Safer stevedoring
Fritz Merk, Sort + Store GmbH, Essenbach, Germany

Dockers live dangerously
Although modern container terminals are highly automated, thereby helping to achieve a major reduction in the risks to life and limb facing their workforces, there is one group which still works under the same conditions, but under steadily increasing time pressures: the stevedores.

As was recently remarked by Lloyds, container ship building has undergone a rapid development in the past few years, but this has not extended to stevedoring systems. Although deck containers are now stacked up to eight deep – a good 25 metres – the lashing and locking techniques remain unchanged. Above the third tier (or the fifth if using lashing bridges), the boxes are interlocked with twistlocks (TWLs).

Since fully automatic twistlocks are still the exception, the TWLs have to be released manually on unloading (and – if using manual TWLs – locked again after loading). This is performed by the stevedoring gangs from the top tier of containers using long operation rods. And – given the constant imperative to minimise berthing times – they are constantly up against the clock.

This makes the stevedores’ job highly dangerous: often they work on bays as they are being unloaded from the gantry crane; night work or poor visibility due to bad weather conditions make matters worse and the operation rods too can present a serious hazard when dropped or discarded. According to the statistics, one in two lashing accidents involves the rod. And such accidents resulting in personal injury abound, as evidenced not only by the statistics, but also by accident insurance premiums, which – in German ports for example – are typically three times as high for stevedores as they are for the yard personnel.

Flying not climbing
Serious accidents have made the need for action abundantly clear. Until fully automatic TWLs become standard – which is unlikely to happen in the foreseeable future given the persistent safety problems with the types currently on the market – a concerted effort needs to be made to make stevedoring safer.

This task is facilitated by an entirely new type of lash basket. Instead of the conventional cages which are lowered onto the container stacks, with SORT + STORE’s TPC the workers are guided along both sides of the top container tier in narrow pods, enabling them to reach and release the TWLs directly – without using any aids.

The pods are joined horizontally by a telescopic beam allowing stevedores to work on stacks of 20’, 40’ and 45’ containers. The system is suspended from the gantry crane like a standard container, and additional, optionally available securing devices prevent dropping due to operating errors, etc. The pods are narrow enough to be used in the vast majority of container ships while allowing sufficient freedom of movement for the workers plus extra space for stowing any remaining TWLs or necessary tools. As an added feature, the pods of the TPC S2 type also telescope vertically, so that the stevedores can work through the top container tier while travelling from the land to the seaward side before lowering their pods to the second tier and releasing all the TWLs there on the way back. This reduces unproductive return journeys to the bridge and helps improve economic efficiency.

Beside these routine uses, the TPC has also proved an ideal aid in case of emergencies: when blocked or frozen TWLs need to be released, the time-consuming and extremely dangerous task of ladder climbing can be dispensed with, and the worker ‘flies’ instead directly to the source of the problem complete with equipment, enabling him to deal with it from a secure and ergonomic position.

What does the industry tell us?
SORT + STORE developed the ‘Telescopic Personnel Cage’ (TPC) in close collaboration with the EUROGATE Group. The design principle is protected by the German manufacturer by international patent and has now been certified by Germanischer Lloyd. The lash basket has been and continues to be thoroughly tested at a range of terminals in Europe and USA and is also increasingly used commercially, although this
involves some changes in the work process. Opting for the TPC brings a substantial safety improvement for the stevedores, which has to be weighed against potential disadvantages on a case-by-case basis.

Below are some frequently cited arguments for and against this novel lashing device. After all, only practitioners can evaluate in the long term whether the TPC can be successfully integrated in the highly individual and variable processes of a container terminal.

For
Ideal equipment for working on top container tiers (tiers 5 to 8); can be used even by lower cranes which are unable to place conventional baskets on the container stacks.

• Telescopic from 20ft to 45ft; good solution for 45ft containers with TWLs in 40ft position.
• TPC solves lashing problems of open top containers and flatracks in the top tiers.
• Allows faster and safer trouble-shooting.
• Excellent access to TWLs – no need for operating rods.
• Workers feel safe on board thanks to sufficiently high sides, safety devices and unobstructed view. The lash basket is light (approx. 5 tonnes) and the pods are pivot-mounted, allowing them to react flexibly to impacts.

Against
• The bridge is blocked by the TPC throughout the process (releasing of TWLs).
• Problem of communication between stevedores and crane operator; best solved by the use of radio devices.
• No manpower saving.
• The TPC can only be used in wind speeds of up to 20m/sec for safety reasons
• The vertical retraction of the TPC by the bridge spreader must be performed at reduced speed to avoid damage to the hydraulic brake
• The TPC requires more maintenance than conventional lash baskets.

Summary
The TPC – available in a fixed version for working on one container tier or a vertically telescopic version for two tiers per operation – is a device which helps fill one of the biggest safety deficits at container terminals. While the acquisition of these lash baskets is not primarily associated with an improvement in productivity, more and more terminals are now opting to use them, as the avoidance of serious or fatal accidents constitutes a success factor which operators world-wide are increasingly giving the priority it undoubtedly deserves.