

LEAD INDUSTRIES ASSOCIATION, INC.

292 MADISON AVENUE

NEW YORK 17, N. Y.

BATTERY POWERED INDUSTRIAL TRUCK - ADVANTAGES AND OUTLOOK*

H. M. Palmer
Lewis-Shepard

Before discussing battery electric trucks specifically, it might be appropriate to briefly describe the industry of which they are a part. This is the Material Handling Industry. In its broad sense, it includes not only the equipment used in handling material but the science of material handling - in other words, application of material handling equipment.

Reduced to its simplest terms, material handling is the transportation and movement of material. This includes both horizontal and vertical movement in warehousing, distribution, manufacturing and transportation. Modern material handling could be defined as the transition from movements by hand to movements by machine.

In considering material handling, it is well to think of its cost to industry which indeed has a bearing on the future of battery powered industrial trucks as well as other equipment. For some time, it has been recognized that at least 22% of the cost of all manufactured products is in material handling. Even in factories time spent on production in process is seldom more than one-third with the balance of time devoted to material movement. Of course, in storage, and distribution 100% of the labor cost is in material handling. It is estimated that there are 100 tons handled for every ton shipped throughout manufacturing and non-manufacturing industries. Certainly, material handling adds to the cost but never to the value of a product.

Cost reduction through labor saving devices is an ever increasing consideration of management because of higher labor costs and lower productivity. There is no more fertile field for savings than in material handling because it plays such an important part in the overall industrial picture as illustrated by the few facts I have just recited.

Major categories of material handling equipment as we think of them in our industry consists of cranes, conveyors, overhead monorail systems and industrial trucks. There are many more products such as, batteries, chargers, gasoline engines and pallet racks but in general these are supplemental to the major segments of the industry.

*Presented at the 35th annual meeting of the
Lead Industries Association, Inc., Drake Hotel,
Chicago, Ill., April 29-May 1, 1963



Look Ahead with Lead

H. M. Palmer

-2-

Battery Powered Industrial
Truck - Advantages And
Outlook

My assignment today is of course on the subject of industrial trucks - particularly battery power industrial trucks. So, let's devote some thought to industrial trucks. What they are and what they are intended to do.

Most everybody knows what a fork truck is. Probably more people are familiar with gas trucks because of their similarity to automobiles but the great majority also know there are battery electric fork trucks. Both are used for transporting and stacking material generally in unit loads.

Of those not connected with the material handling industry or application of its products, many do not know that there are narrow aisle trucks quite different in principle from conventional counterbalanced fork trucks and driver lead trucks called "walkies". Both of these types are made in many models both low lift and high lift and they open new fields of application for which the gas truck simply is not suitable. These trucks are made only with battery electric drive. There exists a very definite trend toward these new concepts and applications and because of their nature they favor the electric truck almost to the exclusion of the gas. In total units when all types are included, there are already almost four electric out of ten trucks purchased and these new broad fields of application are only just beginning to be recognized.

Electric trucks are made in so many different types for so many different applications that it is difficult to describe them in a word picture. I have, therefore, brought a few slides which illustrate the various types I have attempted to describe. This will also give you an idea of some of the newer applications which battery electric truck manufacturers are being called upon to meet.

Slides

1. Counterbalanced fork trucks. Made in gas and electric. Most gas trucks are sit-down models but electric are made in both stand drive and sit-down types.
2. The narrow aisle truck is made in two basic models. The first, shown here, is a straddle type machine. This truck works in much narrower aisles than counterbalanced trucks and is made only with battery electric power.
3. This is a narrow aisle truck of a slightly different type. This one is called a Reach Truck which is a combination of straddle and counterbalanced types. It, too, is made only in electric. Both of these models can be furnished with very high lift as needed to meet trends in warehouse construction and they are available with many innovations such as, remote control where the operator rides up with the load.

H. M. Palmer

-9-

Battery Powered Industrial
Truck - Advantages And
Outlook

4. This is a low lift walkie truck for handling pallets. It is also available for loads on skid platforms such as, skids of paper. It is for horizontal transportation only and you will note that the operator walks but all traction and lifting is accomplished by battery electric power.
5. This is also a walkie type truck but as you can see is for lifting and stacking in addition to horizontal transportation of loads. All movements are battery electric powered and fully controlled from the control handle. Walkie types are furnished only with battery electric power.
6. This is a relatively new concept - the Order Picker. This truck is designed specifically for withdrawing material which has been put away in unit loads but is to be withdrawn item by item. It eliminates the former practice of climbing up on ladders, riding the forks of a conventional fork truck where two operators are required or worst of all the necessity of order picking only as high as a man can reach from the floor.
7. This is a special truck for handling bar stock. Note, however, that it is the basic walkie design. Equipment of this kind lends itself only to battery electric-truck design.
8. Finally, this is a picture of a very special truck. It is a 19,000^{lb} capacity die handling truck. It is the same basic walkie design with specially built, very heavy carrying frame and lifting mechanism.

That is the picture of industrial trucks, what they are and particularly a few examples of the models available in electric truck design. Now what are the advantages of electric trucks. There are many and here are a few of the outstanding ones.

1. There are no fumes from a battery electric truck. This means no health hazard, no odors, no hazard of food contamination in refrigerated storage.
2. Battery electric trucks are quiet. This eliminates the distraction and annoyance that gas trucks produce particularly inside. It makes it possible to use a central dispatch system for truck operators, radios or auto call.
3. Electric trucks are clean. There is no smoke, no engine oil dripping and no exhaust to kick up dust from the floor.
4. Electric trucks last longer. Life expectancy is at least double that of a gas truck.

H. M. Palmer

-4-

Battery Powered Industrial
Truck - Advantages And
Outlook

5. Maintenance costs are much lower in electric trucks than gas. Average maintenance cost is less than half that of a gas truck because there are, of course, many less moving parts. Your own association survey publication shows studies that indicate a cost of 47¢ per hour to maintain an electric against \$1.18 an hour to maintain a gas truck.
6. There is less downtime with electric trucks. This means dollars saved because downtime is lost time for both operator and truck. A recent survey shows that there is 85% less downtime in electric trucks than in gas trucks.
7. Cost of fuel is lower for electric trucks, even considering the cost of battery and charger. Electricity is the cheapest form of power and while everything else has gone up in price, electric power has gone down. Your association study shows fuel cost slightly less for electric than for gas. This, however, includes battery and charger which can be leased for five years and purchased outright for \$1.00 at end of lease period. After five years, there is nothing left of the gas truck but battery and charger for the electric has additional years of useful life left.
8. Electric trucks are more maneuverable. This was discussed earlier and illustrated by the narrow aisle models shown on our slides all of which operate in much less space than would be possible with a gas truck.
9. Versatility of electric is much greater. There are many more applications possible with electric trucks. In addition, new uses are developing constantly.
10. Electric trucks are safer. There is much less fire hazard the greatest of which with a gas truck is during fueling operations and of course there is no gasoline or propane storage required. Electric trucks are available with spark enclosed construction for use in hazardous areas.

We now come to the outlook for electric trucks. What do we see ahead. Based on known factors, the future looks particularly bright.

We have already described the trend of electric compared with gas. New applications and new uses are developing at an accelerated pace, in our opinion much faster than for gasoline trucks. There is much greater interest in labor saving devices throughout industry. This will benefit both gas and electric trucks. In addition, the electric truck can meet more new demands. For example, we are making riderless electronically controlled tractors which already have a broad application in industry. This would be an almost impossible

H. M. Palmer

-5-

Battery Powered Industrial
Truck - Advantages And
Outlook

accomplishment for the gas truck as presently known.

Our own company projects a 50% increase in volume by 1970. This is not just wishful thinking but is based on the trends I have described today and the research and development program we are presently undertaking. For the size of our company and industry, we have a very large research and development department. Its entire efforts are scheduled for the next three years and although we have the broadest electric truck line made, we can't possibly schedule research and development on all the things we would like to have to broaden it further. It seems to us that these factors justify our optimism for the future.

Finally, what is the relationship of the lead industry to electric trucks and why should you and your companies use them. Well, first of all, all the advantages mentioned today apply to you as well as others. In addition, however, the lead industry is paying for excellent, thoroughly convincing publicity on battery electric truck advantages. For example, you show it costs \$6880.00 to own and operate a gas truck for one year. You show it costs \$3551.00 to own and operate an electric truck for one year. You thus show a saving of \$3289.00 per year to own an electric truck.

You are of course primarily concerned with the expanding use of lead. Your association advises that the storage battery industry is your largest consumer using almost 40% of your total production. Certainly, if you don't use battery powered trucks, your example will tend to undermine this excellent market.

You, and your association management have tangibly recognized your relationship with battery electric trucks in appropriating \$25,000.00 this year for their promotion. Where better to start using them than in your own home plants.

I know I can speak for the entire battery electric truck industry in saying that we appreciate your recognition of our joint interests. Our company particularly is glad of the opportunity to make this presentation today. Thank you very much for your interest and attention.

LIA15752

