DYNAMIC FUTURE s.r.o. | Občanská 1117/23, 710 00 Ostrava - Slezská Ostrava
IČO: 25871871 | DIČ: CZ25871871 | www.dynamicfuture.cz
Společnost byla zapsána dne 11.ledna 2001 do obchodního rejstříku
vedeného Krajským soudem v Ostravě, oddíl C, vložka 23574

Automotive Lighting Ltd.
Direct flows

APPLICATION:

The verification of different ways of production management, work methods, changes of produced amount, shift changes, different distribution and number of operators on production lines and pre-production operations using the dynamic simulation model. The determination of needed place to storage of buffer-stock among pre-production and assembly lines (mark of stocks - „direct flows").

BRANCH:

Automotive industry

SECTOR:

Engineering

BENEFIT:

The verification of the amount of „direct flows" supplies in front of assembly lines depending on the number and workload of assembly setters of individual pre-productions (presses and follow-up operations).

About the company

Automotive Lighting Ltd. exists in the Czech Republic from May 1, 1999 when it arised as joint venture of german company Robert Bosch GmbH and italian company Magneti Marelli. From the year 2003 is a unique owner of the company Automotive Lighting the company Magenti Marelli of the Fiat concern. The year 2000 was for AL Ltd. in sign of moving to new space in industry zone in Pávov. The company develops and products the best modern lights for automotive producers in the whole world for example BMW, Honda, Kia, Mercedes, Mitsubishi, Nissan, Opel, Renault, Škoda a VW. AL Ltd. is respected pattern in production even the concern AL but also in production plants Magneti Marelli and the whole FIAT group.

Projects targets

The project target in the company Automotive Lighting Ltd. was to verificate a mutual relation between the workload of assembly setters of pre-production facilities (MFO) and the amount of produced supplies which are used by assembly lines. The reason of this verification was the deficient area for warehousing of all types of material which is used by assembly lines - so called „direct flows". This supply size is changing in depend on the number and workload of assembly setters at pre-productions (MFO) because in this time the pre-production is stopped and doesn´t produce any parts. In contrast, production lines have the planned production according to a customer and therefore they can still use a needed part which is

DYNAMIC FUTURE s.r.o. | **Občanská 1117/23, 710 00 Ostrava - Slezská Ostrava**
IČO: 25871871 | DIČ: CZ25871871 | www.dynamicfuture.cz
Společnost byla zapsána dne 11.ledna 2001 do obchodního rejstříku
vedeného Krajským soudem v Ostravě, oddíl C, vložka 23574

produced at the pre-production (MFO). That´s why is this buffer-stokck of „direct flows" necessary. It is used to balance of the production capacity of the pre-production and to the planned usage of production lines. This dependency is quite difficut monitored and it depends on many input parametres, preconditions and options that´s why was necessary to built and used a dynamic simulation model. Using this model were researched and verified different proposed variants.

Solution

At the beginning of the project was necessary to process input data. At first have been processed requirements to a final production of production lines. Then was necessary to create the material assignment to the bill of material (BOM), to the process type, to the press mould, to the time of mould taking. It was necessary to all materials assign the packaging index. The last big goal was to find out and assign following operations to the produced materials after the pressing to identificate following processes and operations.

After the processing of input data was created the simulation model in witness with this logic:

- The production requirements are produced on the assembly lines
- Depending on this production ic determined the consumption of components in the first level of BOM (direct flows)
- If the supply decreases it starts the requirement to produce of all pre-component (MFO) needed to the production of this component

- This supply is setted fixed (for example to one average consumer day) for every simulation experiment
- To the MFO production process are included numbers and times of setting of individual production facilities

Due to this model was possible to watch the dependency and workload of setters on the setted initial supply of direct flows.

Results

The simulation model in Witness helped with sufficient precision to find the mutual relation between the number of workers and workload of setters at the pre-production (MFO) and the necessary amount of supplies to storage semi-finished products which are used at assembly lines. Due to these information was not necessary to hold an unnecessarily big supply of direct flows for the known number of setters at the pre-production. By the reducing from earlier 1,5 of day of supply we have got to 0,6 of day. Then the setters´ number increased. The supplies of material could be reduced from earlier 28 194 of packages to the final 18 875 of packages which is the 33% saving.
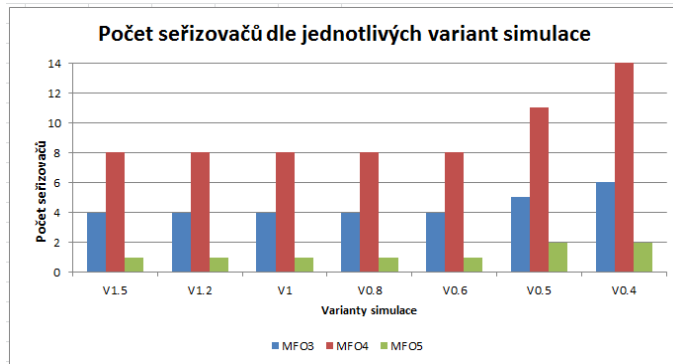
Picture no. 1 – The simulation outputs - the different number of setters