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In-house transport

Air-cushions can reduce costs up to 40%

Reduced investment necessary/reduced energy consumption/ high precision possible/ possibility of using a much reduced area

J.Rh. Nürnberg

Air-cushion technology can revolutionise in-house transport. Many leading companies have recently introduced this technique and they have come to appreciate its advantages. The advantages are the following:

- high flexibility of multidirectional vehicles
- easy adaptation to new products,
- smaller required area for the transport than with the conventional transport techniques,
- no necessity for a complex heavy lifting device in the workshop,
- no rails, no cranes,
- reduced energy consumption due to the almost total reduction of friction,
- worthwhile investment, also for small series production,
- application spectrum for loads from 0,1 up to 1000 tons,
- exact positioning possible,
- low cost.

Air-cushion technology has a great future. The precedent cases are now in the form of world-renowned companies. "Companies spread the news of the advantages of this technique by word of mouth and so the others come to us." Hartwig Michels technical manager of the DELU company in Nuremberg remarks, the latest development. Names

like Deutsche Airbus, Dornier, Adtranz, AEG, Siemens, Daimler-Benz, Volkswagenwerk and Mannesmann confirm this rise. "There are new ranges of application, so that sales and benefits are rising continuously" the commercial manager of DELU Knud Klinger says. Each has approximately a quarter of the shares, the other half of the company belongs to the Fluid Gliding Technology Corp. In Delaware, USA.

Air-cushions reduce costs

When the air-cushion system facilitates a completely new organisation of work, the possibilities to save costs are higher. For example, during the assembly of the new Airbus 321, a longer version of the A-320: Up to now the process of assembly of all Airbus models was carried out in France. The unpainted planes were flown to Hamburg-Finkenwerder, where the interior fitting was carried out. Subsequently the planes were flown to Toulouse, where the painting process took place. With the A-321 it has been possible to completely assemble a plane at the one site. Exterior assembly work and interior fitting can be carried out on the plane simultaneously. The computer controlled vehicles used for this work combine the characteristics of air-cushions with those of driverless transport systems. Loads are suspended

on air-cushions and in this way can be moved in all directions and be exactly positioned with very little power. On a long tape guided pallet, the 16 ton and 45 meter long fuselage glides, few millimetre over the ground, from one assembly site to another. It is positioned with an accuracy of 0,1 millimetre. It is calculated that this new work organisation enables saving of 40% thanks to the use of air-cushion systems.

Another elegant organisational solution was found in the company AEG Schienenfahrzeuge GmbH in Hennigsdorf. At this plant, it was difficult to assemble wagons that were up to 30 meter long instead of the 26 meter wagons up to that date- in the 24 meter wide hall section without transport connection in the fore part.

The air-cushion pallets enable the moving of vehicles of different lengths. They also enable the arranging of the assembly stands at will because the air-cushion technique allows for accessibility at any time.

For the automation of the transport of the half and fully manufactured products of the Herberts GmbH company in Wuppertal "leader of automobile varnish production in west Europe" the DELU company built an explosion protected, driverless transport system on

air-cushions which has a load capacity up to 32 tons. With this system it is possible to move mixers of different capacities to the production positions, like production preparation, dosing stations, etc

Bigger storage capacity

In general air-cushions can be used for transporting work pieces, machine, tools, production materials or movable platforms. With this transport system the assembly pits become unnecessary. The workplace is moved from one and into another production position, for example during window and door assembly. The pallets, which are mobile in all directions, and therefore adaptable, permit a bigger storage capacity than the fork lift trucks, which require more room for their movements. In the wagon construction only half of the previous hall area is necessary. In the bus production and in the Airbus assembly only two thirds are required.

Cranes have no limits

Whereas most conventional cranes can only be used following exact specifications, there are no limits for a crane on a thin air layer. Such a full gantry crane, which is mobile in all directions, enables a completely new transport

system on air cushions. This crane is not immovable to one factory hall. It can even be used outside the factory. It therefore substitutes several cranes which are rigidly installed.

A company which works in a rented area can take along the portalcrane on air-cushions if the company decides to move out. On the contrary a conventional crane must stay in the place, where it was installed. In comparison of the vehicle efficiency (kilowatt power per ton weight) and of the acquisition prices air-cushions devices cut off better than conventional means of transport.

Almost no world competence

The DELU company, which has 35 workers in Nuremberg, a several more at the Romanian subsidiary company, works in construction and planing. The company also builds equipment like control systems, hydraulics and pneumatics and works in the final assembly of pallets. All this requires a special know-how. For the rest, a great quantity of tools and components are bought, especially the heavy steel components. The total turnover of 6,5 million D-Mark per year is increasing quickly. The managers remark that the profit yields a sales profitability of 20%, i.e. 1,3 million D-Mark.