

IKS Case Study

Pirelli Tyres



e-Kanban software IKS creates Transparency

Production if covering a wide range of diversity tends to become complicated and unclear. Manual Kanban systems are limited to a certain degree of complexity. At the Carlisle plant, Pirelli has combined its manual Kanban System with an e-Kanban software called IKS and thus increased production transparency and efficiency.

Pirelli the 5th largest tyre manufacturer in the world produces almost all kinds of tyres ranging from cars, trucks, and motorcycles to agricultural machines. All tyres come in a vast range of sizes and patterns, depending on vehicle, purpose, weather condition and environment.

Pirelli UK Tyres Ltd. is responsible for all the Pirelli's group tyres production in the UK. In Carlisle 12.000 to 14.000 car and SUV (Sports Utility Vehicle) tyres are produced every day. The production runs 24 hours a day, seven days a week.

Pirelli has been working for many years with a manual Kanban system based on a pull logic in which material is produced only upon call for more input materials by the following operation. The card or the ticket-to-produce that identifies the container of materials and initialises the production of parts or compounds is called "Kanban".

In 1995, the Carlisle plant won the TPM Award (Total Productivity Maintenance). This award is given annually to factories that have attained extremely high quality and efficiency standards in their production process.

In Carlisle, the enormous range of different tyres led to a highly complex production, however, lacking transparency. The application of a software backing up the manual Kanban system was inevitable. So three years ago IKS, an e-Kanban software, was implemented.

User Requirements

The following **requirements** on the software were defined:

- > to ensure the transparency of the current Kanban situation
- > to assist communication and acquisition of data during the production process
- > to visualise the dynamic Kanban jobs in the sequence of their priority
- > to integrate existing BDE systems for the logging of Kanban situations
- > to show all stock levels of the Kanban system
- > to provide a connection with the existing PPS system in order to exchange information and integrate them into the supply chain

The software had to meet several **main targets** as follows:

- > Optimising the Run in/Run out management of the products, which allows to reduce intermediate stock levels when finishing a production run or lot or when starting a new production run
- > Planning of parallel machines; there are groups of machines accomplishing similar tasks, but some products can only be produced by certain machines. IKS helps the user to time the application of the machines
- > Managing quality controls
- > Real time communication, e.g. when an order of production is changed
- > Assisting lots that run once only; this allows to run pilot batches with a minimum of cost

Realisation

The Kanban system is organised within the IKS module "**Kanban Manager**". At any time all relevant data of the production process can be retrieved. Thus all workers within the production line are supported in their daily decisions

The **IKS Kanban Board**, an electronic Kanban table, visualises all current production situations for different producers in a sequence to their priority. Jobs can be selected according to any work centres (machines, product groups etc.). When the availability of a material changes the display on the Kanban Board changes too. The visualisation of stock levels and production jobs makes priorities transparent at a glance.



Every work centre has an own Kanban Board at its command, showing the workers all necessary information in real time and thus making work scheduling easy. The indications on the Kanban Boards are the basis for decisions that concern the planning of production and set-up processes. At any time the workers are able to react to changes flexibly and in time.

At Pirelli about 40 people are using the Kanban Boards, approximately 250 people are consuming the Kanban cards. Pirelli defined three processes depending on the Kanban Boards to organise their production. The materials produced by these processes are used by 65 machines. The Kanban consumers register the Kanban situations with the help of barcode scanners.



Results and Outlook

Due to its functionality and user friendliness the software was accepted by operators and workers without reservation.

With the help of the e-kanban software IKS, Pirelli reached its targets:

all Kanban processes became transparent.

Now that the effectiveness of e-Kanban has been proven, it is Pirelli's intention to expand it to all processes in the plant, which includes some, that have traditionally been considered unsuitable for the application of Kanban.

For further improvement of the production processes Pirelli is now developing a "Radio Frequency (RF) Tagging System". This system shall reduce errors that might occur when scans are not accomplished. For that purpose each container is fitted with an electronic tag that causes a consume signal when being used. This signal is transferred to the Kanban Board and automatically generates an update; so the containers need not to be scanned any more.

As the workers are already used to manual Kanban the training focussed on handling the PC and the software. The operators were trained "off the job", so they were able to evaluate and test the software without ruffle.

On the average Kanban Board users needed one hour of training to get along with the system. The consumers of the Kanbans were trained about half an hour.

When the application went live on the factory floor, both IT and Production Planning staff gave 24 hour support for the first three days.

Tony Vorley (Pirelli Tyres):

"IKS helps Pirelli to maintain its grip on the road to lean Manufacturing."



About manufactus

manufactus designs und develops innovative software solutions to optimize production and logistic processes.

Our goal is to supply software tools to support internal production processes, optimize the supply chain and to enable the customer to improve the processes continuously. Hereby we strongly support the principles of Lean Manufacturing, Kanban and the Toyota Production System.