How we develop your automatization idea into a business case

CH·SYSTEM

Many tasks are today performed by manual operators, causing many repeatable movements, extensive forklift transport, human errors and possibly in un-safe working areas. With production running 24/7 almost 365 days per year the number of operators could be considerable.

How we make your business case

CH System can assist with converting your identified idea of an automated process into a business case.

Most projects have several possible solutions, and we align the project to meet the client's financial reality, having a short return on investment for the business case, by designing the most cost-effective solution.

Our solutions are always presented in a detailed split pricing sheet, showing different itemized prices for areas, robots and/or machines, control system, safety area, project management, estimate for installation and packing/shipment. Enabling our clients to complete a full business case, combining their costs together with our solution costs.

Analyzing:

Our experienced design team analyses your application and develop initial solution(s) in a 3D layout. The review includes a:

- Product mix analysis
- Capacity & speed requirements
- The handling/packing/palletizing specified
- Physical product dimensions and weight
- The complete process from A to Z

Knowing the product that shall be handled/conveyed/palletized/packed/stacked/labelled-etc. is crucial for designing the layout and selecting the correct equipment.

Together with consideration for which velocities and accelerations the product can be exposed to.

Further is the capacity of the system analyzed, how many products shall be handled per minute and which velocities are then required for the conveyors and other equipment.

For palletizing applications are the number of robotic movements per minute calculated together with the palletizing pattern, required reach and if a batch of products can be pre-aligned and then picked by the robot gripper.

The robot can be an industrial Kuka robot or a two or three axis gantry robot with a tailormade gripper.

The product dimensions, shapes and weights are the basis for the selection of the conveyor type, together with capacity required, and if change of conveyor direction is required.

In many cases in existing production facilities free space is a limitation. Where the building height allows for a platform or mezzanine-deck, a preferred option is to lift the products up and have the new automated handling, packing, palletized equipment on a platform.

To perform a successful project knowing and being familiar with products that shall be handled, conveying is the key factor.

The most cost-effective conveyor type is the belt conveyor and the variation in length & width is very high. But the product weight is a limitation, and the transfer to the next machine or change in direction has to be considered.

Roller conveyors

The width of the conveyors will be based upon the product or pallet dimensions. The distance between rollers and the roller diameter are selected based on weight and how smooth the product requires the transport to be. The length of roller conveyors is variable.

For products/pallets with high weight, each roller is typically mounted with a double chain wheel and driven by looped chain from roller to roller. For medium weights and higher conveyor speeds, the rollers are driven by toothed timing belts from roller to roller.

If the product is wider than the roller conveyor, needs to be turned or the robot gripper needs to access in between the rollers, then the rollers can be driven by V-belts. The rollers can be angled, so the conveyed product is moved towards the side the conveyor, possibly assisted with a vertical side belt.

Often an angular transfer is required at the end of a roller conveyor for the change of direction. The angular transfer has a lift function, so that the strip belts or chains lifts the product or pallet up above the rollers and conveys them across. If the product or pallet needs turning, a turn table can turn a full pallet at any degree.

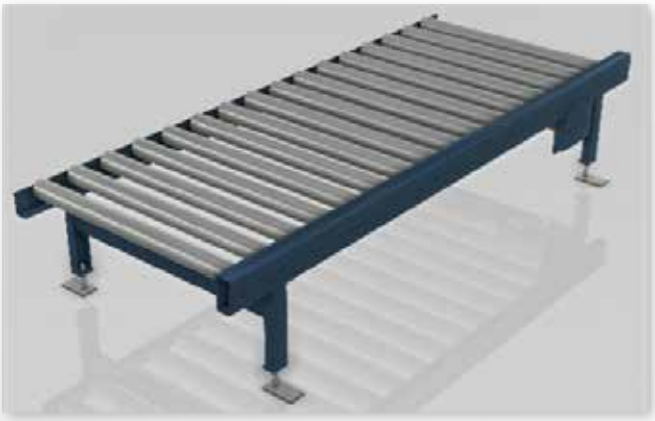
Chain conveyors are often used for transport of empty pallets, stacks of empty pallets or fully loaded pallets. The chain conveyor is available is heavy and medium duty versions.

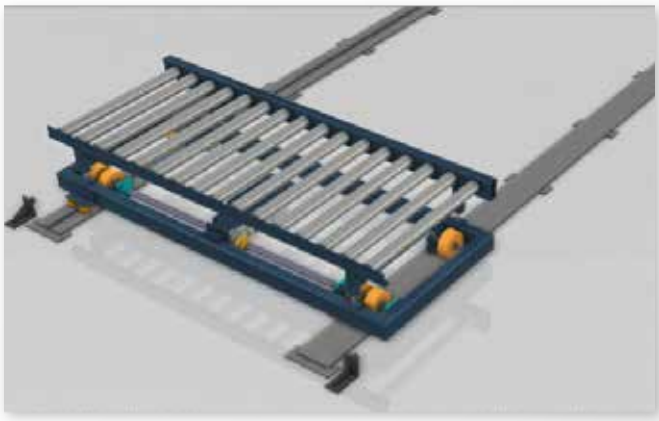
Change of direction or longer distances can also be covered by using a transfer shuttle. A transfer shuttle with 2 or 3 conveyors mounted on top is also often used at the palletizing, where one of the shuttle conveyors transports the empty pallet to the palletizing position, and the other shuttle conveyors removes the finished palletized pallet.

Using a shuttle also enables an open access opening for forklift transport for empty pallets, supply for wrapper/hooder, sheets or removal of waste. Different shuttle designs are available depending upon the speed required, power connection via a cable chain or a inductive power transfer.

For more special products or conveying of steel cages, where the roller or chains could be quickly worn or damaged, a plastic modular belt conveyor can be used.

All our conveyors can be equipped with frequency converters for easy setup of the control system and smooths accelerations. For food safety application all gears are lifetime lubricated with food grade oil. The palletizing gantry robot is driven by toothed belt instead of a rack & pion type.

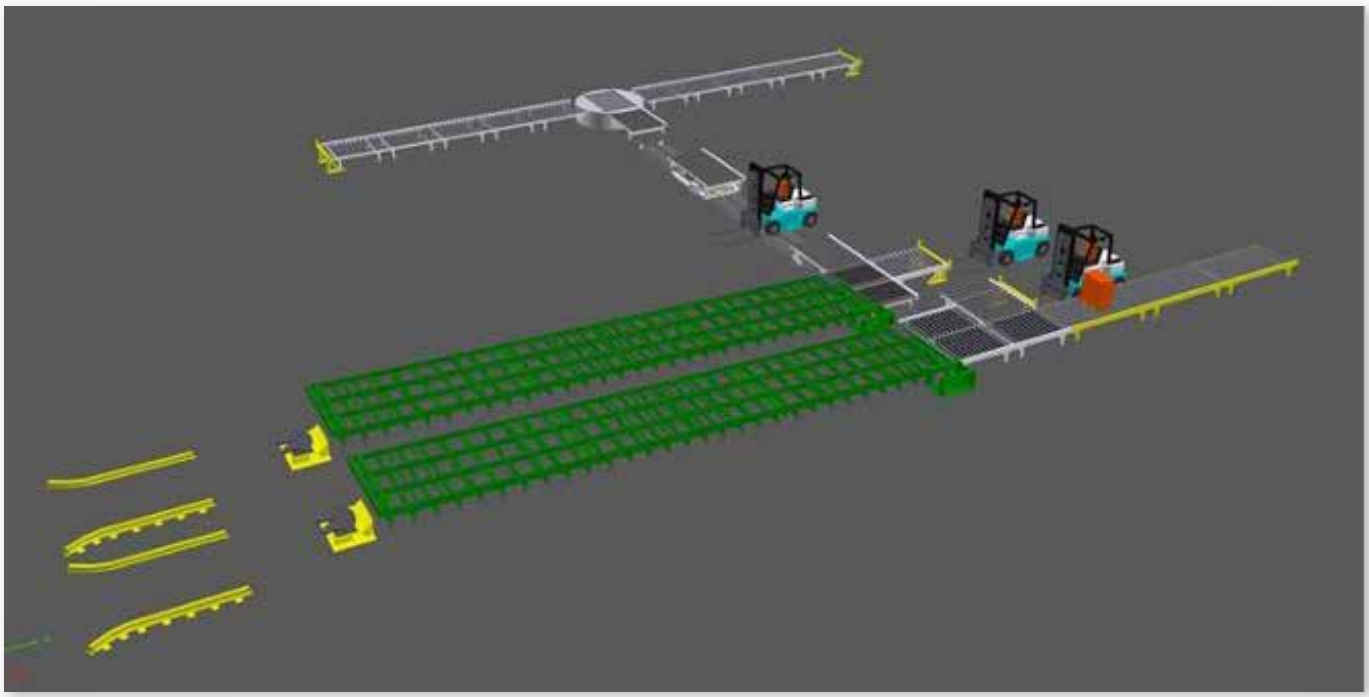




3D Drawing

The 3D Visual Component software contains the whole Kuka robot range with weight/gravity limitations, reach, speeds, axis movement and limitation. Our experienced engineers select

The best suited robot size for the specific application after selecting the initial gripper tool design and estimating the total weight of the maximum product weight and weight of the gripper.



Identification of products

At the starting point of a conveyor line, the product or pallet must be identified. Either by reading a label, barcode or RFID tag.

Our software system is then pre-programmed to handle that specific item, the location is identified, the dimensions are known together with palletizing pattern, bottom-intermediate and/or top sheet, how to be packed, corner protection and the wrapping/hooding sequence.

Dimension checks of the empty pallet stack, palletized pallet or product is possible and vision identification of the product.

Larger projects are often extended in several steps. We always keep the end configuration (future road map) in mind, and ensure major equipment is placed correctly the first time, ensuring good accessibility at the end stage.

We can adapt to most client requirements for preferred brands of frequency converters, motors, sensors, fencing, etc. If 3 party special machines are required, we integrate these in our layout and control system, risk assessment and CE-marking.

Meeting client's specifications and requirements is our main objective – capacity, startup on time and meeting the budget are the key factors.

The capacity of a new or upgraded automatic system must be met, and the critical parts of the layout can be simulated, using Visual Components software together with the CH designed conveyors/machines/gantry robots or Kuka industrial robots & AGV's.

If you have further questions or need our expertise, don´t hesitate to call us