

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

10.1 General Comments

After over one century and a half of existence, A&B still leads the business in many of its areas. The competition has been tough, that is why many years ago it realized that trying to win a market-share battle using hundreds of different strategies, one per each manufacturing site, was little less than impossible. This is why A&B decided to implement a Japanese model that has proven to be effective in that and many other countries. That is when TPM was shaped into what nowadays is A&B's IWS. As was mentioned in this research project, IWS pretends to really achieve an integrated working system in which all areas of the organization synergically come together and join their individual efforts into a massive one that struggles daily to achieve a common goal: success. The very continuance of the business depends on it.

Owning manufacturing facilities in so many places around the world, A&B had to look for a way to easily implement IWS in all of them. As experienced as A&B may sound in these terms, the cultural characteristics of every place it has facilities at are as contrasting and complex as different. In some places it went very smoothly, in others, it was tougher, yet never impossible, so far. In the particular site where this research project took place the company had to find a way to incorporate IWS into a non A&B culture since the site was an acquisition. Many plant managers have come and gone and different leadership styles have accomplished what many believe to be a miracle. The level of implementation of

global company standards is outstanding, but there is still much more to do and the effort needs to be sustained and oriented towards the company true expectations.

How A&B accomplished this is very simple. For this company, its most valuable assets are precisely its employees and when one works in and around what you value the most, no result is hard to achieve, if only, it takes more or less time. In this case, it has taken its time due mainly to cultural characteristics that Tlaxcala's people possess; this has been shown and justified during many sections of this work. Their reluctance to accept without question whatever instructions they are given is quite unique in the country. These people don't particularly like to be bossed around by foreigners, and this has made it tougher to make IWS a part of their daily lives at the shop floor. Today, they know what it is about, they know they have to carry it on and most of them actually understand and accept what it is for, particularly the youngest ones, most of which were hired already under A&B's management. Those are the ones that the site has to put its hopes in, these new members of the organization that know no other way to work but the one that IWS preaches out loud. Eventually, the old force will be replaced by new generations that will live surrounded by IWS. Perhaps it will take still another 5 years, perhaps even more, who knows, but as for the moment, A&B requires not to lose its effort to put IWS into every single activity it does, always abiding to the company's PVP which will ensure a fair and decent treatment of whatever issues it has to deal with, may it be performance bonus establishment or a new machine being set up at the site.

In this sense it can be concluded that cultural characteristics have actually made it difficult to implement at 100% reliability all the global company standards, and the new technology transfer project that was the core of this research project does not prove otherwise. People were reluctant to get involved in what seemed much more work while

still getting the same amount in their paychecks. They still haven't fully accepted that all this "extra" work is nothing more than a time-investment to later on obtain better work conditions that will make their lives easier and their jobs so much better. They can't quite understand how working systems can actually prevent machines from failing, quality defects from appearing or safety incidents from happening. Trying to convince them that integrated working systems can actually achieve that has been a major challenge. Small daily victories will eventually lead to the final conquest of the cultural struggle.

10.2 Lessons Learned

The time has come now to conclude about each specific objective that was set at the very beginning of this project.

As for the main objective, this document shows a detailed and justified analysis of how both technical and cultural factors interact and affect the way the technology transfer project was carried out at A&B's manufacturing site in Tlaxcala. The particular issues that affected the IWS implementation process are described in Chapters 7 and 8, with a summary of both in Chapter 9 which is the case-study.

The first chapters clearly established the main socio-cultural characteristics of the state where this research project took place along with a general overview of the Mexican working culture. As it is mentioned in the first few lines of this document, any attempt to understand the current situation at the plant is worthless if the general background is ignored. This meant that a brief analysis of the cultural, social, economical and even political situation of the context where the site is located was essential before any comments could be given on the particular issue that is the main research topic of this

project. Not being sociology, anthropology, economics or politics the background of the author, perhaps the analyses that are presented are not as deep and thorough as the case may require, but all the effort was put to achieve an objective and concrete approach.

Once the situation of the site was understood back from its roots, A&B's corporate culture was presented. This was done to first of all fully understand why this problem exists, and then, how the company itself tries to deal with it. Along with the corporate culture, the IWS principles were presented followed by the general expectations of the company in this sense towards new engineering project, such as the one we discussed throughout this document.

Once the status of both parties was identified, a series of both technical and cultural aspects that are believed to be the most critical ones in terms of easing or preventing the implementation of company standards in the development of the technology transfer project were listed. An analysis of each point is given and a solution recommendation was issued for all of them.

In terms of cost analysis, the company set heavy restrictions on this data, so just a few basic examples are given throughout the document, mostly the ones considered to have a higher relevance. It is possible to mention, though, that in general, the project costs relating to difficulties in IWS implementation add up to about 15% of the total budget, considering all the rework that had to be done, along with the extra supplies and spare parts that have to be brought in urgently to meet the project's tough deadline, and not to forget all the losses that are due to delays in start-up and quality defects that were identified and that sent many tons of paper back to the stock preparation area.

It was finally recognized that there is still too much work to do to enhance the way culture and technology co-exist at the workplace. No extra attention should be given to one

or the other because a gap will always be left in the unattended one, a gap that can grow enough to have disastrous effects on the general situation of the company. As much as a company can invest in new and better machinery, it has to invest both time and money into understanding how its workers feel, live and think, both inside and outside its facilities in order to find better and more efficient ways to implement their corporate cultures, harmonizing with the local one as well.

This particular company has to understand that not only are the good things and accomplishments to be shared globally, it constantly promotes learning from the best, the fastest, it constantly looks for the benchmark to reapply from, but it tends to forget, that human nature leads us to learn from our mistakes or that of others. Failures and successes are equally valuable in terms of learning; one can learn from the benchmark what it did well to achieve a goal, but one can only learn from the unsuccessful what not do or how not to do it, perhaps this can even be a far better example. In other words, A&B must come to understand that whatever went wrong in one area of the business is not really something to be ashamed of; it is the total opposite, a great opportunity not to make the same mistakes again.

As this research project clearly proves, the design process of new technology is critical for a given project's success. There is already design for assembly, for manufacturing, environmentally friendly, etc. Why can't there be a design based on cultural factors of different regions? As difficult as it may seem right now to conceive it, imagine all the potential problems that could be solved before they ever appear just by taking into consideration how a specific region's people think, feel and act. Plenty of re-work and expensive mistakes can certainly be avoided.

10.2 Conclusions

This research project achieved its purpose which was to investigate and analyze the critical factors, of both technical and cultural nature, that affect how IWS standards can be implemented during a technology transfer project in a manufacturing facility.

It shows how cultural problems can severely harm the business, and also that when technology is not developed to easily blend into the place where it is supposed to in terms of ease of operation, inspection and maintenance, a series of issues appear that require immediate attention, distracting the efforts of the team members in matters that could and should have been very well prevented if only basic details had been taken into account in the design stages such as average height of those who were going to operate the machine or how graphical they prefer instruction manuals to be. A serious amount of re-work is usually the outcome of such design flaws. If each one of them is checked out on an individual basis the cost might actually look ridiculous, but once they are all added up, the obtained figures may easily resemble the area's monthly maintenance and repair budget. Technically speaking, whenever the designers don't take into account the altitude at which the motors and pumps will be operating, they accept the risk of the machine not working properly, if not at all; whenever someone forgets to make corrections to mechanical drawings and carries on the mistake to the next version, who knows what may happen in terms of delays and losses. When things such as these happen, the result is that the technical staff is devoted to solving problems instead of working in the systems that the company expects the project to be run by such as AM, PM, FI, etc.

At a cost of several thousand extra dollars, which could have very well been saved, this technology transfer project was definitely not an example of a smooth implementation

of IWS from the design over to the delivery stages. The site has certainly learned a lot from it and most likely (and hopefully), will not ever fall into the same mistakes or omissions again. IWS has already developed a tool to prevent this; the problem is that the site workers tend to see this document as more paperwork, instead of a valuable tool that will help prevent lots of expensive mistakes from happening. This tool is the GSUM (Global Start-Up Management), which is a checklist that covers all the stages of a technology transfer project, from design to start-up, and that leads step by step through a series of considerations that must be satisfied in order to guarantee a successful and hassle-free start-up, this document is presented, in a modified version in Appendix D.

In future projects it is highly recommendable to ensure that the communication process between the different areas flows in a much more efficient way, with access to real-time information (except for highly restricted one) for the site engineering and production teams, the US corporate one along with the suppliers, this way many misunderstandings can be prevented and the final outcome will be closer to what is expected. Prior to the beginning of an engineering project it won't hurt to review the case-study developed within this document to let the executors beware that a technology transfer project is not only about technicalities, the needs of the people that will be involved on an everyday basis with the equipment have to be taken into account to avoid further problems.

There needs to be much more involvement from the pillar owners at the site in order to really recognize how each pillar can help with within its scope of influence. This will greatly help to maximize the efficiency of IWS methodologies that can help the organization stay within the desired "zero loss journey". No effort should be spared as far as record keeping goes because both the mistakes and the achievements need to be documented in order to allow learning from them.

IWS is not a matter of isolated efforts; it requires the participation of the whole organization, an integrated organization. Each pillar provides specific approaches to specific problems; its members have the know-how and the huge commitment to contribute to the company's goals. The resources and the information are there for whoever wants to make use of them, it is just a matter of committing to the philosophy that for the past several years has reinforced the position of the company and that allows anybody to forecast a great and successful future at short, medium and long terms for the company.

While globalization is pushing to be more and more competitive, to be everywhere, to be the best ones and beat everybody else, there is still a great need to recognize the value of regional traits that cannot just be forgotten about because otherwise, no globalizing effort will be ever worth making.