

SUMMARY

In assignment of semi-trailer factory 'BUISCAR' is developed a new concept for intern terminal transport between stacking yard and quay-crane.

Because of the progressive number of containermoves there has been a need for solution of congestion problems on container terminals.

At the Brani terminal in Singapore the intern transport takes place with 110 Double Stack Trailers. By this, the number of movements on the terminal can be reduced.

In practise the tires of these trailers wears quickly and the possibility exists that the construction of the suspension breaks off.

These trailers are engineered with a gooseneck-construction and five axles of which the rear three axles are self-steering. On the axles there are in total twenty cushion tyres mounted. The suspension is construct with leaf-springs.

This report describes a new concept of a double stack trailer, in which the functions of bearing and fixation are integrated with a spaceframe. The spaceframe requires by his height the demanding bendingstrongness and fixates both containerlayers.

The necessary height for the fixation of the second containerlayer makes it posible to construct the spaceframe with relative small tubuler profiles.

The trailer is construct with pneumatic tyres and air-suspension. The choise for pneumatic tyres and air-suspension results in a less dynamic load as well on the construction as well on the road. Through matching the air-suspension the load will equalize. The stifness depends of the airpressure.

The stabilty is researched by dynamic simulations. With these simulations is determined the maximum lateral acceleration and the springforces. Next to is researched the optimalisation for minimalisation of the tyreforces and steeringmode.

With the springforces and the geometry of the air-suspension is designed the subframe and the spaceframe with a gooseneck.

The buckling-calculation shows that the impactforce by loading a container at the topside of the spaceframe is definite for the choice of the tubular profiles and geometry of the whole design.

The overall conclusion of the spaceframe-concept is : With some restictions for the crane-driver the new DST will be operational succesfully.