Implementing a Global Ergonomics Program and Metric System at Magna International

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Manager, Global Ergonomics Program
Magna International Inc.

October 16, 2012

Agenda

1. Company Overview
2. Implementing a Systematic Ergonomics Program
3. Structure of the Metric System & Scoring
4. Specific Ergonomics Program Criteria
5. Results and Statistics (2007 – 2012)
6. Continuous Improvement & Future
7. Global Roll-Out & Summary
Company Overview

Magna International Inc.

Global Presence

~ 115,000 People | 26 Countries | 296 88 | $28.7 Billion (2011 Sales)

(As of Q2 2012)
Product Systems Overview

**SEATING SYSTEMS**
- complete seating systems
- mechanism solutions
- seat structures solutions
- foam & trim products
- design & development services

**INTERIOR SYSTEMS**
- complete interior systems
- headliner systems
- seat structures solutions
- side curtain & trim systems
- injection molding solutions
- system design & development

**EXTERIOR SYSTEMS**
- complete exterior systems
- headlamp systems
- mirror systems
- reflector systems
- engineered glass systems
- trim systems
- exterior trim systems

**VISION SYSTEMS**
- complete vision systems
- steering systems
- headlamp systems
- rear vision systems
- navigation systems
- safety systems

**CLOSURE SYSTEMS**
- complete closure systems
- power window systems
- door systems
- latching systems
- driver assistance & safety systems
- vehicle electronics

**GLOBAL FOOTPRINT**
- **CAPABILITIES**
- complete seating systems
- mechanism solutions
- seat structures solutions
- foam & trim products
- design & development services
- complete interior systems
- headliner systems
- seat structures solutions
- side curtain & trim systems
- injection molding solutions
- system design & development
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**Note:** Facility numbers include shared facilities.

**April 2012**
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Unique Fair Enterprise Culture

Corporate Constitution
Employee’s Charter
Decentralized Management
Employee Empowerment

Reporting Structure

- Magna Corporate: Ergonomics is a part of Health & Safety which is under the umbrella of Human Resources (HR).
- Magna Corporate sets the Global Standards across all plants.
- Plant Managers report to Presidents of each Magna Group.
- Each plant is responsible to meet Global Standards
- Majority of plants are non-unionized.
- Majority of plants do not have an Ergonomist.
Magna Ergonomics Program 2003 - 2005

- Redeveloped Ergonomics Section within H&S Audit
- Conducted Ergonomics Committee Training
- Established Ergonomics Analysis Tools
- Implemented Engineering Design Guidelines
- Facilitated Action Plan Management

Improvement Areas

What did our program need?

- Provide a clear ergonomics structure and system.
- Program Management tool controlled by the plant.
- Increase Two-way Interaction and Feedback.
- Increase frequency of Ergonomics reporting.
Implementing a Systematic Ergonomics Program

Implementation Steps

1. Management Support
2. Pilot Project Success
3. Set Specific Criteria
4. Create On-line Metrics System
5. Provide Templates/Support
6. Continuous Improvement
Management Support
Pilot Project: 2005 - 2006

- Specific Magna Group XYZ suffered significant losses in Worker’s Compensation claims for MSDs (i.e. $millions)
- Pilot Project included 11 Magna Plants.
- Developed Quarterly Metrics based on 5 Categories:
  1. Support Infrastructure/ Ergo Committee
  2. Risk Assessments
  3. Top 5 & Prioritization
  4. Engineering Design
  5. Ergo Statistics
- Each category rated on a Red, Yellow, Green Scorecard.

Roll-out to all Magna North American Plants

- Magna’s goal is to see these changes globally.
- Worker’s Compensation seen as a primary way to cut costs and save money.
- Support from Group Presidents and the Board of Directors will tremendously help drive ergonomics in the plants.
Global Ergonomics Program & Metric System

What was required to establish a global metric?
- Start with Canada, USA, and Mexico (Approx. 120 plants)
- Standard set of Criteria Elements
- Robust Scoring Methodology & System
- Fully Customized Ergonomics Database & Website
  - Corporate Requirements (i.e. criteria)
  - Tools/templates
  - Program changes, news, & updates
  - Feedback Mechanism

Metric System Structure & Scoring
**SYSTEMATIC APPROACH**

Follow a systematic problem solving methodology or process with clearly defined elements:

- Establish
- Analyze
- Communicate
- Measure
- Prioritize
- Implement
- Follow-Up

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**Magna Ergonomics Program**

**2007 - Present**

- 5 Major Categories
- 26 criteria elements
- Self-Evaluation system
- Plants submit supporting documentation
- Magna Corporate Ergonomist review

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Support Infrastructure

Analysis and Prioritization

Engineering Design

Implementation and Risk Reduction

Metrics and Communication
Self Evaluation System

The number of criteria completed under a particular category determine the performance rating achieved for that category.

Each of the 5 categories contribute to an Overall Performance Rating for an individual division.


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<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Status</th>
<th>Attached Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Infrastructure</td>
<td>Medium</td>
<td>✔️</td>
<td>15 Mar 07</td>
</tr>
<tr>
<td>1.1 A written policy and procedure clearly defining the site ergonomics improvement process has been developed and implemented.</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 A cross-functional ergonomics committee has been fully trained and meets on a bi-annual basis.</td>
<td>High</td>
<td>✔️</td>
<td>16 Mar 11</td>
</tr>
<tr>
<td>1.3 The engineering manager leads and directs the activities of the ergonomics committee.</td>
<td>High</td>
<td>✔️</td>
<td>16 Mar 11</td>
</tr>
<tr>
<td>1.4 Management personnel have been trained to effectively support and manage a sustainable ergonomics programe and its elements.</td>
<td>Medium</td>
<td>✔️</td>
<td>16 Mar 11</td>
</tr>
<tr>
<td>1.5 Supervisors and operators have been trained to identify and minimize basic ergonomic risk factors.</td>
<td>Medium</td>
<td>✔️</td>
<td>16 Mar 11</td>
</tr>
<tr>
<td>1.6 A realistic budget has been allocated to implement improvements outlined in the Top 5 Action Plan.</td>
<td>Low</td>
<td>✔️</td>
<td>16 Mar 11</td>
</tr>
</tbody>
</table>

Analysis and Prioritization

2.1 Progress has been made towards the ergonomic evaluation of all plant flow jobs. | Very High | ✔️ | 7 Mar 11 |

2.2 An ergonomic design checklist has been compiled in conjunction with each ergonomic evaluation. | Medium | ✔️ | 7 Mar 11 |

2.3 Based on the results of the ergonomic evaluations and a review of the available loss data, all jobs have been prioritized. | Medium | ✔️ | 7 Mar 11 |

2.4 Ergonomic incidents and/or operator reports of discomfort/concern are documented and followed-up within 30 days. | High | ✔️ | 7 Mar 11 |

2.5 Body part scores (e.g. from the ERP analysis tool) have been used to determine an effective job rotation schedule. | Low | ✔️ | 7 Mar 11 |

Implementation and Risk Reduction

3.1 A cost-benefit analysis has been completed to justify the implementation of at least one Top 5 improvement per quarter. | Low | ✔️ | 8 Mar 11 |

3.2 A process review has been completed with an effective action plan developed. | High | ✔️ | 8 Mar 11 |
<table>
<thead>
<tr>
<th>Category:</th>
<th>Support Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERGONOMICS</td>
<td>SAMPLE TEMPLATE - POLICY &amp; PROCEDURE</td>
</tr>
</tbody>
</table>

**Criterion 1.1**

A written policy and procedure clearly defining the site ergonomics improvement process has been developed and implemented.

**Details:**
- The policy and procedure should describe:
  - The purpose and goals of the ergonomics program
  - The individual elements of the site ergonomics improvement process
  - How each element of the improvement process is implemented and sustained to achieve the program goals
  - Who is responsible for implementing each element in the improvement process.
- The policy and procedure should be reviewed regularly to incorporate any changes to the ergonomics program or improvement process.

**Document Requirements**

- Provide a single document outlining the site ergonomics policy and procedure.
- Attach new document(s) when updated.

**Template:** Ergonomics Program Policy and Procedure

**Mark Criteria Complete**

**Status**

- Criteria is Complete: 

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Specific Ergonomics Program Criteria

Support Infrastructure

Category 1

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Status</th>
<th>Attached Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Support Infrastructure</td>
<td>Medium</td>
<td>Document Required</td>
<td></td>
</tr>
<tr>
<td>2. A written policy and procedure clearly defining the site ergonomics improvement process has been developed and implemented.</td>
<td>Medium</td>
<td>Document Required</td>
<td></td>
</tr>
<tr>
<td>3. A cross-functional ergonomics committee has been fully trained and meets on a bi-weekly basis.</td>
<td>High</td>
<td>Document Required</td>
<td></td>
</tr>
<tr>
<td>4. The engineering manager leads and directs the activities of the ergonomics committee.</td>
<td>High</td>
<td>Document Required</td>
<td></td>
</tr>
<tr>
<td>5. Management personnel have been trained to effectively support and manage a sustainable ergonomics program and its elements.</td>
<td>Medium</td>
<td>Document Required</td>
<td></td>
</tr>
<tr>
<td>6. Supervisors and operators have been trained to identify and minimize basic ergonomic risks.</td>
<td>Medium</td>
<td>Document Required</td>
<td></td>
</tr>
<tr>
<td>7. A suitable budget has been allocated to implement improvements outlined in the Top 5 Action Plan.</td>
<td>Low</td>
<td>Document Required</td>
<td></td>
</tr>
</tbody>
</table>
Support Infrastructure

Strengths

• Management Web Training was effective by providing consistent information and a platform for questions.

• Engaged Engineering Managers led to effective Ergonomics Committees that implemented solutions.

• Structured Independent Ergonomics Committee Meetings provided suitable time allocation for issues and progress.

• Ergo Coordinators found innovated ways to train their plant workers in the 1-hour Supervisor/Operator training.

Support Infrastructure

Challenges

• Ergonomics Policy & Procedure template was more often used without tailored specific modifications.

• Setting a budget didn’t necessarily mean the money was available when needed (e.g. year-end).

• Initial resistance to have the Engineering Manager lead the Ergonomics Committee.
### Analysis & Prioritization

#### Category 2

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Progress has been made towards the ergonomic evaluation of all plant floor jobs.</td>
<td>Low</td>
</tr>
<tr>
<td>2.2</td>
<td>An ergonomic design check has been completed in conjunction with each ergonomic evaluation.</td>
<td>Medium</td>
</tr>
<tr>
<td>2.3</td>
<td>Based on the results of the ergonomic evaluations and a review of the available loss data, all jobs have been prioritized.</td>
<td>Medium</td>
</tr>
<tr>
<td>2.4</td>
<td>Ergonomic incidents and/or operator reports of discomfort/concern are documented and followed up within 24 hours.</td>
<td>High</td>
</tr>
<tr>
<td>2.5</td>
<td>Risk reduction metrics from the ERM analysis tool have been used to determine an effective job rotation schedule.</td>
<td>Low</td>
</tr>
</tbody>
</table>

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**Ergonomics Risk Management Spreadsheet**

[Image of the spreadsheet]
**Analysis & Prioritization**

**Strengths**
- Job Analyses: Focused on progress rather than having the requirement of all jobs evaluated immediately.
- ERM Spreadsheet
  - Tied all information into one area.
  - Macros to reduce redundancy and colour coded cells by risk.
  - Prioritization made easier.
  - Having a place to store and prioritize ergonomic evaluations gives meaning to significant time spent by team and assessors.

**Challenges**
- Corrupted macros and altered Excel Spreadsheets.
- “One-man shows” doing all of the ergonomic evaluations (remaining team members forget how to use ergo tools)
### Category 3

#### Implementation & Risk Reduction

**Category 3**

3. Implementation and Risk Reduction

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Priority</th>
<th>Status</th>
<th>Document Required</th>
</tr>
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<tbody>
<tr>
<td>A cost-benefit analysis has been completed to justify the implementation of at least one Top 5 improvement per quarter.</td>
<td>Low</td>
<td></td>
<td>Document Required</td>
</tr>
<tr>
<td>An action plan has been developed to sufficiently reduce ergonomic risk in the Top 5.</td>
<td>High</td>
<td></td>
<td>Document Required</td>
</tr>
<tr>
<td>Jobs that fell within the Top 5 or have caused an ergonomic incident (and have been evaluated as high or high risk) are improved within 30 days.</td>
<td>Very</td>
<td></td>
<td>Document Required</td>
</tr>
<tr>
<td>A follow-up ergonomic evaluation has been conducted on all Top 5 jobs within 30 days of implementing controls.</td>
<td>High</td>
<td></td>
<td>Document Required</td>
</tr>
<tr>
<td>Productivity and quality improvements have been achieved and documented in at least one Top 5 improvement per quarter.</td>
<td>Medium</td>
<td></td>
<td>Document Required</td>
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</table>

**Strengths**

- Risk reduction requirement for solutions implemented ensured impactful changes and follow-up.

- Cost-Benefit analysis and Productivity/Quality Improvement cases started to change the mindset and culture of ergonomics at the plant.
Implementation & Risk Reduction

Challenges
- "Top 5" vs. "Quick Fixes"
- Disorganized action plan spreadsheets
- Difficulty in executing the action plan to completion.
  - Money
  - Support from management/operations

Engineering Design

Category 4

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<tbody>
<tr>
<td>1</td>
<td>An engineering design checklist is officially embedded into the engineering design process.</td>
<td>Low</td>
<td>Document Required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Project information related to upcoming launches and major revisions to existing assembly tools or processes has been provided.</td>
<td>Medium</td>
<td>Document Required</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>The engineering design checklist is used to evaluate all design projects and is shared off by appropriate personnel.</td>
<td>Very High</td>
<td>Document Required</td>
<td></td>
<td></td>
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<td>4</td>
<td>Jack software has been used to assess new launches and an action plan for implementation has been developed and executed.</td>
<td>Very High</td>
<td>Document Required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>All at least five engineers and five maintenance/cleaning staff have been trained in organization.</td>
<td>Medium</td>
<td>Document Required</td>
<td></td>
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Engineering Design

Strengths

- Majority of plants did not use or have an ergonomics design checklist in their engineering design process before this criterion 4.1.

- Design Checklist required sign-off by responsible engineer and a member of the Ergonomics Committee.

Challenges

- No accountability on when and how many times the design checklist should be completed.

- Siemens’ Jack simulation can only be conducted by corporate ergonomist.

- No consistent design process across all plants due to the nature of a decentralized structured company.
Category 5

Strengths

- Majority of plants before criterion 5.3 did not statistically track ergonomics-related MSDs.

- Before/After Implementation Document
  - Impactful communication to the rest of the plant.
  - Abundant simple case studies submitted to corporate each quarter.
Metrics & Communication

Challenges

• Short-term metrics were somewhat redundant due to accountability of previous criteria.

• Difficult to set targets and maintain accountability.
Results and Statistics

“Overall” Quarterly Scores

Ergonomics Dot Performance

- Red
- Red/Yel.
- Yellow
- Gr./Yel.
- Green

# of plants

Quarter

2007 Q4 2008 Q4 2009 Q4 2010 Q4 2011 Q4
Magna Wins Innovation Award

Michigan OSHA (MIOSHA)

The Ergonomic Innovation Award is presented for implementing ergonomic innovations to reduce job risk factors associated with musculoskeletal disorders (MSDs).

MIOSHA Director Doug Kalinowski:
"Magna is to be commended for their efforts to create a safe and healthy work environment at their Michigan facilities to reduce ergonomic hazards, protect workers and increase productivity."

Magna Wins Innovation Award


- Drove structure, consistency, and feedback that led to plant floor ergonomic solutions & changes.
- Plant Visit: Fixes, interviewed operators, Ergo & Mgt. team.
- Injury Statistics
Continuous Improvement & Future

Key Changes for 2012

1. Increased weighting on Implementation & Risk Reduction (Category 3).
2. Ergonomics Analysis Tool inputs/data integrated and archived online.
3. Streamline the number of criteria and documentation files.
1) Increase Weighting on Implementation

- Higher weight on Category 3: Implementation & Risk Reduction than other categories.
- 5 risk reduction solutions per quarter (criterion 3.3).
- Plant cannot score overall “Green” without credit on Criterion 3.3 alone.
- “After” solution photo required to close every action item.
2) Integration of Analysis Tool Inputs

Spreadsheet

Magna Database
3) Streamline and Reduce Documentation

Ergonomics System Goals

• All ergonomics data has a single point of entry.
• All ergonomics data is saved and archived.
• All elements are integrated within one system.
• Fluid flow of risk data, scores, actions, and reporting.

Global Roll-Out & Summary
Global Roll-Out

- Languages (e.g. 14 in Europe)
- Legislation (e.g. confidentiality laws in Austria/Germany)
- Consistent Auditing and Reviews (e.g. over 10 different corporate employees)
- Training (e.g. translators, qualified ergonomists)
- Analysis Tools (e.g. Key Indicators Method - KIM)
Overall Summary

An effective Global Ergonomics Program and Metric system was achieved by:

- Establishing Management and Engineering support.
- Developing a robust scoring system based on a standard set of criteria.
- Creating a central database website that allowed program management and effective two-way communication.
- Quarterly reporting to ensure progress and accountability.

QUESTIONS?

Thank You

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