



# "Combination of Value Management with Modular System for Wire Straightening Machines"

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## 1 Background

EVG Entwicklungs-und Verwertungs GmbH [www.evg.com](http://www.evg.com) is a global engineering company based in Raaba Austria, which specializes in the development and construction of machines and equipment for the processing of wire and reinforcing steel.

VMN Valuemanager Ninaus ([www.valuemanager.at](http://www.valuemanager.at)) is a consulting company for Value Management and Innovation and supported EVG.

## 2 Target

In 2016 a VM project was initiated to analyze and optimize the value of a wire straightening and cutting machine of type DRE. The goal is to optimize the functions and the production of the plant, while at the same time reducing the production costs.

Target: -15% manufacturing costs

In connection with this value analysis project, a construction kit analysis was carried out. The aim is to support the optimization in the value analysis by standardization and to reduce the large variety of components. For this analysis, a machine series with similar machines is used in which the DRE is included. As a result, synergy effects for the cost savings will be worked out.

## 3 DRE wire straightening and cutting machines

The DRE high-performance wire straightening and cutting machines are used for processing steel wires from rings, cold and hot rolled, coiled or wound, smooth or ribbed. A servo-electric driven shear with rotating knives for continuous straightening operation without downtime during the cut guarantees in combination with electronic length measurement maximum length accuracy of the rods.

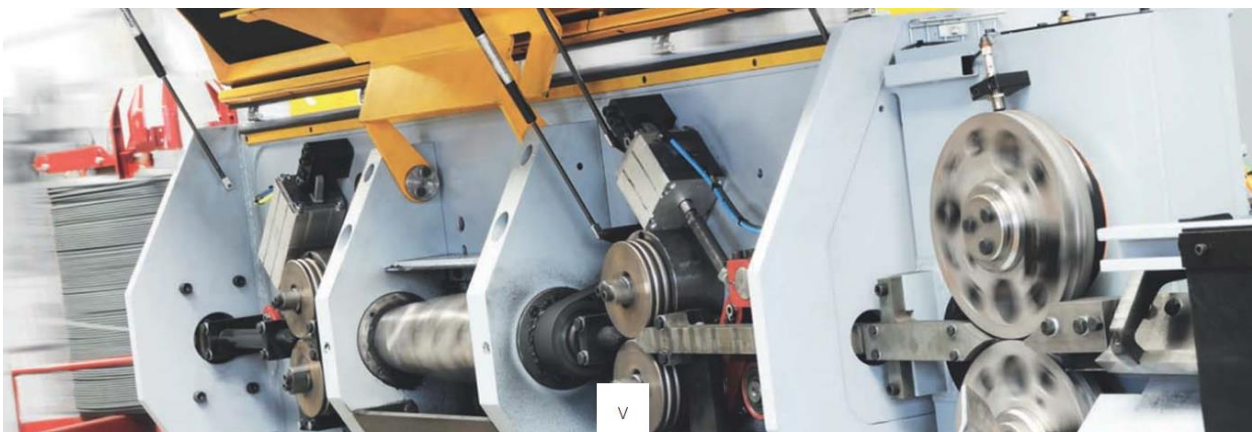


Figure 1: DRE wire straightening and cutting machines (source: EVG Homepage)

## 4 Project plan

The project plan was splitted in 3 subprojects

- Product value analysis
- Production value analysis
- Modular Analysis

Meilensteine	okt	Nov	dez	jän	feb	mär	apr	mai	jun	jul	aug	sep	okt
Wertanalyse DRE_Konzeptphase	Wertanalyse DRE_Konzeptphase												
Projektmanagement													
Objektsituation analysieren													
Produktion DRE – Analysephase													
Produktion DRE - Konzeptphase													
Soll- Zustand beschreiben													
Lösungsideen entwickeln													
Lösung festlegen													
Wertanalyse DRE_Umsetzungsphase						Wertanalyse DRE_Umsetzungsphase							
Projektmanagement													
Umsetzung der Lösungen Wertanalyse													
Produktion DRE - Implementierung													
Konzept Wertanalyse Inbetriebnahme													
Zertifizierung für VM 1 nach EN12973													
Baukastensystem Maschinegruppe 3		Baukastensystem Maschinegruppe 3											
Vorbereitung der Baukastenanalyse													
Leitung & Durchführung der Baukastenanalyse													
Methodik Baukastenprinzip in der Entwicklung													

Figure 2: • Project plan value analysis and modular analysis

## 5 Application of Value Management for wire straighteners

According to the project plan, the three subprojects were set up, two in the field of value management (product value analysis, production value analysis) and one as a modular analysis.

Valuemanager Ninaus presented two moderators for the value management project, one with background product optimization and one with process rationalization expertise

To analyze the object situation, a SWOT analysis, a function tree and a function cost matrix were created.

On the basis of the functions, ideas were collected with a creative workshop to reduce the manufacturing costs and the commissioning time of the machine.



## 6 Application Modular system for wire straightening machines

Valuemanager Ninaus provided a moderator with cross-industry development and design know-how for the modular analysis project.

The construction project was started with the transfer of the functional analysis of the DRE machine. Functionally, the functional analysis corresponded to approximately 80% of the total functions of all Series 3 functions.

Accordingly, the function analysis of the DRE had to be supplemented with the individual function analyzes of the other 4 machines of the 3 series. This created the 100% feature model for the Series 3. The graph below shows an excerpt from the 100% feature analysis

In a next development step, the assignment of functions to modules took place. All variants were listed and functions assigned to components in a system.

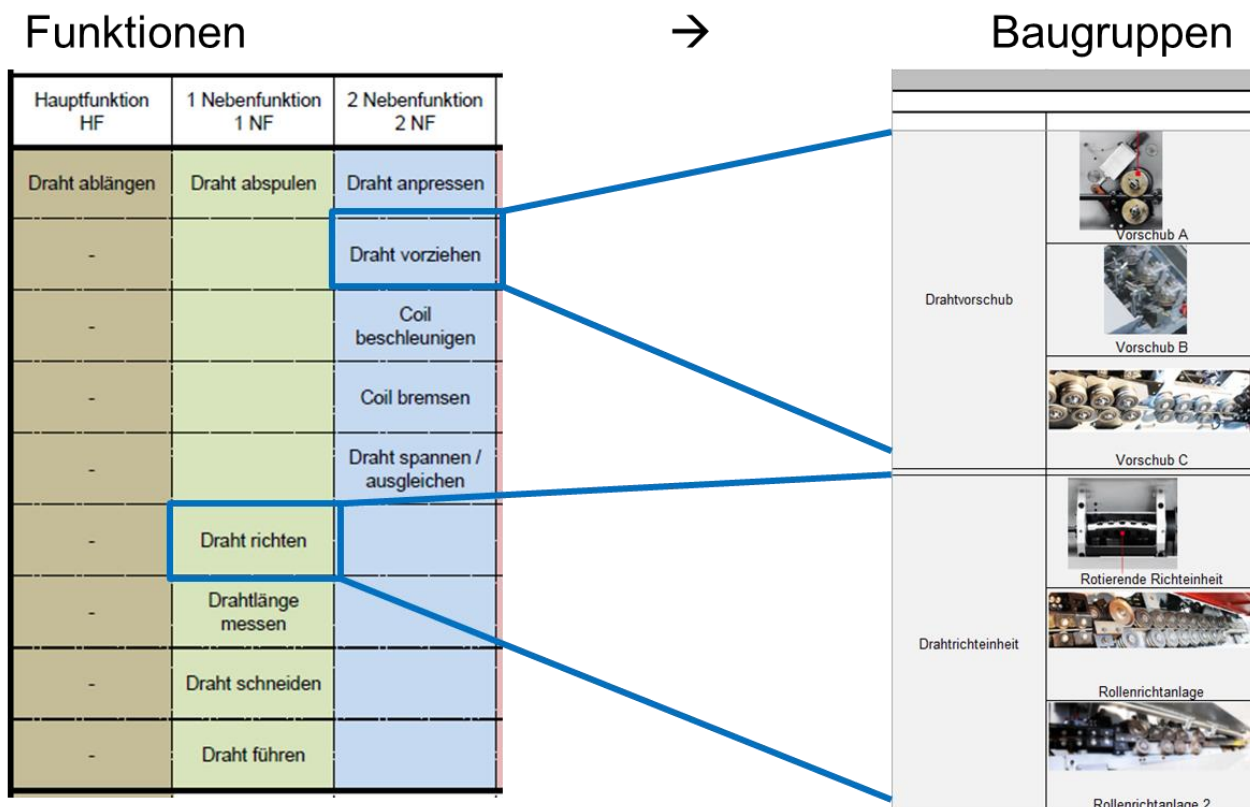


Figure 4: Functional transfer in assemblies

A precise monetary assessment of the kit initiative is not yet possible at the time this manuscript is submitted. Here one still expects individual potentials, which still come "on top" to the results of the product and production value analysis.

However, it is clear that the modular analysis of the Series 3 will bring more potential to the larger machines.

## **7 Contradiction Value Management versus Modular Systematics?**

For strategic reasons, the value management projects were set up and executed separately from the building block analysis project.

Based on experience from Valuemanager Ninaus, the modular design method for the entire Series 3 reduces the manufacturing costs due to standardization and reduction of the variety of variants. However, the machine DRE is a small-scale representative of the series 3 and could therefore remain the same price due to the modular principle in individual modules or even more expensive.

At the time of submitting this manuscript, the kit analysis has not progressed far enough to allow for cost savings. However, initial analyzes have shown that a modular analysis for some modules will bring cost potentials for all machine types of the 3 series.

## **7 Establishment of Value Management in TOE - Lessons Learned**

The company EVG is known for the sustainable establishment of value management in the company. This requires new forms of cooperation and the creation of creative freedom.

- Open cooperation and involvement of all departments involved across the value chain increases the innovation potential and the sense of belonging to a project
- More creative solutions are developed in a team-based approach
- Need for implementation increases through structured moderation and work plan specifications
- Differences between departments results from competent moderation in innovation and novel solutions
- All departments get to know your product better
- Cost target of -15% is even significantly exceeded





Figure 5: • Teamwork for innovative solutions

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