

# The approach to the fully electric spreader

**Gerhard Geis**, Sort + Store GmbH, Essenbach, Germany

Crane spreaders are one of the most highly stressed components in the handling process at container terminals. In addition to the requirements which have existed at all times, namely to produce as low standstill times as possible, the aspect of ever greater environmental considerations has gained more and more importance.

Consequently, it is only logical that many companies are working to replace the hydraulic components of spreaders with electric systems. The ultimate target is to render spreaders fully electric.

## Evolution of container handling

When in 1951 the first containers were transported by ship from Denmark to Alaska, no one could predict the extent container transport would reach in future. Malcolm McLean was the pioneer who shipped the first containers from Newark to Houston in 1956 and thus SeaLand, the first container shipping line, was born.

Along with a rapid development in container transport came a rapid development in lifting devices as well.

Initially, simple lifting devices were used, but with the introduction of individual container dimensions, it became necessary to develop adjustable systems.

Initially two companies used electrical drive systems, but these were abandoned after only a short period of time as electro-hydraulic drives were given preference. This concept was further developed and perfected throughout the years.

The disadvantage of this concept was that it was characterised by very long standstill periods which – in the first line – were due to failures in the electro-hydraulic system.

In addition, quite a number of leaks and pollutants occurred.

As late as the year 2000, a German company was successful in developing the first STS spreader which was driven completely electrically, including the flippers. This system worked without any lubrication, showing excellent performance during long running tests at several terminals. Unfortunately, this company went bankrupt before the products were completely developed to serial standards.

Because power input is limited depending on the crane used, it was very difficult to design powerful and permanent drives that functioned properly with the available energy.

## Spreader developments

This problem has now been overcome through the innovative ideas of the Sort + Store development department. The engineers who designed and produced the first STS spreader have designed these new drives and brought them to a production stage in a subsidiary of Sort + Store. These developments are an absolute novelty in this field of industry, showcasing the following attributes:

- Highly powerful flipper drives which are superior to the hydraulic drives while at the same time being very simple to function. In this case, no specific control equipment is required and also maintenance is possible at a very low cost and by simple technical methods. During each setting motion, the flippers re-adjust automatically and are thus very advantageous as compared with hydraulically operated flippers which lose their setting power through time.
- Telescopic drives are designed such that the power supplied by the crane is sufficient. Also, telescopic over-height frames or other telescopic devices (such as personnel cages) can be operated without any difficulty. At nearly the same power input required for a hydraulically operated spreader, the electrically driven spreader has a comparatively high moving power.
- In addition, the drive is suited best for twin lift spreaders. It is possible to move two spread 20 ft containers without difficulty. This is possible due to the telescopic arms' new bearing system, which allows two fully loaded 20 ft containers to be moved.
- 'Long twin spreaders' which are equipped with this system need only 50 per cent of the drives in the area of the centre twist locks. This is possible through the use of specific reversing equipment. Height compensation is automatically regulated through mechanical means. No damping systems are required for this version.

Patent applications have been filed for all components described above. As Sort + Store regards itself as solely playing the role of development and engineering in this field of spreader technology, discussions are now being held with interested partners from the industry in order to transfer these path-breaking components to the industrial level, in order to support terminals in achieving their objectives. These objectives are: maximum availability, optimum handling and environmental relief from hazardous effects such as oil leaks, grease spills and noise.

### ABOUT THE AUTHOR

**Gerhard Geis** has been in the spreader business for more than 35 years. Working for various companies he has achieved an excellent reputation as an expert in terminals around the world. Mr Geis works with Sort + Store on a free-lance basis, working on inventions and innovations, particularly for spreaders.

### ABOUT THE COMPANY

**Sort + Store GmbH** are a manufacturer of highly sophisticated devices for container handling.

### ENQUIRIES

Sort + Store GmbH  
Siemensstrasse 13, D-84051  
Essenbach  
Germany

Tel: +49 8703 90790  
Fax: +49 8703 907920  
Email: [info@sort-and-store.com](mailto:info@sort-and-store.com)  
Website: [www.sort-and-store.com](http://www.sort-and-store.com)