

# OPTIMISED PRODUCTION MANAGEMENT AND CONTROL FOR STAIR MANUFACTURING

## STAIR BUILDER DE VRIES INVESTS IN “JUST-IN-TIME” MANUFACTURING

The Dutch stair builder De Vries was able to cut back from two shifts to one while achieving an increase in efficiency of 30% by rearranging the production method. An overflowing workshop, drawn out planning and production cycles, slow and inflexible manufacturing practices, as well as stressed workers are a thing of the past since adopting the new way of production.

The stair builder De Vries from the Netherlands opened shop about 100 years ago and has been growing steadily ever since. De Vries was able to make it through the financial crisis and is now producing more successfully than ever with 93 employees, 40 of which work in the manufacturing department alone. The Dutch enterprise is strongly focused on intelligent software and new technology. Principal shareholder Roland Wagelaar explains: “You can buy the best machine or computer out there, but only in combination with the right technology and software you will be able to make a real difference!” Approximately four years ago (in 2013), De Vries initiated a monumental conversion process, which resulted in an entirely new method of operation. Now the company is managing their entire manufacturing process with a new software module for optimised production management and control. The solution was developed by their longstanding business partner, the staircase software provider Compass Software.

The company was founded about 100 years ago.



De Vries initiated a monumental conversion process, which resulted in an entirely new method of operation in 2013

Now the company is managing their entire manufacturing process with a new software module for optimised production management and control.

### Reduction from 20 to 3 Work Days Per Stair

Before changing to the new production method, the planning and production process for each staircase was very time-consuming and required about 20 days. At any given point in time, the stair builder had to store materials for 1000-2500 staircases. The company produced 5-6 staircases at the same time in segments, i.e. all treads, stringers, posts, and so on. The individual staircase parts and materials were piling up everywhere and had to be sorted through, before the staircases could be assembled. Production was conducted in two shifts, which frequently led to miscommunication between the two teams. Nevertheless, the company was able to produce about 45 staircases daily utilising this method, however, staff was constantly stressed and pressed for time. Therefore, management decided it was time for a fundamental change in their work process. The most important thing was that all employees were convinced of this change, from the CEO, over the department manager, to each individual worker, everyone had to be on board.

## The Quick Response Manufacturing Approach

Today, De Vries is producing with the “QRM” (Quick Response Manufacturing) approach, that means everything is planned and produced “just-in-time”.

The concept has been adopted for all company processes, from sales and planning to production.

## The entire production is planned with regards to the delivery and installation date

The workshop no longer produces only parts of the staircase, but the entire stair or staircase group is finished within 1-3 days.

Furthermore, the entire production process takes place during only one shift, so that all employees can communicate with each other at any point in time.

From the moment the order comes in, to its delivery, the production is based on complete orders. All parts of the staircase are kept together as one group. The entire order

Today, De Vries manufactures 75 staircases in only one shift of 7.5 hours.

Yet, productivity has not even reached 100% and they could easily increase production to 85 staircases per day.



From the moment the order comes in, to its delivery, the production is based on complete orders. All parts of the staircase are kept together as one group.



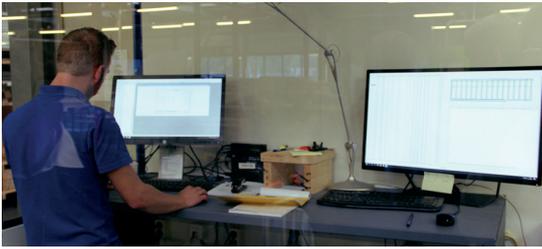
Principal shareholder  
Roland Wagelaar: “You can buy the best machine or computer out there, but only in combination with the right technology and software you will be able to make a real difference!”

goes through each station until it is ready for delivery. “The most important part is that everything flows smoothly. If the machines are constantly running, then we are achieving the most efficient productivity. Speed is only secondary at this point,” Wagelaar explains.

The concept saves time, effort, and it is no longer necessary to stock so much material. Furthermore, manufacturing workers have been trained to work on different stations, so that they can be placed flexibly on the floor.

Additionally, the QRM approach utilises so called “Oilmen”, who are problem solvers that switch between the different stations and make sure that everything runs smoothly (like oil). The entire process is significantly more efficient and flexible. “There is no rush, nobody is stressed. Everyone is only concentrating on what they are doing right at that moment. The employees are happy and feel like they belong to a coherent group.” Staff members are able to let their creativity flow and always face new challenges.

Today, De Vries manufactures 75 staircases in only one shift of 7.5 hours. Yet, productivity has not even reached 100% and they could easily increase production to 85 staircases per day.



The production groups are listed on a central screen in the workshop. Once a group has successfully passed through and been completed on one station, the team grabs the next project off the list.

### **Interface between Theory and Practice: QRM Implemented with Compass Software**

In order to make the QRM concept work, De Vries required a management software that would allow them to sort orders automatically by delivery date, complexity, quantity, and priority, as well as forward those orders to manufacturing: “We want to have the shortest possible path from the calculation of the order to its production. Naturally, delivery and assembly times have to be considered.”

The necessary software concept was specially developed for de Vries by the staircase software provider Compass Software. Sales and administration enter the individual orders into an internal ERP system. At this point the designers take over to draw the stair in Compass Software in collaboration with the sales team. There, they have the option to note special complexities etc. for the individual staircases. There is a direct XML interface between the ERP system and Compass Software. Compass Software sorts the staircases or staircase groups into individual production groups. They are displayed on virtual cards that contain all information pertaining to an order and are handed down throughout the entire process, accompanying the order. The production groups are listed on a central screen in the workshop. Once a group has successfully passed through and been completed on one station, the team grabs the next project off the list. This ensures “just-in-time” producti-

on of all stairs. There are less errors and the new system is far more flexible, since high priority projects can be slotted in at any time. The entire planning process, from order to assembly of the staircase is automated with the Compass Software solution and everything is controlled concisely with only one software. The concept brings the perfect oversight between administration and production and all information can be found in one place at any time.

**To put it in tangible numbers, the change to the optimized control of production has resulted in an increase of efficiency of 30%, with a potential of 50%**

The staircase manufacturer has become faster and more flexible. Beyond these results the biggest benefits cannot be measured in numbers: “We have an image of being a reliable partner to our trade associates. We deliver precise products on time” Wagelaar says. Only a few years ago the stair builder had to negotiate each staircase and how much it could cost. Nowadays, the business partners do not talk about pricing anymore, but are free to discuss the individual details of the staircase and how they can make their partnership even better and more convenient. “We are selling more than just a stair now, we are selling a service, the whole package deal.”

### **Setting Out into a Promising Future with the Aid of Robotic Loading**

All in all, the stair builder is more than satisfied with the software solution for his new production method and asserts: “I would recommend Compass Software without question. If Compass agrees to a request, I know it will get finished.” De Vries is convinced that Compass Software is the right partner for the future, since their partnership is based on mutual trust and the longstanding know-how of both parties. De Vries’ production method only needs small adjustments at this point, but these changes have a huge impact. The company also wants to start automating production with the aid of robots, an area of production Compass Software has already been successful in with other companies. De Vries wants to implement robotic loading into their production and hopes to increase productivity to 12 staircases per hour, an additional 20% increase. All parties agree that the future of the industry lies in robotic production. Automating workshops is a promising future project.