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<http://www.thehindubusinessline.com/companies/isro-bhel-lithium-ion-batteries/article9644713.ece>

## **ISRO, BHEL tie-up for lithium-ion batteries to have buyback agreements**

The Indian Space Research Organisation (ISRO) which is finalising a memorandum of understanding with BHEL to help develop low-cost lithium ion batteries for electric vehicles, also envisages a buyback commitment for such batteries.

The move is expected to take care of concerns on managing the waste generated at the end of battery life. According to the MoU, BHEL will set up a production plant, while ISRO will provide support for scale-up, joint effort in cost optimisation, research and development for alternate chemistry and buyback commitment, according to sources.

BHEL will develop the battery for commercial applications. This is part of India's plan to promote low-cost electric vehicles with the use of lithium-ion batteries.

Thiruvananthapuram-based Vikram Sarabhai Space Centre (VSSC) has developed four types of lithium-ion batteries — 1.5 Ampere (Ah), 5Ah, 50 Ah and 100 Ah. Of these, 1.5 Ah and 50 Ah have been used for space applications and 5Ah and 100 Ah are ready for use in space applications.

### **Use in two-wheelers**

On use in vehicles, the Automotive Research Association of India (ARAI) has

successfully tried using these batteries in two- and -four wheelers, sources said.

It has demonstrated use of 50 Ah cells in two-wheelers that can run up to 98 km with a two-hour charge, with speeds of up to 40-50 kmph. It is now trying the feasibility of 100 Ah batteries to demonstrate electric vehicle operations, which use lower-cost indigenous material. Initial tests show that the 100 Ah batteries are more efficient at lower temperatures. BHEL has expressed interest in the transfer of technology from VSSC to produce lithium-ion batteries to meet the requirements of ISRO as well as electric vehicles. ISRO, on its part, has identified areas for cost reduction, which can be transferred to BHEL for production of low-cost Li-ion batteries. They include bulk procurement of raw material.

There is scope to indigenise components of the fuel cell by using graphite (from Himadri Chemical), aluminium foil from Hindalco or Nalco, copper foil or sheet from Cubex. These companies have expressed interest in lithium-ion batteries.

VSSC has initiated in-house development of the 50 Ah and 100 Ah cells.

“While BHEL is interested, the technology should also be transferred to private, public

and other joint venture firms for commercial production,” said a source. Other corporate majors that have expressed interest include Mahindra Renault, Hyundai, Nissan, Tata Motors, High Energy Batteries (India) Ltd, BHEL and Indian Oil Corporation. Representatives of the companies participated in a meeting chaired by the Road Transport and Highways Minister Nitin Gadkari on promoting commercial production of lithium-ion batteries for use in electric motor vehicles. India needs to promote commercial production of lithium ion batteries for use in electric motor vehicles.

The meeting was also attended by the Cabinet Secretary, Secretary-Road Transport and Highways, Director from Vikram Sarabhai Space Centre (VSSC) and Director, ARAI. The Cabinet Secretary pointed out the need to bring all issues related to non-polluting vehicles under one roof.

Last week, Suzuki Motor Corporation, Toshiba Corporation and Denso Corporation entered into an agreement to manufacture lithium-ion battery packs in India.