Study regarding the Risks Management in Flexible Manufacturing Systems

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Abstarct: - In the paper are shown the benefits of risks evaluation into organization, and are detailed the risk management processes. Also, the case study is based on an exemplification of implementation of risks management procedure and there are evaluate and assess all risks of loss and need for insurance related to the specific performance objective, indentifying the control and preventive measures.

Key-Words: - flexible manufacturing systems, quality, risk management, procedure implementation, improvement process

1 Introduction

Enterprise risk management is a process, effectuated by the entry's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entry, and manage risk to be within the risk appetite, to provide reasonable assurance regarding the achievement of objectives [1]. Benefits of risk management and internal control in establishing and maintaining risk management procedures are as follows:

Fig.1 The advantages of risks management procedures

Times of economic crisis often generate significant discussion and debate surrounding risk management in all types of organizations, with particular emphasis on the role of the board of directors in strategic risk

oversight. Due to the widely-held perception that some organizations encounter risks for which they are not adequately prepared, boards, along with other parties, are often under increased focus during such times.

Annually, the board are responsible for identifying the risks facing the company, assessing the risks and ensuring that there are controls for these risks, which are to be designed to ensure that any identified risk is reduced to an acceptable level.

Risk managers rely on a variety of methods to help companies avoid and mitigate risks in an effort to position them for gains.

The four primary methods include exposure or risk avoidance, loss prevention, loss reduction, and risk financing.

A simple method of risk management is exposure avoidance, which refers to avoiding products, services, or business activities with the potential for losses, such as manufacturing cigarettes [2].

Loss prevention attempts to root out the potential for losses by implementing such things as employee training and safety programs designed to eradicate risks.

Loss reduction seeks to minimize the effects of risks through response systems that neutralize the effects of a disaster or mishap.

While risk oversight is ultimately a responsibility of the full board, boards often delegate primary responsibility for overseeing management's risk management processes and related identification of key risk exposures to a committee of the board. Often that delegation is to the audit committee.

2 Risk Management Procedures

The goal of any organization is to identify the risks and determine if they may be avoided, reduced, spread, transferred or prevented. Having recognized the need, and taken the responsibility to preserve the organization resources.

2.1 Purpose

- To provide a method for the identification of hazards and control of risks arising from the workplace and the introduction of new plant, processes and substances to the facility and the means by which these risk shall be eliminated or minimized.
- Comply with relevant State regulations and approved Codes of Practice.

1.2 Policy

The policy of enhancing operational risk management should be decided by the board of directors in order to implement it on a firm-wide basis. The policy should include [3]:

(a) how to implement an op risk framework by supplementing traditional risk management with one using risk measurement techniques;

(b) how to allocate very limited resources to business lines and risk management departments;

(c) how to co-ordinate these functions integrate them effectively and efficiently within the structure of an organization.

Department Head / Supervisors shall be responsible for hazard identification and risk assessment in their areas of responsibility:

a. before significantly changing a work practice or procedure;

b. before changing any activity or process, where the change may give rise to

c. ensure that any risks are eliminated, or if this impracticable at least minimised.

3 Case Studies

3.1 Research Methodology

The basic steps of the implementation of risk management process are shown in the following flow chart:

Fig.2 Risks management process

The research methodology consists on:

- a) Hazard Identification;
- b) Risk Assessment:

Likelihood - the chance of the hazard or event actually occurring during the life of the plant:

Very likely - Could happen frequently

Likely - Could happen occasionally

Unlikely - Could happen, but only rarely

Highly unlikely - Could happen, but probably never will

Consequences - the extent of the harm (injury or ill health) should it actually occur:

- Fatality
- Major injuries (normally irreversible injury or damage to health)
- Minor injuries (Normally reversible injury or damage to health requiring several days off work)
- Negligible injuries (first aid)

Once the likelihood and consequence of each hazardous event or situation has been decided, the risk is to be rated using the following risk management matrix (Fig.3).

	Likelihood			
Consequence	Very Likely	Likely	Unlikely	Highly Unlikely
Fatality	**HIGH**	**HIGH**	**HIGH**	MEDIUM
Major injuries	**HIGH**	**HIGH**	MEDIUM	MEDIUM
Minor injuries	**HIGH**	MEDIUM	MEDIUM	LOW
Negligible injuries	MEDIUM	MEDIUM	LOW	LOW

Fig.3 Risk management matrix

Events assessed as very likely with fatal consequences are the most serious (high risk); those as highly unlikely with negligible injuries are the least serious (low risk)
Ratings for each factor and the risk rating are to be recorded in the appropriate columns on the Risk Management Worksheet.
When developing risk control strategies, HIGH ratings shall receive first priority.

c) Risk Control;
d) Review.

This process is continuously performed throughout the duration of the project life cycle.

3.2 Case Studies

At the activity level, risk assessment starts at the beginning of the activity identification process and goes all the way through to activity evaluation. Risks that are identified in activity identification and assessment or at the activity preparation stage need to be managed during activity implementation. At appraisal, an assessment needs to be made whether an activity design correctly identifies risk and proposes adequate measures to deal with it.
After risk identification process it can be done a risk assessment using risk classes and their components, which determined, after analysis and evaluation, the likelihood and severity levels.

Table 1: Risks categories

Category	Description	Likelihood	Severity	Score
1. Integrity	Process	0.70	0.40	0.28
	Handling errors	0.90	0.40	0.36
	Interfaces	0.30	0.20	0.06
	Change management	0,30	0.20	0.06
	Data	0.50	0.20	0.10
2. Relevance	Using information generated by the flexible manufacturing system	0.50	0.40	0.20
	Time of use of information transmitted by the flexible manufacturing system	0.50	0.20	0.10
3. Access	Business process	0.30	0.10	0.03
	Application	0.50	0.40	0.20
	Data management	0.50	0.40	0.20
	Processing environment	0.30	0.20	0.06
	Access process	0.10	0.80	0.08
4. Availability	Performance monitoring	0.30	0.40	0.12
	Interrupt system	0.30	0.40	0.12
	Disasters	0.10	0.80	0.08
5. Infrastructure	Planning	0.30	0.10	0.03
	Define and use system applications	0.50	0.20	0.10
	System administration	0.70	0.40	0.28

With a list of risks with their order of priority, risk management team performs an analysis to determine what actions to respond to risk (avoid, control, acceptance or transfer of risk) can be applied or what decisions could be taken to eliminate the risks identified.

Risk profiles and the priority risks to be managed change as activity development proceeds, resulting in an updating of the risk management matrix. The process of risks monitoring is illustrated in Fig.4.

Fig.4 Risks monitoring process

Team evaluates, quantifies and decide on possible consequences of inaction - on the one hand - or whether the benefits obtained by the action of the risks justifying the expenditure of time and money - on the other. This step should focus on continuous improvement of processes, identifying those organizational processes that could lead to the elimination or substantial reduction in risk.

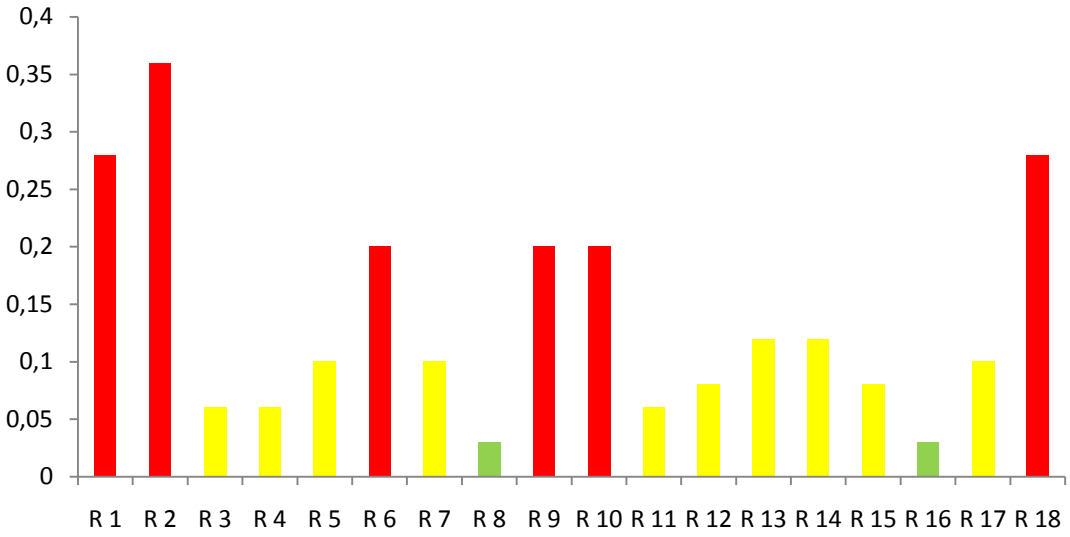

Fig.5 Risks quantification

In conclusion, there is identified 18 risk category: 6 are situated in high risks zone, 10 are medium risk and 2 are low risks.
For each risk, the risk management team carried out activities necessary to implement mitigation actions / risk reduction. These activities are documented risk management plan for each risk reduction scenario.

4 Conclusion

- The risk-management process involves identifying exposures to potential losses, measuring these exposures, and deciding how to protect the company from harm given the nature of the risks and the company's goals and resources.
- Risk managers determine their importance and ability to be affected while identifying and measuring exposures.
- Risk managers consider different methods for controlling or preventing risks and then select the best method given the company's goals and resources. After the method is selected and implemented, the method must be monitored to ensure that it produces the intended results.

The key features of this clause are:

- The implementation of a procedure(s) for ongoing hazard identification, risk assessment, and determination of necessary controls;
- The organization's methodology for hazard identification and risk assessment shall be proactive;
- The methodology should provide for the prioritization of hazards and the identification of those that are significant;
- Keeping risk assessments and any resultant improvement objectives up to date.

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