

LEAD INDUSTRIES ASSOCIATION, INC.

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July 3, 1967

SUBJECT: MAGAZINE STORY
ON LIFT TRUCKS

To: Members of The Lead Industries Association, Inc.:

Enclosed is a reprint of an editorial article from the March issue of MILL AND FACTORY magazine concerning the challenge being offered to gas powered vehicles by electric lift trucks.

We think the piece is done quite objectively and contains much food for thought on the subject. Please note that one of the nomographs from our well known brochure, "Industrial Trucks — What do they cost? ... to Own? ... to Operate? ... to Maintain?" is reproduced as a comparison table. We have ordered a quantity of reprints for use in our motive power battery campaign activities.

Up to 25 copies are available to members without charge.

Sincerely,

Connell A. Baker

Connell A. Baker

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Look Ahead with Lead

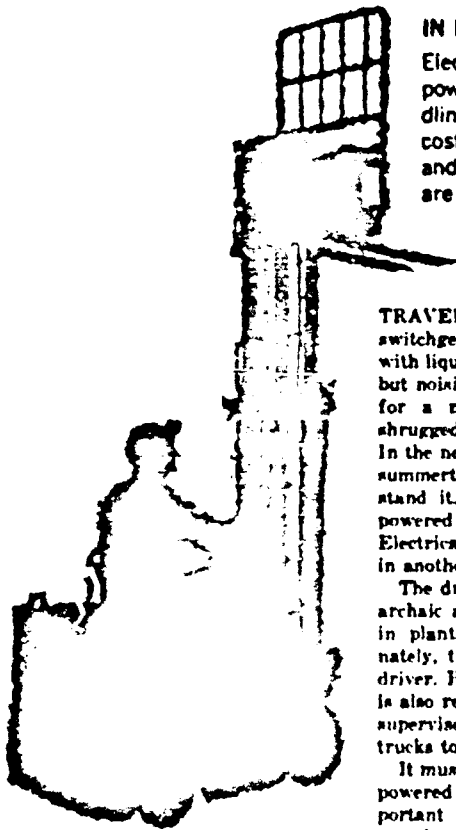
SPECIAL REPORT

Before you buy: check some lift truck truths

JEROME FRANK, Associate Editor

IN BRIEF

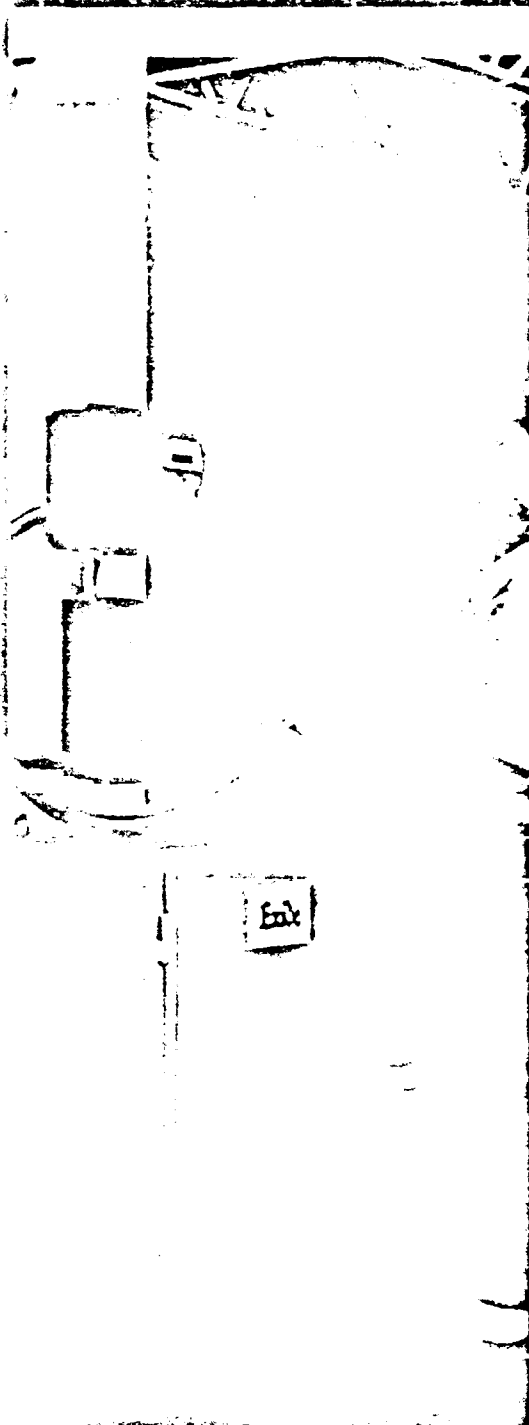
Electric lift trucks are challenging gas powered vehicles in the material handling industry. Although their initial cost is high, the substantial benefits and long-term savings of the electrics are very attractive. Here are the facts.



TRAVELING down the long aisle of the switchgear plant, the fork lift truck, fueled with liquid propane gas, rolled along efficiently but noisily, giving off a noxious odor. Stopped for a moment and questioned, the driver shrugged the odor off as just part of the job. In the next breath, however, he added, "In the summertime, the smell's so bad you can hardly stand it." Would he rather drive a battery-powered truck? "I'm satisfied with this one. Electrics are too jerky for me. I've driven 'em in another plant some years back."

The driver's attitude is characteristic of the archaic approach to electrics still being taken in plants throughout the country. Unfortunately, the attitude is not limited only to the driver. His view of the "gas vs electric" scene is also reflected in the attitudes of many plant supervisors responsible for recommending lift trucks to their purchasing departments.

It must be pointed out at once, that gasoline-powered lift trucks are themselves playing important roles in industry today. Many plant men favor the gas types, not because they have compared their merits to electrics successfully, but because they are used to them. Other men prefer them because of their low initial cost. Whatever the reason, electric trucks have a



BATTERY PUT ON charge at Federal Warehouse under Exide meter plan.

long road to hoe before they can net the same profits racked up by gasoline units.

During plant visits to test these attitudes, I was favored with several old wives' tales. One maintained that battery-powered lift trucks are not as smooth in operation as gas trucks are; another, that electricians just cannot do the same heavy work that gas trucks can. Both of these tales, while based on earlier truths, no longer apply. With the advent of solid-state controls and other technological developments in the field of battery-operated lift trucks (including better quality batteries), electricians have come abreast of their gas-filled counterparts in in-plant applications.

Though all plant men will not agree with that statement, under questioning, many will admit they have not given the electric truck a fair shake. It is not easy for men with years of plant experience using gas trucks, to view electricians without disdain.

This is not to say that electricians aren't being accepted. A look at truck manufacturers' sales indicates a growing acceptance of electric lift trucks. And the greatest users of these trucks appear to be the larger companies. Such firms are used to keeping close tabs on costs and, in this case, are finding electric trucks providing long-range profits despite their higher initial cost.

What then, should plant men consider before they select a fork lift truck? Certainly, a manager must appraise the cost against return on investment. In conversation with a transportation manager in a large switchgear plant in the East, it became clear that he would be reluctant to buy an electric because of its initially high purchase price as compared to gas trucks. His attitude neglects to consider savings to be realized through superior performance and less maintenance. Yet, plant men can benefit their companies immeasurably by projecting long-range costs vs applications before they lay out a single cent. There are some basic differences between gas and electric that should be reviewed by anyone about to buy lift trucks. These include the following operational factors:

1. The shorter the hauling distance the greater the advantage of electric trucks due to faster acceleration. This is particularly true today, with the advent of solid-state controls on electricians.
2. On long hauls—those over 850 feet—gasoline trucks have the advantage because of higher sustained speeds. With solid-state controls, however, there is far less battery

drain on electric powered trucks, so that speeds can and are sustained over increasingly longer distances.

3. Use of hazardous fuels is eliminated when electric trucks are used, thus increasing plant safety. As a result, insurance rates are lowered.

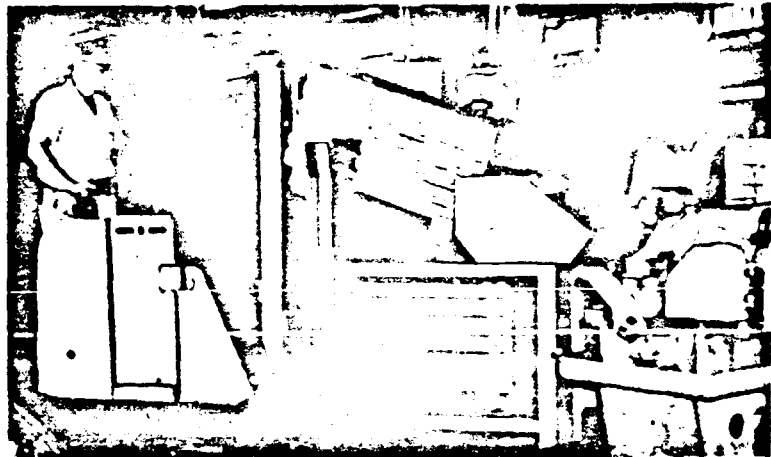
4. Short ramps pose no problem for electrics. Users tend to prefer gasoline trucks on extra-long grades (over 10%). But here again, at least one user reports using a 4000-lb capacity electric truck, fully loaded, on a 20% grade, in a stop-go operation.

5. Better working conditions for employees

10. Gas trucks are recommended for off-the-road operation because of their availability with pneumatic tires.

11. Where plant production is dependent on industrial trucks, the dependability of electrics is an important factor; downtime for electrics averages 2-3%; for gas, 10-15%.

For the purpose of this projection, let's consider the case of one company that is prepared to buy a new fleet of 60 trucks to replace its present one. It is up to the plant manager to decide whether to buy gas- or electric-powered lift trucks. He needs 3000-lb capacity units. Gas models, he finds, will cost him about \$5000



SOLID STATE CONTROLS on battery-operated lift truck give smooth operation.

can be maintained when electric trucks are used—noise, heat, and combustion fumes are eliminated.

6. If trucks are used seasonally, gasoline units are usually preferred.

7. Product contamination is avoided when electric trucks are used, since gasoline fumes and smelly exhaust are eliminated.

8. Refrigerated warehouses and other areas with controlled atmospheres are usually worked with electric trucks.

9. Plant housekeeping is simplified with electric trucks. Oil drippings, exhaust dirt, etc., are eliminated. Today, with the accent on maintenance, many firms pride themselves on having a truck maintenance program that eliminates such oil drippings before they get started. This was borne out at several plants using gasoline and LP trucks. Nowhere were there any grease or oil slicks.

each. The job calls for 60 machines, a total expenditure of \$300,000.

Looking at electric truck costs, on the other hand, the plant man responsible for making the decision finds that the initial cost will be substantially higher than the comparable gas model. The 3000-lb capacity truck will cost \$6500. He also knows that it takes fewer electrics to do the same job because they require less maintenance and have less downtime for repairs.

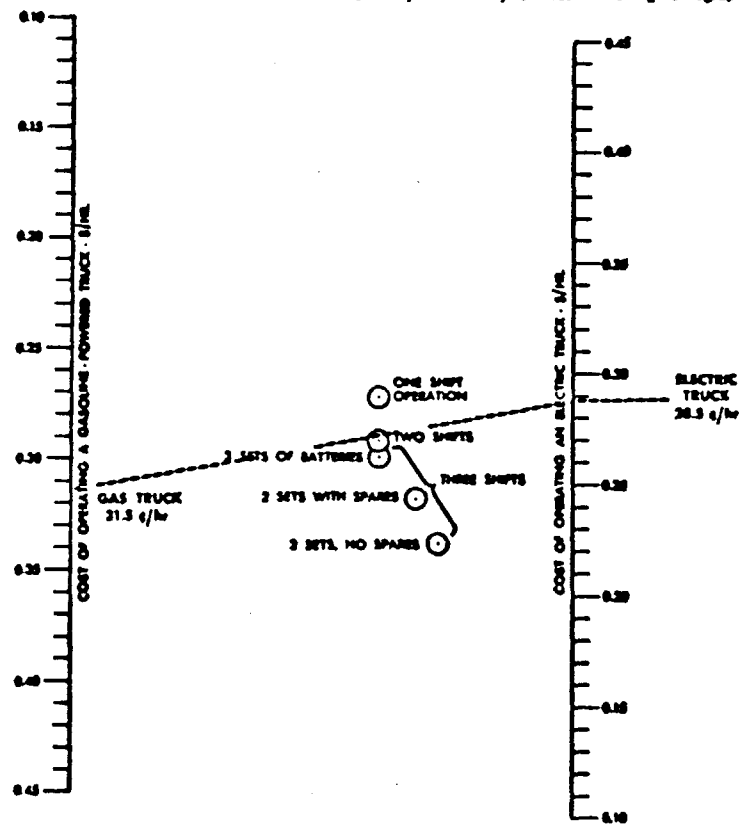
One rule of thumb, as indicated by user records, shows that four electric trucks will replace five gas models in most installations. To be conservative, however, the plant man selects 60 as the number of electric trucks needed to do the job. Based on this figure, his total electric truck outlay will be \$325,000.

Next, he should take into consideration the cost of the battery and charging equipment. If

How to Find YOUR Operating Cost

A Typical Example

In the operation considered in the first example (cost of owning a truck) a 4000-pound truck was used for two shifts a day. If a gas truck were used under normal conditions, the cost per hour to operate it would be \$0.315 per hour—or 31.5¢ per hour. Find this point on the left scale of the nomograph. Lay a straightedge through this point so that it falls on the center point "two shifts." The straightedge will cross the right scale at 0.285 \$/hour of operation. Correct the operating cost of gas trucks by the ratio of your gasoline cost to 27.6 or (for electric trucks) your power cost to 1.5 if they differ widely. Correct after using nomograph.



COST TO OPERATE A GAS TRUCK

0.315 \$/hour

And, in a year of operation,

8 hours/shift × 2 shifts/day × 255* days/year = 4080 hours/year

0.315 \$/hour × 4080 hours/year
\$1285 per year

*for a five-day week, six annual holidays

COST TO OPERATE AN ELECTRIC TRUCK

0.285 \$/hour

0.285 \$/hour × 4080 hours/year
\$1163 per year

Courtesy, Lead Industries Assn.

he intends to buy his batteries instead of using, say, Exide's meter plan, he might pay somewhere in the neighborhood of \$90,000 for 60 16-cell, 648 A.H. units. He also needs chargers, which means an investment of perhaps \$5500 each in 10 five circuit chargers, a total of \$55,000.

Now, the user must look at long range prospects of his alternative truck investments. A check of industry statistics shows that electric trucks outlast comparable gas powered models on the average of 2:1. That is, if a gas powered truck will last five years on a given job, an electric will last about 10 years. Based on such a life expectancy ratio, he can expect to replace his gas trucks at least once during the next 12 years.

To make a fair comparison, you must take into account the additional cost of a replacement fleet of 60 gas trucks bought sometime in the next 12 years. Replacement cost will undoubtedly be higher because of inflation, so the total cost will be considerably above that of the initial fleet purchase.

What about the electrics 12 years from now? The trucks themselves will probably be good for many more years of service, but it is true that batteries will have to be replaced. Using an arbitrary price inflation factor of 15% (also used to determine the gas truck increment), each replacement battery will cost around \$2000, or a total of \$100,000 for 50 trucks plus the inflation factor. Chargers have a long life and probably won't need replacement for at least 12 years. In adding up, then, all the electric truck costs (truck, batteries and charger plus replacement batteries), a plant supervisor will find that his company will have to invest around \$600,000 as against \$638,000 for gas trucks.

It is imperative for the plant man to assess his applications needs carefully and to invite truck manufacturers to demonstrate their trucks' characteristics, before deciding on any truck type. Plant supervisors should also be aware of another route to the reduction of overhead when buying lift trucks. The Exide division of The Electric Storage Battery Co. a few years ago introduced a unique pay-as-you-use-it Meter Plan under which an electric truck user pays Exide a stipulated amount per kilowatt-hour of current used to charge the batteries. This is just like paying for gas metered out of a pump.

Jerome D. Ullman, president of Federal Warehouse Co. in Peoria, Ill., discusses the Exide plan with a great deal of satisfaction.

"To handle some 1800 canned and dry grocery items and tobacco products, we selected battery-electric vehicles—both rider type and walkie trucks—for most of the material handling operations.

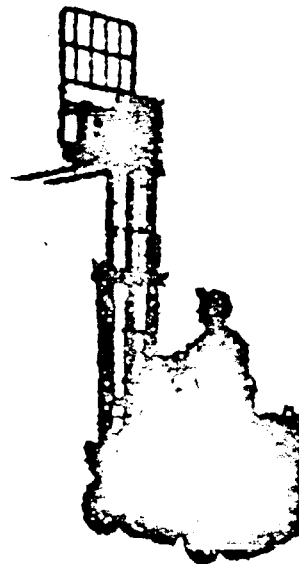
"Ordinarily, this decision would have strained our then limited capital.

"To get the advantages and long-term savings of electrics, we would have had to invest—besides the amounts for the electric truck chassis which approximate the original cost of ready-to-go gas trucks—substantial amounts for the heavy duty industrial batteries and chargers to power the trucks.

"In effect, we would have had to invest our capital, in advance, in a six-to-ten year supply of electric 'fuel'."

He explained that under the Exide Meter Plan, his firm was supplied with nearly \$10,500 worth of battery and charging equipment. "We made no down payment. And now, we simply pay Exide monthly for the amount of battery power we use, as measured by kilowatt-hour meters. We also pay our utility company for the power we use to charge the batteries, but much of the current is drawn at low rates during off-peak hours."

Mr. Ullman added that the "total cost of electricity to operate our trucks is as low or lower than other types of fuel." ■■■■



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Look Ahead with Lead

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