Quinn plastics Ltd.

APPLICATION:

The complex proposal of an optimal solution of a logistic warehouse of finished products

BRANCH:

Production of plastic boards

SECTOR:

Storage and handling

BENEFIT:

Due to creating proposals of range of variants and its verification using dynamic simulation it was gained more ways of suitable storage and handling in a warehouse of the company Quinn Plastics Ltd. By the change of using of individual concepts of storage technologies it is possible to achieve avarage increasing of warehouse capacity up to 25% and more.

About the company

The company Quinn Plastics is a leading producer of plastic boards from polystyren and acrylic matters, technical polymers like polycarbonate and new materials developed from polyesters.

Quinn Plastics is a part of Quinn Group, the irish private company which operates in different industry fields. The company originated by developement and buying different companies during last 30 years.

Project targets

The logistic study target was to create a complex proposal of a new logistic warehouse for finished products in the company Quinn Plastics Ltd.

Solution

There were created prime drafts of placement of storage technologies in a dispatching warehouse which have been adapted on basis of outputs of dynamic simulation model and at the same time there was a verification of gradual production launching in the years 2011, 2014, 2016 and in anticipation of final production and storage capacity in 2018.

Using the dynamic simulation model of a dispatching warehouse it was verificated a gradual developement of production launching on extrude lines, increasing of needed storage capacity and at the same time an impact to handling technology need, an utilization of sawmill for material formating and for dispatching ramps needs.

For the verification of possible drafts of dispathing warehouse layout and utilization of different storage technologies there were proposed different types of handling technology.

With regard to the agreement with the contracting authority of the study there was screened also a variant of using a larger share of automation during storage and dispatching of pallets with finished products with using a rack stacker.

Then it was verificated a variant of utilization standard pallet racks in a dispatching warehouse without a placement of formating sawmill in a warehouse. Due to this implementation it was increased a warehouse capacity of 9 – 10% against to using standard pallet racks in max production variant in 2018 with placing a formating sawmill into a dispatching warehouse.

In the other variant it was counted the utilization of standard racks in production and needs for storage of finished products in 2018 for a variant of increasing warehouse height to 10 metres.

With another variant it is possible to use of maximal space in a dispatching warehouse is using of sliding racks.

Within processing all the implementation proposals of storage in a dispatching warehouse of a new production plant in the company Quinn Plastics Ltd. were also verificated options of using of automatic identification system. There are possibilities of barcodes or RFID technology with using chips.

In the all proposals is expected print of a barcode or loading information to a chip in the end of a production line. This is due to decreasing of errors number and ensuring of information transfer from the production line. In case of solution of both of options automatic identification (barcode or chip) there was proposed using of a terminal for barcode or chip reading to ensure control and processing all the processes in the dispatching warehouse.

In WMS (warehouse management system) will be the identification of placement of particular pallets with HV with individual activities which are executed in the warehouse. The WMS system according to setting allows dispatching by FIFO, dispatching particular orders and in addition guides operation to a HV storage place.

It were verificated 2 variants of utilization of a conveyor to transport pallets from production to the dispatching warehouse.

Results

From the perspective of storage space there were found out in all examined variants in gradual production increasing that one entrance from production to the warehouse is satisfactory.

For years 2011 and 2014 is satisfactory one dispatching ramp. For increased production and handling in years 2016 and 2018 is necessary to use a second ramp.

There was verificated using of different concept of storage technologies - standard pallets racks, sliding racks, rack stacker - these variants are realizable.

Then it was verificated using drive-in racks and DIS technology (from the Jungheinrich company). These technologies are not realizable because of size of pallets.

From the viewpoint of capacity is the most appropriate solution using of sliding racks, from the viewpoint of automation is the most appropriate solution using of rack stacker - both of these solutions are very expensive.

From the viewpoint of combination of capacity and financial expensives is the recommended solution using of standard pallet racks in variant of 10 metres height warehouse or variant of 8 metres warehouse without a sawmill for material cutting.

If a contracting authority would not be limited by financial budget for ensuring storage technology, the best solution is using of sliding racks or combination of sliding and standard racks.

By change of using individual concepts of storage technology is possible to achieve average increasing of warehouse capacity of 25% and more. The best solution from the viewpoint of warehouse capacity is using of sliding racks.

From the viewpoint of the automatic identification it was reccommended using barcodes with using terminals for gathering and processing activities in the warehouse and for printing labels directly at the end of the production line.

Using of conveyors from the production to the warehouse is not recommended because of crossing with handling paths and then it would not be possible to take empty pallet to the production and take brash back from the production.