



Lead Industries Association, Inc.

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March 3, 1972

SUBJECT: LOCKHEED BATTERY

TO: MEMBERS OF THE LEAD INDUSTRIES ASSOCIATION, INC.

A recent item in the Wall Street Journal (February 22, 1972) reported Lockheed's development of a sodium or lithium battery that might compete strenuously with lead-acid batteries.

Connel A. Baker, Jr. of the LIA staff has checked a number of informed sources, including Lockheed. His report is attached, together with a copy of the Lockheed release which was not picked up in toto by the Wall Street Journal.

Sincerely,

Philip E. Robinson

Philip E. Robinson
Executive Vice President

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Attachments

NEWSBUREAU
LOCKHEED MISSILES & SPACE COMPANY, INC.
(A SUBSIDIARY OF LOCKHEED AIRCRAFT CORP.)
SUNNYVALE, CALIF. -- (408) 742-6688
Contact: W. R. Hilbrink

FOR RELEASE: TUESDAY,
FEB. 22, 1972

LOCKHEED DEVELOPS COMPACT
ELECTRIC POWER SOURCE

PALO ALTO, Calif. -- A compact power source that can produce levels of electric power greatly exceeding that of conventional batteries has been developed here in the laboratories of Lockheed Missiles & Space Co.

The source has been developed in two configurations, described as a dynamic cell and a static power cell. The devices are fueled with two plentiful materials--water, and an alkali metal such as sodium or lithium.

Lithium and sodium are among the lightest in weight of all metals, and when they come in direct contact with water, they normally react violently. Because of this high reactivity, it was not believed practical in the past to combine them directly with water to obtain electrical power.

However, Lockheed has found a way to control this reaction and to extract large quantities of useable electric power. The static cells, like conventional battery cells, can be made in various sizes and connected in combination to make up batteries with various voltage outputs and current capacities.

The cells produce many times more electrical power per pound than is available from the common lead-acid storage battery--up to 100 times more in long term applications where water is freely available. They will also operate more efficiently at lower ambient temperatures than will the lead-acid battery.

The static cell produces electrical power as its output without moving parts, as in conventional batteries. Several working prototypes have been operated. The dynamic cell has a rotor, and can convert its electrochemical activity directly into mechanical output. A laboratory model of the dynamic cell has been built to demonstrate direct conversion of the cell's electrical energy into rotating shaft power--a combined electric motor and power source.

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MEMORANDUM

February 24, 1972

LITHIUM AND SODIUM BATTERY -- LOCKHEED NEWS RELEASE

ILZRO - A. R. Cook believes of little immediate substance beyond our present knowledge -- no foreseeable threat to lead acid.

COPPER DEVELOPMENT ASSOCIATION G. M. Hartley, President has some proprietary agreements with Lockheed. (One of the electrodes contains copper) In connection with CDA's electric car some consideration is being given to using the lithium or sodium battery to support the lead-acid, not to replace it. The nature of this new source is such that it discharges extremely fast, cannot be electrically recharged and is highly unstable at present state of the art. Still considered experimental and has not advanced beyond the "breadboard" stage.

ESB INCORPORATED - J. Smythe, Research and Development "Another wild fuel cell!" He has thoroughly investigated the current report and finds no substance to a commercial viability. ESB is also working on this principle and knows the problems involved.

LOCKHEED, Dr. Weyland Griffith The battery, or power cell by their definition, is in the milliwatt stage presently. They have found no insurmountable problems to date to further development into the watt and kilowatt stage, but it is a primary cell and the hoped-for application foreseeably is small signal and electronic devices requiring intermittent power at low rate. The next step might be application to shore and marine markers and such devices. Has no feel for economics at this time, but is told that the basic metals are in plentiful supply, notwithstanding lithiums' dependence upon other metal processing. Said that Wall Street Journal item selected only parts of original release. (He is sending me a copy of original.)

GOULD - Dr. D. Douglas Feels that availability will be for highly specialized application only (mostly submersible devices). Economics rule out for replacing lead-acid.

CONNEL A. BAKER, JR.

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