

How to improve competitiveness and productivity by managing the impact of fatigue and chronic back pain in key employees.

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The Verti-Mark Group is a marketing consultancy concentrating in business-to-business vertical market and segment marketing strategy design, planning, execution and administration.

The impact of globalization on the paperboard industry is undeniable. As a result, there are many operational costs that without exception must be even more precisely managed than ten years ago. Some of these costs are constants like the cost of energy. Some costs like experienced and highly skilled personnel add value. And some costs are escalating aimlessly while never adding any value to the product or the process at all, like the cost of health care.

Taken together the costs of doing business in North America seem to be conspiring to erode productivity. But taken apart, some of these costs may be more directly manageable than once thought. Dealing effectively with Muscular

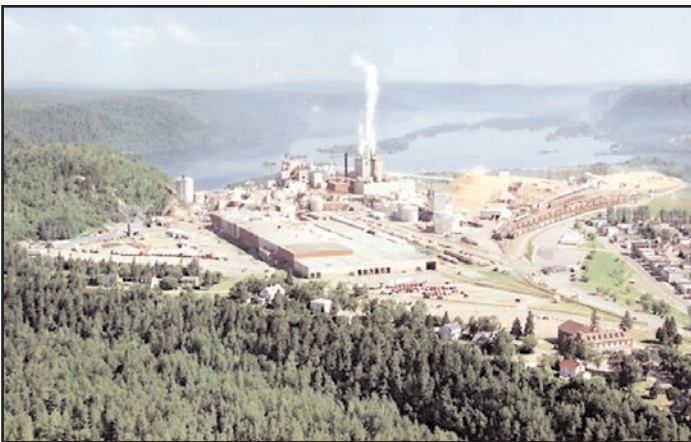
Skeletal Disorder (MSD) occurring in the paper and paperboard industry is one example.

TAKING CARE OF YOUR MOST VALUABLE ASSET. YOUR PEOPLE.

Improvements in automation-led productivity in the last ten years, together with older machines, consolidation and lower-priced overseas competitors are all having an erosive effect on today's workforce. As a rule, whenever personnel change occurs, usually only the most experienced maintenance, engineering and production people remain. The inescapable conclusion is that the average age of a worker in the industry is older now than the average age ten years ago. Yet veteran personnel are being asked to do more. And although they're usually willing to do it, they're often asked to carry an unbalanced share of the productivity and performance burden.

But there are workload strategies that are good for success (performance) and also improve the way people do their jobs (productivity). If workplace safety and productivity are to coexist in an industrial environment then the workers' comfort and, ultimately his health, are prerequisites. The outcome must be nothing short of alert, intelligent, creative, motivated and safely equipped maintenance, engineering and production people. No manufacturing or process operation can compete successfully on the world stage without them. This is a holistic approach to productivity. And

The Smurfit-Stone paperboard mill in La Tuque, Quebec employs 650 people and running two machines making 430 MTPY of coated white-top linerboard, solid bleached linerboard and foodboard.



because these people are the backbone of a process enterprise they must be consulted. Fernand Lebel knows that.

Mr. Lebel is the Health and Safety Manager at Smurfit-Stone's 650 person La Tuque, Quebec mill. It's at this location where the company makes its premium white top linerboard. The mill is running two large board machines.



Notice this man's slight counter-lean to the right. He's compensating for the load on the left. The time this maintenance man spends "leaning against the load" could be eliminated with an ergonomically balanced tool-carrying program. The incremental Muscular Skeletal Disorder (MSD) injuries he's incurring daily will have implications on the quality of his work on the job and on the quality of his life at home. And on the cost of healthcare for everyone.

THE PROBLEM CLARIFIED. HOW MUCH CAN ONE MAN CARRY SAFELY?

To compound the "fewer people doing more work" problem, many experienced maintenance and engineering veterans are routinely carrying 10 to 12 pounds of electrical, mechanical and special-purpose hand tools, devices, instruments and communication gear. They're carrying their gear significant distances for extended periods of time, (Often 7 hours a day. Perhaps longer during shutdowns). And they're regularly carrying their gear on narrow catwalks, up access ladders or into hot and tight quarters and confined spaces. Rotating machines and process equipment are a constant part of the environment. Improperly stowed personal

gear can cause potential process upsets and represent a safety hazard.

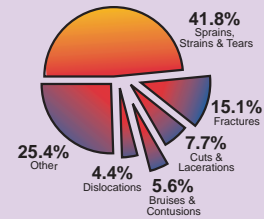
But there are other less obvious productivity-killers. Take for instance the process of safely and comfortably strapping on and adjusting the necessary hand tool, device, instrument and communications gear every morning. This is a time-consuming process for each member of the maintenance and engineering staff. And every time they break for lunch or go into a department meeting they have to disassemble and then re-position all their gear yet again. Additionally, because the carrying rig is often assembled from dissimilar, sometimes homemade, variable quality, and usually generic, off-the-shelf components it's not consistent from man to man. As a consequence, Lebel found that uniform training in health and safety best practices all but impossible.

But the issue that concerned Lebel most was the carry-forward effect of poorly designed and jury-rigged tool carrying gear on the long term health of his maintenance and engineering team. Lebel reasoned that the experienced maintenance and engineering team would be more alert, creative, innovative, safe and proactive if he could protect them from unnecessary and chronic fatigue and recurring back pain. He had no wish to alter or amend the array of hand tools, devices and instruments the users needed to carry. Or for how long to carry them. Or where they carried them in the mill. But he concluded that he could find a uniform way to help his team be healthier and more

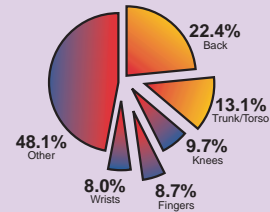


Ten to twelve pounds of gear is a lot but not an unusually heavy load.

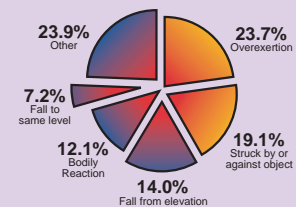
Most Frequent Nature of Industrial Injuries or Illnesses



Most Frequent Part of the Body Affected by Industrial Injuries or Illnesses



Most Frequent Event Causing Industrial Injury or Illness



The most frequent contributors to Muscular Skeletal Disorder (MSD).

comfortable. However, it's the men doing the work who ultimately will know what works and what doesn't. Lebel was compelled to respect the culture and the custom among those with the experience. And so when members of the maintenance and engineering staff at La Tuque approached him with the idea of using a flexible, self-customized and ergonomically balanced tool carrying solution from

Duckbill Enterprises in Trois Rivières, Quebec, and Self Tools, Inc in Grand Rapids Michigan he leapt at the opportunity to test it.

A SCALEABLE REMEDY

The Duckbill system is comprised of three ergonomically designed and constructed component parts. They are; 1) An industrial suspender arrangement, 2) A lightweight, industrial belt, and 3) An array of interchangeable tool carrying modules (some of which are custom-made for the men and their tools.) The system is unique in that the design of the component parts integrates a "separate but equal" approach to carrying hand tools, devices or instruments 1) comfortably, 2) ergonomically 3) productively and 4) safely.

1) Comfort is achieved by the curve of the shoulder pads around the neck, by the wide, non-cross-over dorsal yoke in the shoulder-blade area of the back and by the adjustable terminals on the vertical straps.

2) Ergonomics is achieved by the users' ability to position and re-position individual modules per his preference in both the horizontal (waist) and vertical (chest) planes. If the daily tool selection changes or the load changes from task to task the user has the ability to reposition the tool modules accordingly. This last point is significant because ergonomics after all is the science of crafting the task around the worker – not the other way around.

3) Productivity is achieved when the users, satisfied with the way they have self-tuned their gear, are no longer required to readjust each tool holster at the start of a shift, between tasks, and after every break or meeting. Productivity is further enhanced by the blending of comfort and ergonomics in a single platform.

4) Safety is a function of training of course, but also the intelligent design of tool modules to fit the tool and the man and the Duckbill systems' rugged industrial construction. The built-in redundancy of dual safety fasteners per tool module combined with full width velcro on the inside of each unit combined with a belt tunnel rather than a belt loop con-



This is an ergonomic and balanced tool carrying system similar to the one used by Smurfit–Stone at it's La Tuque/Quebec mill. The more than 40 interchangeable tool modules allow the user to tune the rig to his unique task-set. The user can position or re-position the modules on the belt/suspender grid to achieve the right weight allocation for his frame. The modules remain in position unless they're moved to reallocate weight.

figuration is a further safety precaution and guards against accidental loss.

According to Fernand Lebel, "It was Duckbill's unique approach to neutralizing back pain and worker fatigue, Duckbill's willingness to adapt their product to our mill, and the fast, creative response of their prototype team that ultimately led to the first order." Even so, Duckbill's Weight Allocation and Suspension Program (W.A.S.P.) and the customized modules making up the Personal Interchangeable Tool System (P.I.T.S) had to hold up in use.

The environment in the La Tuque mill is a demanding one. Perhaps even more demanding are the rugged men of rural Quebec who know a faux when they see one and won't hesitate to tell it like it is. The frequent back, neck and hip discomfort experienced by the men - - caused by constantly "leaning against the load" they carry at their waist -- has been eliminated. Further, Smurfit-Stone corporate has health and safety guidelines that must be followed. And OSHA has recommendations that need to be considered.

CONCLUSION

Of the initial six users in the 2003 pilot test at Smurfit-Stone's La Tuque mill, three reported their back, neck and hip pain had been eliminated. This intended result and the users' almost immediate acceptance was

enough to prompt Lebel to order more gear from Duckbill. But there were three other unintended benefits. First; a commercial benefit was derived from the built-in flexibility of the W.A.S.P and P.I.T.S. approach. This flexibility is the result of the universal ergonomic tool carrying platform that allows Lebel to equip different disciplines and trades within the mill with task-appropriate gear. From supervisors who carry some, to plant electricians who carry a lot – all without changing the platform. Second; and just as important to Lebel, in addition to the per-person flexibility, his logistics are greatly simplified by a uniform tool carrying solution. Third; Lebel can now build an archive of documented best practices, improve training and reduce accidental tool losses. But most importantly, his team is healthier.

There has been a productivity imperative at work in the North American economy since the late nineties. Simply stated, it says that if you don't beat the industry averages, your chances of winning on the global stage are slim. But that doesn't mean that the health, morale and professionalism of the people who do the work must be compromised.