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Since the beginning of the development of container cranes, two kind of hoisting systems are used; the rope trolley and the machinery trolley. Those hoisting systems are still in used, but the sway control of the container in the crane becomes an increasing problem. That's why there is in this report an analysis made of the sway behaviour of the container. Based on the analysis the effectiveness of sway control between the rope and machinery trolley is compared.

The machinery trolley has a heavy trolley with the main hoisting equipment attached to it. The rope trolley has a light frame, which only carries the main hoist sheaves. The hoisting device is placed in the machinery house and thereby this system has much longer cables than the machinery trolley.

From the both systems are simplified models made in ADAMS. With these models simulations are made of the both hoisting devices under different circumstances. The following simulations are done; trolley driving, a push, lowering the load, wind load, eccentric load and different sheave distance.

The simulations results ended up in the conclusion that the model was unstable. And in some cases the cable force became zero, which is hardly possible. So there is chosen to simplify the model to get a stable model. Looking at the results the deceleration of the trolley delivered a lot of trouble. So to get the model stable the deceleration is forgotten. The problem of the cable force that becomes zero can be avoid by decreasing the acceleration to 0,6 m/s^2 and change the cable length to 15 meter instead of 20 meter. This numbers are determined by tests with the model and this where the maximum numbers at which the cable force didn't become zero and the model looks stable. So with this simplification the effectiveness of sway control of the both systems is compared.

With the new model the following simulations are done; trolley travelling, trolley travelling, a push, wind influence, sheave displacement and eccentric loading.

Still the simulation results were not reliable. The model that is used is build up of components that are available in ADAMS. An expert has delivered the program of the components, but it is clear that there is an error in it.

In spite of this the conclusion is that the effectiveness of sway control is better with the rope trolley. Because the rope configuration of the rope trolley is stiffer and also the overshoot and the skewing of the container were smaller with the rope trolley.

The recommendations are that the model must be improved. The best is that the first model is improved to a good working model. By means of:

- Improve the interaction between the ropes and the sheaves so the model will work.
- Improve the trolley travelling in such a way that it moves as in the reality.

The following extensions are suggested:

- The middle sheaves in the model of the machinery trolley ought to be besides each other. (The drums lay beside each other in reality) This is not the case in the model and can lead to big difference, because the swaying depends for a great part on the rope configuration.
- Put the total rope system of the rope trolley in the model this gives better similarity with the reality.
- A better look at the wind.

There is a recommendation for the improvement of the stiffiness of both systems and that is to make the sheaves distance maximal. Because of the guide system of the containers in the ship this is hardly possible. So a hydraulic system is suggested, through which the distance of the sheaves can be changed, when the container is above the guide system.
