which should have been identified during commissioning, but instead go undetected for years. Quick fixes are applied, problems go unreported and no analysis is ever carried out. By conducting systematic root cause analysis, we are able to identify the problems and trace them back to construction issues.

The Siveco Way

Based on a long experience of greenfield infrastructure projects all over the world and lessons learnt in China in the past 10 years, Siveco has developed a specific expertise working alongside EPC companies and their equipment suppliers during the construction phase, ensuring smooth transfer of technical documentation from construction to operation, supporting plant commissioning and start-up with an accurate technical database and enforcing good maintenance practice from day one. Siveco China teams supports both owners and EPC companies to better prepare operations. An ongoing case with China National Electric Equipment Corporation (CNEEC) in Malaysia was covered in a previous newsletter[1], as well as another project with China International Water and Electric Corporation (WEC) in Sudan[2]. The same approach was employed with SwireSITA's waste incinerator in Shanghai Chemical Park[3] and the ongoing project to build the new French Embassy in Beijing[4].

In China more than anywhere else, the CMMS turns out to be the ideal tool to bring structure to what would otherwise be perceived as a very abstract concept ("Prepare for maintenance? But the equipment has not yet been delivered!"). A concrete (deliverable) system, the CMMS allows us to clearly define steps in the maintenance preparation project. The "high-tech factor" introduced by the CMMS is of course a key motivator for engineers involved in the project.

The figure below summarizes the Siveco approach for maintenance preparation during a construction project based on the utilization of the CMMS:



The major benefits of this approach are highlighted below:

Detailed, accurate and easily accessible technical documentation

By working directly with suppliers, detailed and accurate technical documentation (specifications, contracts, spare-parts lists, etc.) can be made available to operation engineers in a

structured manner directly in the CMMS, instead of being stored in containers, in shelves or even missing. This has a direct and immediate impact on the accuracy and efficiency of the work as well as on day-to-day decisions (where to purchase a part, how to disconnect an equipment etc.)

Integration with automation systems

The construction phase is obviously the best time to integrate the CMMS with automation and supervision systems (DCS, SCADA) that contain essential data for maintenance planning, as both systems can be designed and build accordingly. Large cost savings can be expected compared to similar integration performed in operation (with an existing supervision system). More importantly, more advanced functionality can be obtained, such as a full HMI integration (operators can access technical documentation directly from their supervision HMI) and more meaningful data transfer (e.g. traditional interfaces will transfer alarms and measurements to the CMMS indiscriminately, while in a joint implementation, the process will be designed to match the maintenance strategy).

Working jointly with DCS suppliers remains Siveco's privileged way to involve in large infrastructure projects. Siveco boasts a long history of cooperation with leading automation vendors in various industries (ABB, Alstom and GE in the power industry, PCVue and Singapore Technologies in urban transportation and many more). This was covered in a previous newsletter[5].

Support for safety during construction

The CMMS can be used before operation starts, with a focus on safety management: before work can be performed, a supervisor must approve related Work Permits in the CMMS, detailing the qualifications, tools, safety measures and other PPE required. By doing so, the supervisor takes the responsibility for the safety of the job and the traceability of the decision is ensured. In the event of an accident or near-miss, the event and its circumstances will be systematically documented and analyzed, leading to a Corrective Action Report or Hazard Report, with clear actions for improvement. Again, even near-misses are clearly documented and fully traceable decision paths.

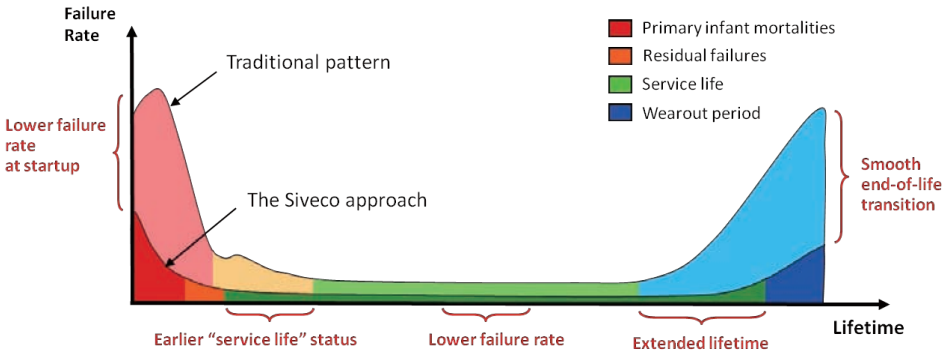
The CMMS is the main tool to support this process. Safety audits are then greatly simplified and can be carried out at any time – the lack of proper documentation being a punishable offense in itself. This idea was further developed in an article[6] published last year in Gongkong magazine (in Chinese only).

Support for commissioning

Engineers supervising the commissioning process can be equipped with mobiles, allowing them to record each step of the process and corrective actions if required, ensuring follow-up of actions performed by the construction company or equipment suppliers. Faults occurring at an early stage – commissioning, trial runs – can be accurately documented in the MMS historical database. Without a proper historical record, information will be lacking for future diagnosis, resulting in delays and temporary fixes rather than permanent resolutions of problems (for example design problems may not be identified and quick fixes may be applied instead, a very common practice in China).

The big picture

For a major infrastructure project, such as a large process plant, the approach described above could easily save millions of RMB every year in indirect or consequential losses: downtime, increased repair costs, recurring problems etc. By taking maintenance into account early, it takes less time to get into the "useful lifetime" part of the famous reliability "bath-tub" curve, while the "wearing out" part will be delayed.



The Siveco way and its impact on the bathtub curve

Links:
(1) http://tinyurl.com/RPIIMalaysiaEN
(2) http://tinyurl.com/meroweEN
(3) http://tinyurl.com/sitaEN
(4)http://tinyurl.com/frenchembassyEN
(5) http://tinyurl.com/tipsmayEN
(6) http://tinyurl.com/metroarticleCN

CMMS optimization delivers concrete results for leading chemical producer

The Arkema Changshu industrial platform

Arkema (www.arkema.com.cn) is a leading chemical producer with over 5.6 billion Euros revenue, for 15,000 employees in over 40 countries. With internationally recognized brands, Arkema holds leadership positions in its principal markets.

Arkema (Changshu) Fluorochemical Co., Ltd., established in June 1996, was the first foreign-invested company dedicated to the chemistry of hydrofluoric acid and CFC substitutes in China. The plant, started up in May 2000, has a production capacity of 20,000 MT Anhydrous Hydrofluoric Acid (AHF) and 35,000 MT FORANE®22 (with applications to air conditioning and the polymer industry). Over the years additional investments were made, namely a 3,000 MT organic peroxides plant (Arkema Changshu Chemicals Co. Ltd.) and a 6,000 MT vinyl compound plant (Changshu Resichina Engineering Polymers Co. Ltd.), as well as several joint-ventures.

Further developments are now under construction, which will eventually make the Changshu industrial platform Arkema's third largest in the world.

The CMMS project

In 2001, Arkema Changshu purchased a computerized maintenance management system from a leading U.S. software supplier. The implementation of this software, however, did not make much progress until 2005 and the appointment of a new technical manager, who considered the CMMS a necessity for the successful operation of a plant of this scale. The project was shifted back into gear and finally went "live" at the end of 2007.

During this 6-year period, the implementation was plagued by all the issues typically found in IT projects in China: inadequate contract terms (man.days rather than result-driven), lack of industrial expertise by the IT vendor, high turnover of supplier's staff and so on. Arkema's needs naturally evolved over time, as operations developed, a phenomenon compounded by weak project management.

By the beginning of 2008, system usage was described as covering "basic daily work and some analysis from preventive maintenance history". Some functionality was not yet in use and some re-work had to be done for which the software vendor still had man.days available. As the last project milestone was soon to be signed off, Arkema hired Siveco to conduct an independent assessment of the CMMS implementation and usage. The goal of this audit was to identify possible improvement and allow Arkema to best utilize the remaining days from the IT supplier.

The Siveco audit

The audit was conducted in June 2008 by two Siveco project managers (one focusing on maintenance management, the other on the CMMS itself). Lasting four days, the audit consisted in reviewing the technical database and work order history, an in-depth analysis of the equipment structure and interviews with users at different levels, from technicians to top managers, in all departments involved (maintenance, stock, purchasing). A report containing detailed recommendations was then prepared and presented to the Arkema team.

For more on CMMS audit, please visit:
http://www.sivecochina.com/en/services/maintenance-audit/

A standardized audit methodology

The report noted fist of all the excellent level of maintenance organization at Arkema Changshu and concluded on a satisfying level of utilization of the CMMS a few months after "go live", thanks to the know-how and efforts of the Arkema team. The necessity was clear, however, to move on to an improvement phase, i.e. not simply using the system for itself, but rather as a tool to manage, build-up knowledge, perform analysis and support decisions.

In line with Arkema's management priorities, a number of areas were identified where quick ROI could be obtained through simple enhancements of the system, more particularly with regards

continuing on page 10

Don't settle for services, demand results from Condition Based Maintenance!

This article was contributed by Areva 01db-Metravib. The Press Release announcing the partnership with Siveco China is available online on: http://tinyurl.com/metravibEN.

The partners

With 25 years of experience in Condition-Based Monitoring (CBM) 01dB-Metravib, a subsidiary of energy giant Areva, is an established partner for the setting up and enhancement of predictive maintenance programs in the process industry. With a comprehensive portfolio of vibration collectors and analyzers, sensors, onsite services and remote services, 01dB-Metravib reduces the overall maintenance cost and increases production uptime.

The integration of 01dB-Metravib's OneProD system with Siveco's CMMS Coswin into a common web-based platform allows the centralization of all maintenance-related data, thus optimizing the expert resources needed. In perfect complement of 01dB-Metravib's specialist tools, Coswin provides an overall plant management tool, a shared know-how database across all disciplines, ensuring the follow up of improvement actions. For both customer's maintenance personnel and 01dB-Metravib or Siveco specialists, all the necessary maintenance information is just one click away... and from anywhere in the world.

A joint, result-oriented and pragmatic service approach has been developed, making use of the two partners' complementary skills and capabilities. Return on investment (ROI) has proven to be in most cases just a few months, explaining why companies of any size are adopting CBM whatever their culture or the cost of the local manpower.

Case study in a paper mill

This article is based on the experience of a paper mill located in the South of France. The company aimed at increasing its production output without adding capacity, though a simultaneous increase in production speed and machine availability. At the same time, direct maintenance cost was to be cut down, primarily by decreasing bearing replacements and reducing oil consumption. An extensive audit assessed the feasibility of the project and a performance-based contract was established, covering the implementation of systems and the necessary follow-up services.

A practical application

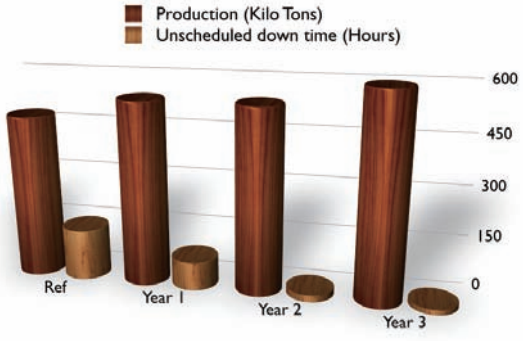
A practical application for a centrifugal pump monitored on a periodic basis is available at http://tinyurl.com/metravibcasestudyEN.

The pump in our example

This specific case detailed above proved the capability of the OneProD System to provide accurate diagnosis before repairs. It also shows the benefit of early detection (before failure) that well-implemented condition-based maintenance provides: in this case, the maintenance operation was planned and carried out at the best possible time without any production loss.

Overall result

The chart below shows the paper mill's improvement in production output and unscheduled downtime over a four year period.



Experience in the paper industry

Both partners boast extensive experience in the pulp & paper industry all over the world. Customers include global papermakers such as Norske Skog, International Paper, ArjoWiggins, Mondi Packaging, SCA, UPM, etc. as well as many local players.

How to make meter readings a true value-added process with your CMMS

Most industries rely on meter readings, at the very least to measure the consumption of electricity and water (utility meters) but also to follow-up production (cycles, running hours, quantity produced, and other operation meters). Meter readings are relevant to maintenance in two main cases:

(1) Upon reaching a certain value (or at a certain interval of value), a preventive maintenance task should be performed. This could for example be a lubrication job every 1,000 cycles or a part replacement based on actual operating hours (as opposed to a fixed time period); electricity meters would also be inspected on a regular basis and replaced over longer intervals.

(2) The meter value is useful for performance calculations. For example the computation of OEE (Overall Equipment Efficiency), a performance indicator commonly used in the process industry, requires input of production quantities and durations for the various manufacturing processes[1].

Measurements share similar feature with meters but differ by the nature of their values i.e. measurements can go up and down, while meters only go up until they are reset. Almost all CMMS available on the market today can handle both meters and measurement points, in one way or another. Our CMMS COSWIN provides extensive facilities to manage meters, most notably in terms of using the value not only to trigger a work order (a seemingly useful feature, in fact just a reminder) but, more importantly, to actually forecast the next work order date. This forecasting capability in COSWIN enables a true planning of corresponding resources – such as manpower, parts, tools, workshop space etc. – knowing that, based on industry statistics, planned work is approximately 50% more efficient than unplanned work. As obvious as the above statement may sounds, most other CMMS still use meters to automatically generate work orders when they are due – thus losing all the benefits of planning normally associated with meter-based maintenance…

This article will deal with a specific but critical part of the process: the reporting of meter values or measurements in the CMMS. This is how the process usually goes:

A technician starts his round, reading meters and recording values with pen and paper (usually in a pre-printed form showing meter tag numbers, with empty space to write down the value and some comments). The pre-requisite is that meters should have been tagged for easy identification – or can be identified by their type and location ("electrical meter in room 12"). The technician may then deal with other issues – technical problem with the meter, other checks and repairs etc.

When his round is over, he will go back to his base and either input data by himself in the CMMS or hand over this task to someone else (a "CMMS secretary"). This clerical task is often delayed, perhaps done on a weekly basis or sometimes irregularly. On the CMMS side, the input typically consists in entering or selecting the meter number (often in a very long list, which can then be filtered by area/equipment/process), to finally key in the value.

While it is relatively simple to so do with one meter value, it becomes very tedious when a large number of meter values have to be entered, as is usually the case. In addition to being tedious, this entire process is prone to errors at several points: the taking down of meter value on paper, reading of the written value and the manual input in the CMMS. In COSWIN the input process can be made slightly easier through the use of diagrams (see previous newsletter[2]).

Note that there is very little value added in this process, hence its delegation to junior engineers or clerks without understanding of the importance and underlying usage of this data. More often than not, the original purpose of the job is forgotten, becoming a purely administrative task. As triggering of work orders from the CMMS is mostly useless (no planning), the only output for this entire process is often limited to: a list of work to be done immediately and a historical record of values available for later study (perhaps with trending).

Knowing the limitation of the manual process described above, automatic meter reading is one of the solutions available, with values read directly into for example a SCADA system, then passed onto the CMMS through an interface. Siveco has also worked with technology partners providing remote reading capability through the mobile network (for example to collect meter readings and measures in pumping stations over a large are in a water distribution network). This however requires significant investments in hardware and, for large infrastructures, may take several years to implement: it doesn't solve the problem at hand and manual reading by a technician will continue to be a daily reality.

Apart from the actual meter reading, other – more value-adding – parts of the process have been left out, without support from the CMMS: assessing whether or not the value is normal, conducting further checks if the value if abnormal, diagnosing faults (meter problem or other), reporting work done (reset of meter, replacement of damaged part etc.) or requesting further action (meter replacement etc.).

From Siveco's point of view, technology aims at removing complexity and let maintenance people focus on improvement. Siveco China has developed mobile solutions based on very intuitive user interfaces and running on Microsoft Windows mobile phones. The solution, known as Siveco eHand, is further declined into several role-based applications. With the "Inspector" application, the complex administrative-driven scenario described above is totally transformed:

The technician starts his round and read the first meter. He inputs meter tags, followed by its value directly in the device (in less than 30 seconds: total 3 clicks and 2 value inputs with the phone numerical keyboard).

Meters or measurement points may of course be

tagged with barcodes or RFID chips for easier identification by mobile devices equipped with these technologies (among device suppliers: Motorola of the US, M3 Mobile of Korea and Chinese suppliers such as Refine Technologies), thus removing the need to manually input meter tag. The tagging process itself may take time (well managed, it can be finished in one meter reading cycle, i.e. the period required for all meters to be read) but it is inexpensive and doesn't change the overall process (meter equipped with device-readable tags are scanned, while others have their tag number keyed in manually).

Upon inputting the value, the technician can view previous records and get immediate feedback on an abnormal reading. He can then either correct a reading mistake (which can always happen) or assess the nature of the problem – meter problem, sensor problem, abnormal value leading to further maintenance action. He can also immediately report other faults (e.g. a broken display cover) with a photo or voice record, access the knowledge base (has a similar fault occurred before, what were its cause and remedial action taken?) and, guess what… he can make a phone call, for example to talk to an expert at headquarters. We, at Siveco China, are firm believers in the use of no-nonsense old-fashioned technologies, in total harmony with the latest gimmicks.

The scenario above is a perfect example of how inexpensive technologies can greatly simplify the utilization of the CMMS and help users focus on value-added improvement processes rather than admin. Immediate ROI are obtained by a reallocating human resources to non-clerical tasks or to other job (the "CMMS secretary" – usually a young engineers who could be better utilized), by reducing the number of errors and their consequences (missed jobs, rework). As in all CMMS applications in China, most ROI however will derive from maintenance improvements (better diagnosis by direct access to the knowledge base from the field).

Siveco eHand and other Siveco mobile solutions (see our website for details) are compatible not only with COSWIN but also with other CMMS (Maximo, Datastream, SAP etc.), adding tremendous value to the existing system. All development is performed at our Shanghai R&D unit, allowing us to efficiently tailor our application to customers' specific needs and to provide quick local support. For more details, contact us at info@sivecochina.com.

Links:
(1) http://tinyurl.com/tipsjuneEN
(2) http://tinyurl.com/tipsmarchEN

continuing from page 7

to simplifying the way preventive maintenance was structured in the CMMS and the management of strategic spare parts.

After the audit

Based on the actions proposed by Siveco, the Arkema team went back to their IT supplier to correct the most pressing issues. At the same time, Siveco was asked to help implement some of the recommendations, where maintenance know-how was required and to support the deployment of the CMMS to two new plants under construction at the time. Siveco also performed a similar audit in another unit of the group, Arkema Hydrogen Peroxide (Shanghai).

The way the preventive maintenance process was handled in the CMMS and its subsequent improvement is perhaps the best example of Siveco's no-nonsense approach. The existing preventive maintenance programs, although usable, were complex, with too many redundancies: Siveco had, during the audit, identified an opportunity to achieve the same result with a simpler, more flexible and leaner system. The same Siveco team came back to Changshu, this time with the assistance of a third consultant focused on the utilization of this particular CMMS, and conducted workshops with key users until the desired result was obtained. The joint team achieved outstanding results: the number of preventive maintenance work orders to be managed in the CMMS dropped by 75% (for the same actual tasks in the plant). The entire planning and scheduling process was thus immediately simplified, freeing time for improvement activities: analyses, optimization of job frequency, etc.

According to Bernd Kloepzig, Technical General Manager of Arkema Changshu:

> "Siveco's involvement has been very beneficial to us, delivering concrete achievements above and beyond of what our IT vendor could ever provide. The Siveco people proved to be true maintenance experts we could talk to: we understand each other. I would not hesitate to recommend Siveco for similar audits and improvement projects in the chemical industry. I am looking forward to a continuing partnership with them in future projects."

Leading chemical group to optimize inspection process with Siveco's eHand solution

August 19, 2010

Siveco China is proud to announce that leading chemical group Sichuan Lutianhua (www.sclth.com) has selected the eHand mobile solution to support the entire inspection and measurement process at its Luzhou fertilizer production base. In the first phase of the project, the system will cover the main processes as follows:

- Standardization and planning of inspections (routine maintenance and measurements)
- Ensuring jobs are actually performed, through mandatory scanning of asset tags (two-dimensional barcodes)
- Diagnosis aid for technicians based on reported symptoms and access to know-how base
- Optimization of plans over time
- Operation and management reports

The project has already started.

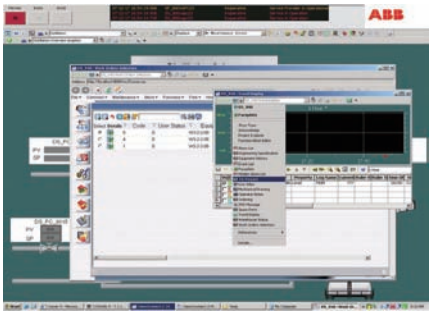
About Sichuan Lutianhua Group

Sichuan Lutianhua Company Limited is engaged in the production and sale of fertilizers and chemical bulks. The Company primarily offers urea under the brand name of Gongnong and synthesis ammonia. During the year ended December 31, 2009, the Company produced 810,000 metric tons of synthesis ammonia, 1.23 million tons of urea, 60,000 metric tons of thick nitric acid, 50,000 metric tons of carbinol, 40,000 metric tons of nitro phosphor complex and 40,000 metric tons of ammonium nitrate.The Company primarily distributes its products in domestic markets.

For more information about Siveco mobile solution, please visit: http://www.sivecochina.com/en/products/coswin-mobile/

Joint ABB-Siveco project in East Malaysia

Last November, Chinese construction company China National Electric Equipment Corporation (CNEEC) selected the ABB-Siveco partnership to supply an integrated DCS-CMMS for the Ranhill Powertron II (RPII) Combined Cycle Power Plant, currently under construction in the state of Sabah in Malaysia. The 190 MW power plant is set to start operation at the end of 2010. Siveco China engineers are working alongside project team members from ABB and CNEEC for the entire construction phase. COSWIN is being preconfigured at the ABB office in Beijing, with standard integration to the ABB 800xA DCS (see link for details[(1)]), before shipping to customer site towards the end of the year. The project team will then finalize the setup of the system, train RPII's maintenance team and provide babysitting support onsite to ensure COSWIN is effectively put into operation. Ranhill Powertron II is the first major cooperative project with ABB in Asia. The two companies are actively promoting the same concept to Chinese EPC companies building infrastructures all over the world.



Integrated ABB-Siveco system

Link: (1) http://tinyurl.com/integrationabbEN

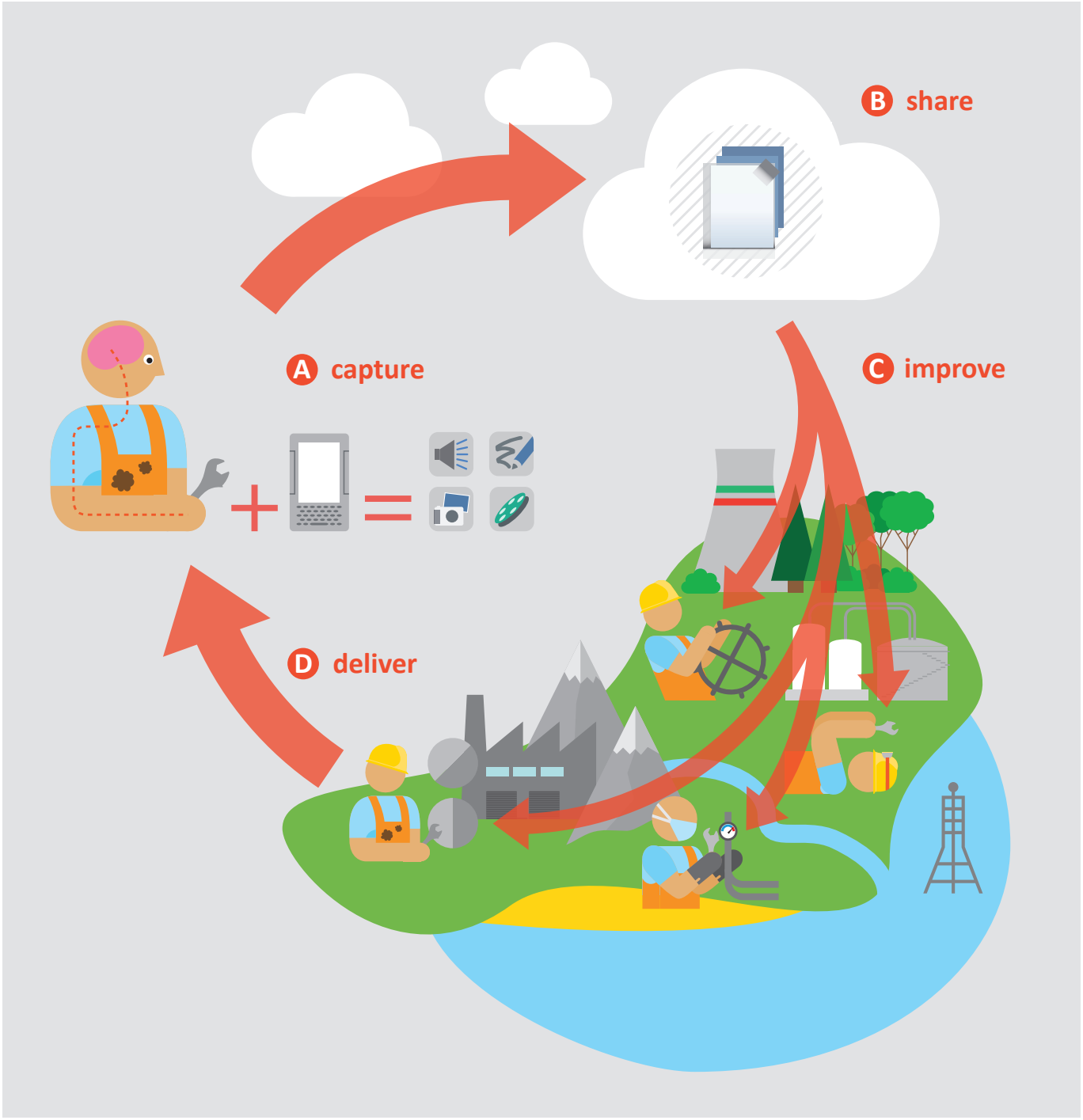
For more latest news, see http://tinyurl.com/siveconewsEN

Maintenance in China e-newsletter

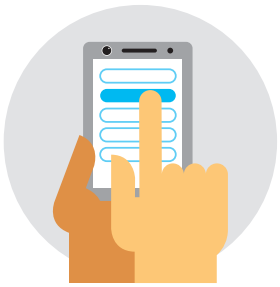
Read or subscribe to our monthly newsletter

http://www.sivecochina.com/en/maintenance-in-china/

亦有中文版可供参阅



the lean technician



Siveco provides a suite of mobile solutions offering support for the “worker of tomorrow”. Running on Tablet PC or Smartphone, the solution works with any back-office maintenance management system (Coswin, Maximo, SAP, Datastream etc.).

Contact us for more.

Siveco China

Tel: +86 21 6440 3226
Fax: +86 21 6440 0670
Email: info@sivecochina.com
Web: www.sivecochina.com