

J. van Kasteren *Development of a large pipecutter. Preliminary investigation.*
Doctoraalopdracht, Report 88.3.OS.2475, Transport Technology, Offshore Technology.

During the assignment "cutting" of steel tubes, which usually consists of combined deformation and shearing, has been investigated. The tests have been executed by parallel "shearing" with straight knives, in order to separate the process of deformation and shearing for investigation and modelling.

Dimensionless presentation of each process is possible as follows (based on the testresults):

- dividing the deformation force by the plastic moment M_F of the tube: $M_F = (\sigma_v \cdot t^2 / 4)$.
- dividing the cutting force by $F_K = \sigma_v \cdot A$.

Adaptation and improvement of the computerprogram KNIPSIM1, based on the testresults, has led to the simulationprogram KNIPSIM2, which gives an estimation of the required amount of cutting energy.

It is recommended to execute further research using different shapes of knives to minimise the maximum required force based on the assumption of equal amount of required cutting energy (calculated by the computermodel KNIPSIM2) independent of the shape of the knives.

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