



Research Paper

# Quasi-Analog Simulator for the Optimization of the Flow of Materials in Integrated Systems

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A quasi-analog system is described in detail which is capable of representing complex materials handling systems with a view to optimising such processes either before construction or after operation has commenced. An example is given of the savings to be made as a result of optimum handling routes, based on information gleaned from the simulation.

## 1. Introduction

A quasi-analog simulator for the analysis of the flow of materials was developed in the Department of Materials Handling of the Ruhr University in Bochum, supported by the Ministry of Technology and Research of the state government of North-Rhine-Westphalia. This simulator allows one to describe discrete systems of handling or processing plants in a similar way to continuous systems using an analog computer. This means that handling systems can be represented by hardware model functions, the combination of simulation modules. Such a model employs the transmittance of signals which correspond to the flow of material, information and signals of the real plant.

This simulator, independent of the availability of computer systems, enables the planning personnel without specific knowledge of data processing or the

employment of computer specialists to test ideas represent the functions of a newly developed system and prove its performance to the customer. The simulator is applicable to the entire field of handling bulk materials, for unit transportation which does not require identification or information about destination during the simulation and processing plants in the chemical or steel making industry.