

Summary

In the last decades several systems have been developed for the loading and unloading of goods, especially for road transport. These systems can be divided in:

- **Tail lift.** This system is the most common system in use, and the diversity of types is enormous. Tail lifts can be divided in rear-closing, retractable, vertical moving, changeable, and many others. With tail lifts (un)loading can take place everywhere, but it takes a lot of time. Other disadvantages are the weight (decreasing the load capacity) and it isn't suitable for automatic loading.
- **Loading plates.** This system can be used in combination with load docks, with the principle of low-loaders, or on trucks with a variable height of the cargo floor. This system is easy, has a low weight, but it isn't fast.
- **Dock levellers.** This system is built into a load dock and eliminates the difference in height of the load dock and the cargo floor. Possible constructions are a mechanically or hydraulically powered loading platform; a hinged or a telescopic tip. This system also has the disadvantages of a low speed and non-automatic control.
- **Scissors lift.** The basic principle is the same as for the dock levellers. But with a build in roller track automatic loading can be realised. This system isn't fast, but the construction is less complicated compared with other automatic systems.
- **Automatic systems:** First the roller track. These are pneumatically lifted roll cylinders on which loaded units (pallets), roll on. The cylinders can be lowered under ground level. This fixes the load. This system will be automatic if it is powered by a slipchain (a chain which is pushed against the pallet) or by a wheel unit system (wheels which are pushed against the pallet). The speed of such systems is high, loading a truck in 3-5 minutes. The disadvantage of such systems is the need of fixed bottom dimensions and a minimum bottom stiffness.
Other systems like the trailer- or manual skate system (pneumatically raised skates in a gutter or guidance which raises pallets or roll containers) can be as fast as the roller track. But the construction of the cargo floor inside the truck is easier. Other systems do need an expensive installation in the truck, but then the installation of the dock shelter won't be that expensive. These systems have a chain/ slat floor, a rubber 'carpet' floor (both the principle of the conveyer belt), or a walking floor (moving parts based on the principle of friction). The big advantage is that there is no limit to the product dimensions in these systems.
- **Truck-mounted forklift.** The different types offer one/ three wheel traction, normal/ revolving wheels, mounted at the back or under the truck. Truck-mounted forklifts are able to load at every possible place. Disadvantages are the price, the weight, and the lowering of the available cargo space.

None of these systems is "the best". In case of universal applications the tail lift will be most popular. In case of traffic between distribution centres and manufacturers automatic systems will be the best. Especially the roller track combined with a slip chain or the pneumatic raised skates are good solutions. But, not for every company an automatic system can be paid back. Therefore, systems like automatic loading at the distribution centre and unloading with a tail lift at the shop-centre can be a very good solution. But everything depends on the available time and on the overall cost of such systems.