

Maintenance, Forgotten Supply Chain Link

Horror stories of badly designed and poorly maintained facilities are everywhere. A recently conducted “maintenance in China” survey estimates the indirect cost of maintenance, in the form of losses and consequential costs throughout the supply chain, at around 10 times its direct cost.

It is not uncommon for industrial facilities in this country to experience early aging, in the form of an increasing number of breakdowns after only two or three years of operation, the direct consequence of maintenance not being managed. Indeed, most Chinese organizations still operate in a purely reactive manner with a very short-term view focused on immediate cost cutting.

In China, abnormally low maintenance expenditures in early years inevitably lead to high unplanned costs later on. These take the form of early replacement of key equipment, production stops and operation losses. For instance, it is very common to find design problems, which should have been identified in the early stage of operations, several years down the line.

This picture is further complicated by some of the other aspects of “maintenance with Chinese characteristics”: a shortage of experienced managers as opposed to skilled technicians, fraudulent procurement (a field often overlooked by corporate controllers) and a lack of experienced suppliers, who often suffer from the same shortcomings as operators.

New facilities – preparing maintenance from the early construction stage

In China more than anywhere else, it is critical to take maintenance into account as early as possible, ideally from the design stage of new facility. This includes preparing maintenance plans (necessarily adapted to the reality of maintenance in China, including the experience, hab-

its and skills of local teams) for all facilities and systems (HVAC, compressed air, cranes, etc.). This approach ensures that routine inspections and other preventive actions are in place from the startup stage.

Existing facilities – assessment and preparation

When acquiring another company or facility, it is necessary to conduct an assessment of all buildings, systems and utilities, in order to determine the additional investments required to bring the equipment up to standard, and define preventive maintenance programs. The maintenance team should be trained on modern maintenance practice, especially in terms of preventive maintenance, long-term planning and optimization.

How to train local teams – the CMMS as a catalyst

Classroom training simply doesn't work in China. Western wisdom on the subject, which recommends auditing, training, organizing and then computerizing the maintenance department to drive efficiency improvement, is at best irrelevant, often counter-productive. Experience has shown, on the contrary, that a Computerized Maintenance Management System (CMMS) is the ideal tool to immediately structure the maintenance team, to build-up historical records to support decisions based on technical/financial analysis, to train the team on-the-job on the concept and practice of preventive maintenance and ultimately build reusable know-how. The resulting organization will be less reliant on specific people such as an expat manager soon to leave China or an excellent



Cut through the hype, back to basics

With all the talk about “green buildings,” energy saving equipments, sophisticated monitoring systems and other vendor fantasies, the basics of maintenance are often overlooked. It is not uncommon to see newly-built facilities incorporating all the latest gimmicks, providing only marginal benefits, while suffering huge inefficiencies. Worse still, those companies that have stuffed their buildings with sensors – which have a high failure rate, without in-house skills for repair and tied themselves to a specific supplier for many years to come. A vendor's dream come true, but a true maintenance nightmare.

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local technician headhunted by competitors. Typical ROI is well within one year, sometimes weeks when design problems are quickly uncovered. Finally the introduction of a high-technology tool has proven to be a powerful motivator for maintenance teams, too often undervalued.

From the trenches

Drug producers rely on clean rooms, where air is carefully controlled to reduce the spread of germs. A few years ago, an audit conducted at a multinational producer located in Shanghai revealed a fraudulent scheme whereby the maintenance team recycled used air filters, washing them with water and having them repackaged by the original manufacturer. The scheme involved maintenance, security and purchasing personnel. Luckily, no harm was caused. In fact, as often happens in such cases, everyone benefited: production was not affected, and the manufacturer increased its margin. Who are we to complain? Who would have been liable in case of a problem?

Retail business can be seriously disrupted by maintenance problems, as happened when a major hypermarket in China had to close for the day, because of an electrical failure with the main transformer. The backup diesel generator did not start since it had never been tested! Losses: one full day of business, all the food in the refrigerated areas, not to mention the company's image. This added up to several times the store's annual maintenance budget. The failure was traced back to a small electrical component that had been replaced with a cheaper locally-made part – a saving of a few hundred RMB. Simple maintenance routines would have prevented huge losses. A few years later, has this retailer learnt its lesson? Have they managed to instill the notion of preventive maintenance to their technical team?

Some companies have, from the start, taken control of their maintenance and recognized its impact on operations. SCIP Swire SITA Waste Services, which operates a modern waste incinerator in Shanghai's Chemical Industry Park, is one of them. The company is a critical element in the supply chain of giant chemical producers located in



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▲ Chinese factory workers check and maintain water treatment equipment in Daqing Hongwei Thermal Power Plant in Daqing city, northeast China's Heilongjiang province.

the park, which rely on the incinerator to burn hazardous by-products according to European standards. General Manager Philippe Al-louche commented: "From day one, we recognized maintenance as a key success factor for our project. A Computerized Maintenance Management System (CMMS) was implemented before startup. The system allowed us to manage safety right from the commissioning stage, by enforcing a strict work order process. The CMMS is used to educate and organize our team and to support management decisions. Reliability is the key to our business, serving chemical plants in the area, whose own operation would be affected by a prolonged downtime of our facility. Four years down the line, we have succeeded in creating a true culture of maintenance in our Chinese operation: maintenance is under full control, regardless of the inevitable personnel changes." □

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