Blending Corporate Ergonomics with European and French Regulations

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ABSTRACT

For global corporations with operations in France, a challenge has been to merge the European Union (EU) and French ergonomics regulations with the company health and safety requirements in order to achieve efficient and effective results without unnecessary work. In this case study the company's corporate ergonomics program focuses on reducing work-related musculoskeletal disorders (WMSD) and is more detailed and prescriptive than EU or French regulations. This paper details the way a global company with manufacturing operations in France meet both company and governmental regulations related to WMSDs. In 2008 a comparison of the company and EU requirements was completed. This paper describes the process, from the initial audit to the ongoing implementation of the ergonomics program as part of the health and safety management system throughout France. Using the company's risk reduction process and job assessment tools resulted in compliance with EU and French regulations and standards. It took only a year to see the first jobs evaluated and the reduction of unacceptable WMSDs risk exposures due to ergonomic intervention.

Keywords: Ergonomics Programs, Industrial Ergonomics, Macroergonomics, Participatory Ergonomics, Work-related Musculoskeletal Disorders, European Ergonomics, French Ergonomics

INTRODUCTION

EU safety and health legislation is based on a 1989 framework directive that specifies the principles of health and safety prevention and risk assessment. This directive details the guiding principles and defines the minimum requirements that must be implemented in order to promote continuous improvement in workers' health and safety. This directive has two goals: 1) place all European companies on an equal footing; and 2) ensure a high level of protection of workers to avoid pain and suffering while minimizing loss of company income due to risks related to work. Additionally, the company in this case study requires a high level of employee protection and improvement of health and safety and focuses on both regulatory compliance and proactive health and safety approaches. The company's ergonomics program is one of these approaches.

If risk prevention is not coordinated within a company, each site could, theoretically, meet local and company requirements with a job or specific program. But what use is it to accumulate tools for risk analysis related to work activity if they are not coordinated to serve a company's health and safety prevention strategy? What must be done faced with this potential situation?

This case study details the work carried out by France operations to implement the company's ergonomics program to reduce work-related musculoskeletal disorders (WMSDs), understand and respond to all the requirements of European directives, and integrate the program into the company-wide ergonomics prevention approach in the company.

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Prevention Requirements of EU and French Regulations

There are minimum requirements of the European Directive 89/391 - OSH "Framework Directive" on the European Agency for Safety and Health at Work 1989 that an employer has to implement to promote continuous improvement of health and safety (EU Directive 1989). From a global point of view, a directive is a tool to harmonize national legislation. EU directives are legally binding and have to be transposed into national laws by the Member States. The directive establishes what the results must be, but each State can manage how to achieve the result. These minimum requirements are detailed in the French regulation with the same structure as the European Directive (EU Directive 1989):

- Keep a list of occupational accidents and illnesses.
- Evaluate all safety and health risks of workers.
- Designate worker(s) to carry out activities related to the protection and prevention of occupational risks.
- Implement measures which assure an improvement in the level of protection afforded to workers and are integrated into all the activities of the undertaking and/or establishment at all hierarchical levels
- Ensure that each worker receives adequate safety and health training.
- Consult workers on introduction of new technologies.
- Inform and consult workers and allow them to take part in discussions on questions relating to safety and health at work.
- Consider worker's capabilities as regards to health and safety when assigning tasks to workers.

The obligation addresses the implementation of a global process of prevention in the company. The Directive's approach is based on risk assessment in the company, followed by implementing a program of actions and training to improve health and safety among workers. For continuous improvement, the process needs to be actualized by consulting all the staff every year.

To evaluate this approach, an initial review was conducted at all company sites in France. All other company requirements were integrated through the company's health and safety management system. The aim of this review is to identify the health and safety processes already in place at each site, and then to interview all employees to understand their knowledge of and attitudes toward these risk management processes.

Initial Review

The initial review was conducted between October 2008 and June 2009 at all France operational sites. Interviews were conducted at all levels of the company, that is to say, from the site manager to operational staff.

The review identified these positive points:

- In the company, occupational accidents and illnesses are monitored in a common system.
- The company requires each site to implement a health and safety program with identified actions to eliminate risk, conduct training, and monitor compliance through :
    - Regularly scheduled audits to verify plan addresses risk prevention
    - Quarterly progress reviews
    - Risk assessment teams include health and safety committee members
- An organization was established with appropriate resources, i.e., central and local knowledgeable and skilled resources are in place to implement the system.
- Change management processes were in place at the main factories to address new products, new working areas, etc.

The review also identified these areas for improvement:

- **Programs**:

  - Risk assessments from various locations were not always comparable which made prioritization across all France facilities challenging.
  - Actions were often initiated as reactions to incidents instead of proactively addressing issues identified in the risk assessments.
  - Additional ergonomics risks (handlings, repetitions, and awkward postures) were identified during the visits.

- **Resources**:

  - Health and safety resources on site needed additional training to more efficiently and effectively address ergonomics risks identified during the visits in the locations;
  - A process to assure communication of assessment results to operational staff was missing

- **Change Management:**

  - Updating risk assessments is conducted at least annually but also needs to be incorporated as part of a management of changes process.
  - Opportunities to incorporate health and safety improvements beyond ergonomics were not always taken.

ACTION PLAN: IMPROVE PREVENTION IN FRANCE OPERATIONS

A team composed of several operational areas worked to provide a concrete action plan to improve the process of prevention that was audited. Based on the findings, the proposed actions were structured on two axes: what needs to be improved and what does not need to be improved. The needed improvements included:

- Optimize the risk assessment tool by using the company model.
- Systematically initiate an action and training program based on risk assessment priorities.
- Update risk assessments to incorporate changes, modifications, and anticipated risks associated with new projects.
- Integrate operational teams when assessing risks.
- Implement the company's ergonomics program to reduce the potential WMSD issues that were identified during site visits, i.e., handlings, repetitions and awkward postures.

This action plan was presented to France site managers for review and validation. The stated goal was to optimize risk prevention because existing programs in order to more effectively meet the overall objectives of the EU Directive, the French regulation, and the company policy, specifically assure the protection of employees at work. The numbers of accidents and illnesses were trending upward.

Keep a List of Occupational Accidents and Illnesses

The human (accident and illnesses) and financial (direct cost of accidents and occupational illnesses) consequences were detailed during this meeting, providing strong arguments to support the plan.

To present this information, it was imperative to have a good list of occupational accidents, incidents and illnesses. This part of the European regulation is highly specified in the French regulation and is closely monitored by French authorities. In fact, each company must have a register of occupational near misses and incidents. But each accident or illness that needs medical treatment or more needs to be reported to French authorities, whatever the gravity of

the injury. Each event is listed and then tracked by the authorities in terms of severity and costs.

We used these lists of accidents, illnesses, and diseases to graph the trend in WMSDs at the company operations in France. In 2009 ergonomics issues became the primary source of incidents related to occupational activity (see Figure 1).

This information confirmed the proposal to prioritize the company's ergonomics program.

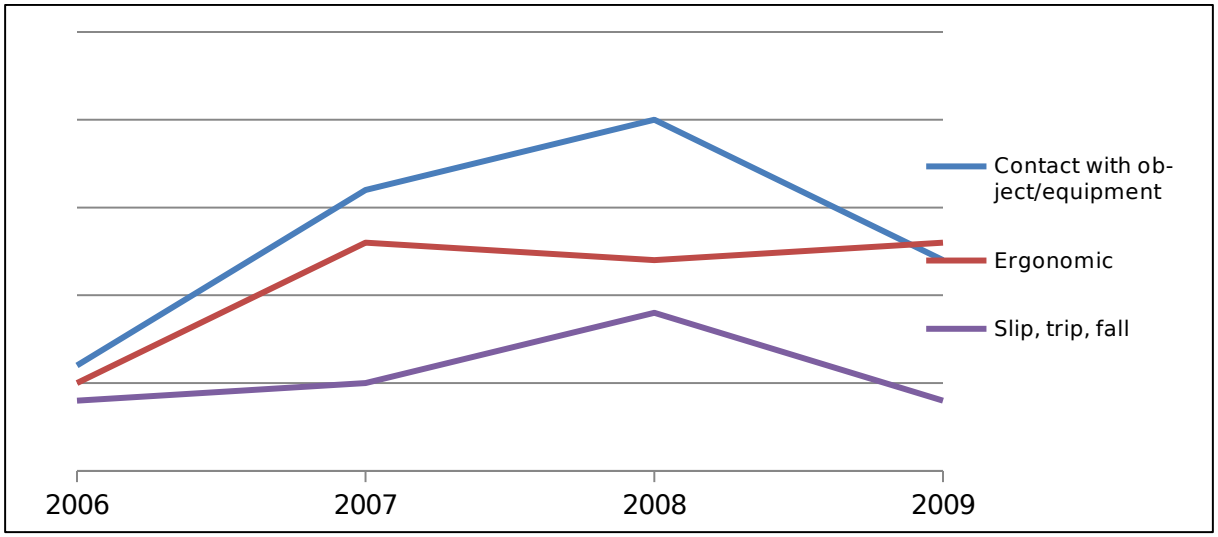

Figure 1: Trend of Accidents in France Operations

In addition, a financial analysis of the costs of these WMSDs was very influential in supporting the proposal to implement the program. It was based on direct costs related to WMSDs at company operations in France. As this information is confidential, the explanation will deal only with general data available in France.

The French National Agency for the Improvement of Working Conditions (ANACT) estimates a WMSDs cost between €100 to €500 per year per employee for all employees, even if many of them do not have a WMSD (ANACT). This represents for company operations in France a significant cost each year. If we consider that the indirect costs of these accidents and diseases are between 3-7 times the direct costs, productivity of some of our sites could be improved by working initially on improving health conditions and safety of workers.

At the end of this presentation, the action plan was validated. The France manufacturing management wanted to act quickly by engaging projects to improve working conditions. So, the first step was to optimize the risk assessment tool by using the company's model to determine if job analysis risk assessments would confirm the trends of occupational accidents and diseases.

Evaluate All Safety and Health Risks of Workers

From the EU point of view, there are no precise rules explaining how to assess risks. The French regulation provided these details in 2001:

- Identify hazards and risks in each work unit of the company for all occupational activities.
- Transcribe the results of risk assessments into a single document, accessible to all employees.
- At least once per year, update the assessments for any significant change or new information that may alter the initial assessment.

Who is exposed to a risk? What kind of risk? When? How? All these questions must be addressed in the risk assessment. However, even as initial assessments complied with regulatory requirements, it is a challenge for countrywide or global programs to be more proactive and implement programs and adjust resources in constantly changing manufacturing operations.

The implementation of the company's risk assessment model allowed us to retain regulatory elements that were available in the previous assessments and to give more consideration to the risk assessments. Indeed this model defines a consistent level of exposure where preventive action can more proactively be addressed.

Following this initial step, which consisted of transferring the previous assessments into the new model, jobs were assessed. In the end, two categories were extracted: jobs that required preventive actions or programs or those jobs where levels of protection and prevention were limited to maintenance and/or monitoring.

In 2009, the company's operation in France was composed of seven sites, and more than 9000 job evaluations were done. Forty percent of the identified health and safety incidents were related to ergonomics. The recommendation of the audit was to act on preventing WMSDs. Thus manufacturing managers supported WMSD prevention by implementing the company's ergonomics program.

With these assessments, all sites were able to identify a list of jobs for which improvement projects were needed. It was necessary for each location to have a knowledgeable ergonomics resource.

The first part of the ergonomics program needed to be implemented while ensuring that the minimum requirements of the Framework European Directive were addressed:

- Implement measures which assure an improvement in the level of protection afforded to workers and are integrated into all the activities of the undertaking and/or establishment at all hierarchical levels.
- Ensure that each worker receives adequate safety and health training.
- Consult workers on introduction of new technologies.
- Designate worker(s) to carry out activities related to the protection and prevention of occupational risks.
- Inform and consult workers and allow them to take part in discussions on all questions relating to safety and health at work.

Involving Workers in the Program

The company's ergonomics program is based on the implementation of an internal organization at each site and the achievement of specific objectives. A key objective for each site is to have an internally "certified" ergonomic resource, which also meets the regulatory requirement to designate workers to carry out activities related to the protection and prevention of occupational hazards (Larson, 2012).

To be certified, a worker must develop and implement a minimum of projects after taking ergonomics training. An ergonomist approved by the company's corporate ergonomics ensures that the resource has correctly identified ergonomic risks using the company's tools and that the project has improved work conditions and prevented risks (Larson, 2012). In France there is no specific regulation on the kind of certification or degree a professional ergonomist must have to work in a company. The company's ergonomics program is much more prescriptive about this. In 2009, 10 people were trained and 4 were fully certified in France locations.

A certified ergonomics resource at each plant is also an indicator that management looks at each quarter. Each indicator, when it is below the level required, is systematically questioned. This shows both the support of the management but also the desire to improve working conditions. This focus on risk prevention promotes the development of skills in ergonomics globally.

Implementing Measures to Ensure Improvement

We have seen that risk prevention makes sense when an organization implements a program to improve the health and safety of workers (Larson, 2012, Vink, Imada, Zink, 2008). The risk assessment results identify the jobs that may need to be improved, but this is just the first evaluation that needs to be completed. The number of work areas to improve varied from only a few to several. These are projects the ergonomists have to further evaluate and implement interventions.. The company's ergonomics program provided guidance about how to prioritize projects.

A company tool is used to list and evaluate risks and provide management and ergonomic resources with the infor-

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mation to prioritize projects (Larson, 2014). Beyond WMSD information, accidental events, surveys of operators, opinions of occupational medicine professionals, and prevention organizations can also be considered. Each project selected is included in an annual health and safety program goal at each location.

The goal of the company's ergonomics was to achieve improvement of these identified jobs as part of a well defined goal (Larson, 2014). From 2010 to 2013, more than 130 unacceptable risks were reduced or eliminated and nearly 60 workplace improvement projects were carried out across 9 sites. At the end of 2013, the percent of ergonomic incidents was reduced to 30% when compared to other health and safety incidents.

However, during these years of improvements, many new projects were implemented in each site and there were multiple modifications of existing work areas. Many of these changes were made without taking into account ergonomic studies or the opinions of certified resources or experts and are part of the ongoing effort to increase the proactive efforts to reduce WMSD risk exposure.

Ensure that Each Worker Receives Adequate Safety and Health Training

Another requirement of the company's ergonomics program is to train everyone at a site about their responsibilities and roles toward ergonomics. As detailed in the program, training must be adapted for all operational categories. This is more than what is required in European and French regulations. These requirements only focus on workers being trained "to handle loads correctly and the risks they might be open to particularly if these tasks are not performed correctly" (Council Directive 1990). However, this does not include addressing what are WMSDs, what are the steps to avoid risks, and what are the operator's responsibilities. This training goes beyond simple recommendations provided to an operator about work technique. At the conclusion of the training, each trainee must understand what goals need to be reached and how they can participate to achieve reduction in WMSD risk.

The employee training was conducted at the work area of the workers which helped to change opinions or behaviors regarding ergonomics at their own work location.. At the conclusion of this training, everyone agrees to two or three commitments as decided by the team. Instead of only providing advice to a worker, this training focused on shared commitments toward a specific goal such as avoiding awkward postures during activities.

It is necessary to train everyone at a facility, from supervisors, engineers, team leaders, staff representatives, and health and safety workers to operators so that everyone can identify what role he or she plays in ergonomics. The internally certified ergonomics resource on staff is the technical leader .but participation by all from management to operators is needed to facilitate the transition from reactive to preventive mode.

Some operators requested to take the full training to become ergonomics certified resources. Six operators were certified at two sites in the past two years. They successfully developed and implemented effective improvement projects at their facilities. They also trained their colleagues on specific workstations, participated in LEAN projects to improve work conditions as well as productivity, and they have been brought in to consult with employee representatives.

This extensive training has contributed to involving and engaging a greater number of employees in the prevention of safety and health and to facilitate:

- Identification of problems and their causes
- Participation in the development of practical solutions
- Formalization of advice, suggestions, and ideas for improvement
- Consultation of workers in new projects

This participatory approach led by location ergonomics resource allows more projects to include ergonomic consideration, even those which do not seem to relate to ergonomics (Vink, 2008).

Consult Workers on Introduction of New Technologies

The France regulations specify that each project that modifies health and safety conditions must be discussed with representative personnel (most of the time a union representative). A complementary approach involving representa-

tives of workers to the direct participation of workers is also required when designing workplace modifications (Council Directive, 1990). Many ergonomics achievements have demonstrated that this approach is the simplest one. It corresponds to the desire of management for ergonomics to be integrated into several levels of the organization quickly and well.

But additional opportunities continue to emerge. As in many other corporations, management has introduced the LEAN manufacturing model as a basic tool for improvement (Bourgeois, Gonon, 2010). The specific opportunity is to integrate ergonomics into the LEAN process improvement projects during the design or modification study of a workplace to reduce WMSD risk exposure and improve working conditions as part of lean projects (Bourgeois, 2012).

Take into Consideration the Worker's Capabilities

To comply with this EU requirement, all operational people that can make changes or modifications to a work area were trained, including:

- Engineering team
- LEAN engineers and technicians
- Supervisors
- Process engineers
- Team leaders
- Maintenance workers

The goal was to train operators to integrate ergonomics during the creation or modification of a work area. At the end of the project, another analysis would be done to control if any additional risks were identified.

The training is based on the company’s ergonomics design criteria (EDC). This tool ensures that changes or creation of a workplace will be made in accordance with the capacity of workers by setting thresholds for many criteria, such as manual handling, repetition, forces, postures, and environment (e.g., light and noise).

CONCLUSION

After all these steps, we have seen a reduction of the incidents related to ergonomics in France operations. This is quite positive because the number of sites has increased from 7 to 13 from 2009 to 2013. In 2012 this was particularly true because four new plants were integrated into France manufacturing. However, the maturity of the implementation of the company’s ergonomics program in nine other plants likely contributes to the good results in 2013. This improvement also has an impact on WMSDs direct costs. But there is still room for improvement.

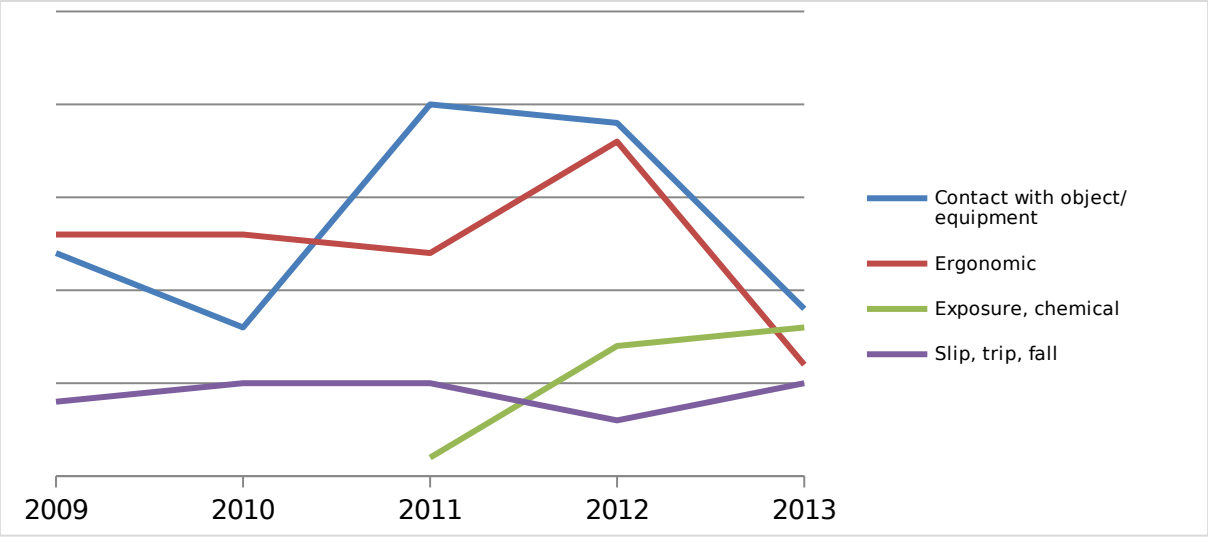

Figure 2: Company France EHS Incidents 2007-2013

WMSDs remain localized at four recently acquired sites as well as at an existing site. If the 1989 framework directive promotes continuous improvement of health and safety of workers, the implementation of simple requirements is not so simple. The company's ergonomics program Ergonomics Program facilitates this expansion by providing the practical tools and an easy-to-follow structure. From 2006 to 2009 the numbers of incidents was growing, and at the beginning of the implementation of the company's ergonomics program this trend was stabilized. The successful results suggest that the program should be fully implemented at each site.

The participation of operational staff, health and safety committees, and management commitment are essential to the improvement of working conditions within a company (Vink, 2008, Larson, 2012). Everyone must act toward prevention and continuous improvement of health and safety.

Also, this company program meets all the minimum requirements of the European Directive transposed in a local regulation. Even if this program is prescriptive, it is more detailed than what the regulation addresses. The program allows facilities to meet regulations and provide powerful tools to go beyond. But it is necessary to blend them together. The example of how the ergonomics program was used to answer both regulatory and global corporate goals provides very good feedback to the company. The France manufacturing management has decided to structure all the others health and safety programs in the same way.

Opportunities to incorporate health and safety improvements beyond ergonomics can always be improved.. Action was often addressed through independent initiatives and collaboration tools. Also, prevention of WMSDs was not fully integrated into the business strategy. The biggest opportunity is to broaden the perceive value of ergonomics risk assessment from being a regulatory obligation to a real starting point of health and safety risk prevention. Risk prevention is not only a sum of numerous requirements to address, it is also a comprehensive and global approach to implementation.

Other aspects must be implemented within companies to prevent any drop in health and safety. Training and responsibilities of designers, packaging services, and teams of business need to be engaged. There is also a need to implement organizational measures (for example, flexibility) and training in ergonomics for human resources.

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