


SUCCESSFUL APPLICATION OF VE IN THE EARLY DESIGN STAGE

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Axel Peter Ried studied in Germany, Switzerland and the U.S.A. He obtained a Masters Degree in Business Administration and Applied Psychology. He also holds a Masters Degree of Machine Engineering.

During his early career, he worked as a Director of the Berlitz School of Chicago and as an Assistant VP of the Singer Corporation N.Y. In 1962, he started his technical consulting company, RMM-Ried Management Methods. In 1989, he founded a design and engineering company, Berner + Ried GmbH.

Mr. Ried has introduced Value Management, Value Analysis and Engineering in Germany starting in 1961. He has applied VM/VA/VE in several hundred companies of all branches of industry.

During the past 35 years, RMM has trained about 350.000 managers in VM/VA/VE, and coordinated about 5.000 project teams. Besides VM/VA/VE, Mr. Ried also is an expert in TQM.

Mr. Ried has written 15 books on various subjects and has presented numerous papers at international Value Management Conventions in Europe, the US, Japan, India and Singapore.

ABSTRACT

This paper describes the successful application of VE in the early Design Stage of a Machine Tool. The development of a **Machine Tool** is a very **challenging project**. This is especially true for the German based well known company Reichenbacher, a specialist for highly sophisticated Machine Tools.

Value Engineering best proven technique

In order to meet the high leveled targets of this Project:

- **high precision** manufacturing of parts
- **high machine efficiency**
- **highest safety factor** for operators
- **most competitive in price and functions**
- **low manufacturing and assembly cost**
- **extremely short Time To Market (TTM)**
- **unique selling points** compared to the world wide acting competitors

- **implementation of special options for each key market**

Value Engineering as the **best proven technique** was chosen to perform these challenging targets.

Worldwide Activities:

Preceding to the Development, Design, Testing and Manufacturing Phase **intensive worldwide activities** had to be completed:

1. **Market Analysis** of the key markets in Europe, USA and Canada
2. **International Competitor Benchmarking**
3. **International Patent Analysis**
4. **Analysis of safety regulations and requirements** in the key markets.

VE Parent and other Management Tools

VE applied as a **Parent Tool in combination with a number of highly sophisticated Management Tools** was the basis for the successful completion of this project within a

thought about this project in Dec '96 until series delivery in May '97.

Project Management and Marketing Strategy

Project Management and the development of a Marketing Strategy focussed to the needs of the different key markets made sure, that all targets were successfully achieved.

INTRODUCTION

Reichenbacher is a leading manufacturer of highly sophisticated Machine Tools. In Dec 1996, the Reichenbacher Management decided to develop, design and market a completely new product.

This new product should be presented to the market at an International Fair in Nuremburg/Germany.

Series deliveries were scheduled for June '97, i.e. the Time To Market (TTM) was only six months, which is an extremely short period of time. Normally the time span needed to develop and market similar products is up to 24 months.

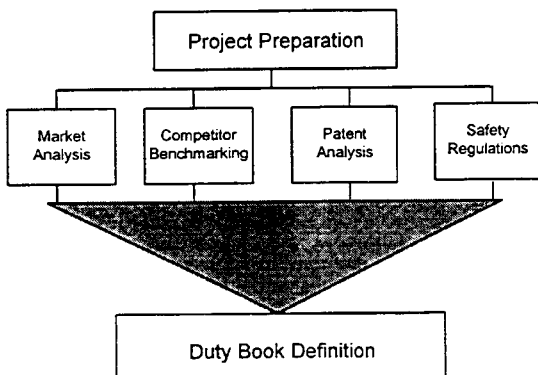
Further Targets

- highest safety factor
- reasonable market price
- low manufacturing and assembling cost
- unique selling points
- key market oriented special options

Project Preparation Activities

In order to define a market and customer oriented duty book for this new product program intensive preparation activities were organized:

Picture 1



In all European key markets intensive market research took place.

Information gathered from customers was analyzed just to learn what the final users would expect in regard to

- technical functions
- safety functions
- comfort functions
- and the price which they

would be willing to pay for such a new Machine Tool for wood and plastic parts production.

2. International Benchmarking of all Competitors

All the different competitors were deeply analyzed by comparing items like:

- technical functions and solutions
- safety functions and solutions
- comfort functions and solutions
- sales price
- sales organization
- unique selling points

The best technical, safety and comfort solutions of each competitor were especially analyzed and compared in an evaluation matrix, so that all possible synergy effects could be learned and used later on during the creativity phase.

3. International Patent Analysis

In all key markets the patents of all competitors were collected and studied. This was done to:

- know the details about all patent protected solutions
- get synergy effects for the creative phase
- prevent the development of solutions already protected by other manufacturers and to prevent possible patent claim problems later on.

4. Analysis of Safety Regulations

Safety for machine operations is an **extremely sensitive matter**.

Not only because we talk about the possible harm to individuals, but also about the juridical and financial consequences in cases of failures due to technical development mistakes for

responsible.

The analysis of the safety regulations and requirements proved that there are quite very different and very special requirements in the key markets.

The knowledge of these differences however is substantial as one of the main basic factors for the definition of market and customer oriented duty books.

National Specific Requirements

The success of this new product program in the selected key markets can definitely only be achieved, if national specific requirements are being met and offered specifically to the end users.

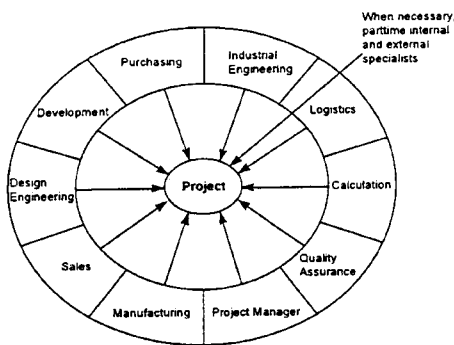
Duty Book Definition

On the basis of the results of the project preparation activities described above, the duty book of this new Machine Tool Product Program was defined by the project team.

Project Team

Picture 2

VM Project Steering Team (PST)



Duty Book Chapters

In the duty book the following main chapters were determined:

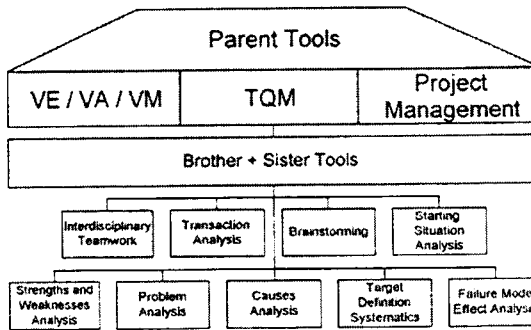
1. Basic product requirements
 - 1.1. Primary Functions
 - 1.2. Unique Selling Points (USPs)
2. Main customers in the key markets
3. Installation of the machines
4. Basic machine structure
5. Handling and comfort for operators
6. Machine appearance
7. Options for different applications
8. Control system requirements

10. Safety criteria
11. Required floor space
12. Packaging and shipping
13. Life Cycle Cost
14. Instruction manual in different languages
15. Market distribution price
16. Warranty

Value Engineering and other Sophisticated Management Tools

Picture 3

Value Management Tool Kit



Parent, brother and sister tools are being applied in a close combination according to the specific requirements and targets.

Creativity Techniques

It is important to know that different **Creativity Techniques** were applied systematically during this Machine Tool Development Project, such as

- Classical Brainstorming
- Morphology
- Synectics

The implementation especially of the more sophisticated creativity techniques "**Morphology**" and "**Synectics**" made it finally possible to create ideas and solutions to make this new Reichenbacher product a **Unique Selling Machine Tool**.

Also we would like to point out that the consequent application of

FMEA – Failure Mode Effect Analysis

made sure, that all thinkable possible problem and defect-areas were identified. On this basis the solutions were developed and implemented to prevent such problems completely.

Total Time Span to Market (TTM)

The total time span to Market for this product was only six months from the very first thoughts

company on their way to the customers.

Picture 4

	ACTIVITIES	TIMESCHEDULE						
10	Start Sales Activities							
9	Series Production Assembly							
8	Machine Production at fair							
7	Machine Testing							
6	Manufacturing/Assembly of first Machine							
5	Purchasing and Manufacturing Preparation							
4	Machine Engineering and Design							
3	City Block Definition							
2	Market Computer/Part Analysis							
1	VE and Project Management Testing							
		Dec 96	Jan 97	Feb 97	Mar 97	Apr 97	May 97	June 97

Intensive Integration of Suppliers

During this project suppliers were systematically integrated in the **Value Engineering Project Team** at a very early stage while the duty book of this product was designed.

Many of the parts of this Machine are coming from suppliers. As this is the case they had to be trained in exactly the same techniques like the Reichenbacher Managers, i.e.

Picture 5

Value Management Tool Kit –

Training Program

Training Subject
VE / VA / VM
TQM
Project Management
Interdisciplinary Teamwork
Transaction Analysis
Brainstorming
Starting Situation Analysis
Strengths and Weaknesses Analysis
Problem Analysis
Causes Analysis
Target Definition Systematics
Failure Mode Effect Analysis

Zero Defects

Besides VE and the other sophisticated Management Tools, especially **TQM** was trained with the suppliers in order to make sure, that they understood the quality requirements and policy of the Reichenbacher Company. On this basis all parts and deliveries were exactly just in time (JIT) and with **Zero Defects**.

Due to the complexity of the requirements of this Reichenbacher Machine and its worldwide marketing, international **Project Management** was implemented consequently during the duration of this product development.

The overall project coordination was carried out by RMM, Ried Management technical consultants. All Reichenbacher Managers of the different offices of the key markets were systematically integrated in the VE-Project Steering Team, to guarantee that all specific national targets, specifications and requirements of their markets were completely considered and achieved.

Marketing Strategy

The marketing strategy as well as the operative marketing tools and measures were developed by the VE-Project Steering Team as well. Each key market requires different approaches, and also the distribution channels are quite different in the specific countries.

Target Achievements

The systematical application and consequent implementation of Value Engineering and all the other sophisticated management tools by the Reichenbacher Company and the international suppliers as well in fact made sure that all targets were achieved with the planned success.

This new Reichenbacher product is being manufactured at the moment in Germany for the European Market and the U.S. This year the US-Market will be supplied directly out of a US located assembly plant.

Conclusion

At the time when this very challenging project was started, almost nobody believed that the targets will be met.

But we now really can conclude that VE, in combination with the other management tools mentioned above, offers the chance to perform design and development activities in much shorter times than ever before. The average time reduction effect ranges between 50-70 % of the time normally considered to be needed.

The key for this success is the consequent application of VE in the early Design Stage.