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Concerns about lithium supply



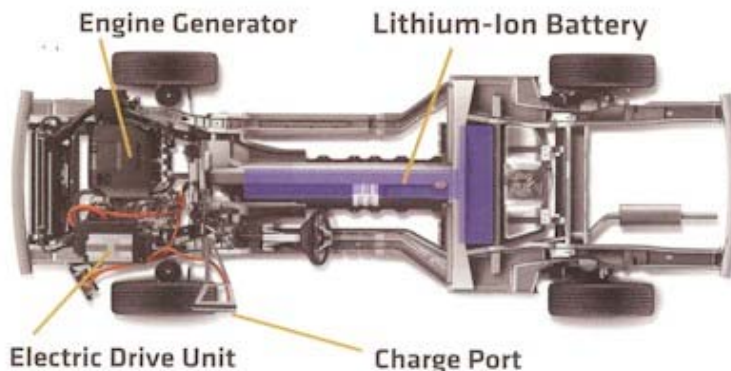
Armin Reller of University of Augsburg Germany and Tom Graedel of Yale University USA have attracted attention in recent years by warning that many materials used by industry are effectively running out as evidenced by huge price hikes in the price of indium despite it being more abundant than silver

in the earth's crust.

The New Scientist extended the message but others were skeptical. For example, indium is only produced as a by-product of zinc mining and they argued that it would be mined in its own right if demand continues to rocket, driven by such things as ITO transparent electrodes and CIGS photovoltaics. Certainly, the global financial meltdown has provided a few years of respite.

Attention turns to lithium

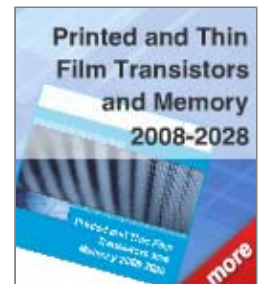
Nevertheless, the debate has now moved to an element that they did not cite. It is lithium. Here the electronics industry will not be the cause of the most burgeoning demand but it could be the victim. The new, heavily promoted lithium AA batteries and the now standard use of lithium batteries in laptops creates significant new demand but electric vehicles are the elephant in the room. Hybrid and electric vehicles are rapidly becoming available in all sizes and purchase is increasingly backed by subsidies and tax breaks to save the planet. According to some estimates, the demand for lithium will increase three to seven times by 2012 as a consequence.




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Look to South America

50% of the world's lithium resides in South America's poorest country Bolivia. Its government is refusing permission to dig up the salt flats where that lithium resides, despite coming under international pressure.

Honda has big concerns about the supply of lithium. Thomas Brachmann, Senior Manager with Honda R&D Europe says, *"We have very big concerns about the supply of lithium. We are in competition with computers, cell phones and many other applications. There are only some areas of the world that can supply lithium and so, if you want to have a certain freedom from oil, why are we focusing on lithium batteries? The biggest issue is that there is no production capacity to fulfill our demand."*

Francois Bancon, General Manager, Exploratory and Advanced Product Department of Nissan speculates about forming strategic partnerships and even becoming a lithium provider. He says he is going to have 200,000 to 300,000 electric vehicles on the road soon and, *"Yes that could be a nightmare."*

Some disagree

Some are more laid back though, with Andrew Farah of General Motors saying extraction is difficult high in the mountains but it is not an issue he is concerned about. As quoted by Electric & Hybrid Vehicle Technology, he claims that part of the reason that his company currently uses lithium is *"because nickel prices are high"*. However, nickel cadmium batteries are banned in much of the world because cadmium is highly toxic and one wonders how generally nickel can be substituted for lithium in batteries. Jon Lauckner of GM also says lithium supply is not a problem in the near to medium term, *"You're going to be able to sell millions of these vehicles before you even need to think about lithium supply."*

On the other hand, Dr Charles Wu, Managing Director of Ford Research and Advanced Engineering Europe warns that the whole industry needs to know where the lithium supply is going to come from. He says it will be South America and there needs to be planning. On the other hand, Serge Yoccoz of Renault is happy about supplies for the next decade and speculates that zinc batteries might be an escape route for vehicles thereafter.

Escape routes for the new electronics

It seems that, if there really is a problem looming, the electronics industry is going to be spun in the tail winds from all this. More energy harvesting in both the electronic devices and vehicles would certainly seem to be a wise insurance policy. That will sometimes still call for rechargeable batteries, particularly lithium, but they will be smaller and need less material. In addition, for laminar and flexible primary batteries, printed manganese dioxide zinc batteries are an alternative to lithium batteries in some cases where power demands are modest.

Concerning the lithium supply/ price threat - if there is one - we have consulted some manufacturers of laminar lithium batteries

as used in printed electronics but they have felt unable to comment.

For more attend [Printed Electronics Europe 2009](#) and read [Printed and Thin Film Photovoltaics and Batteries](#).

Look out for IDTechEx's new report "Energy Harvesting and Storage for Electronic Devices 2009-2019," which will be available shortly.

Also read [Augsberg University Calculate When Our Materials Run Out - Soon, Progress with lithium batteries and Lithium ion cells are showing their power](#).

Above image: Salar de Uyuni, Bolivia - considered the world's largest salt pan.

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