Super battery from mine tailings?

Batteries weigh heavily on electric cars

VANCOUVER — A revolutionary new super battery which promises to take the pinch out of the energy crisis has been developed by three University of B.C. researchers.

The lighweight electric cell has the capacity to store 10 times the electrical power that can be crammed into conventional lead-acid batteries now used in automobiles.

What's more, it uses as its key ingredient a mineral called molybdenum sulphide which can be found in tailings dumped as useless after most mine-mill operations.

Dr. Rudi Haering, head of the team that developed the battery, says its most important use could be the storage of surplus hydro power during low demand periods for use when power-users demand more power than is available.

"At the moment," says Haering, "the number of generating stations is determined by their ability to meet peak load requirements. If we could store electricity during periods of low loads, then use it to meet the needs of peak periods, we could have fewer electric power stations."

Another use would be in a battery-powered car, a dream that's been weighed down by attempts to use heavy lead-acid batteries as the power source.

Haering says an unspecified number of the new batteries should carry an electric car for 320 kilometres (200 miles) at 96 kilometres per hour (60 mph) — about the same distance conventional cars get out of a tank of gasoline.

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By comparison, the same number of lead-acid batteries would push the car only 40 kilometres (25 miles) at a speed of 88kph (55 mph), Haering says.

Another way to compare the old and the new batteries: the new ones have storage capacity of 400 watt-hours per kilogram while the old only store from 25 to 40 watt-hours.

The batteries could also boost introduction of wind and solar power systems because they could solve the problem of storing up power for days when the sun doesn't come out or there is no wind.

The whole project started only last January when Haering got involved in a lunch-hour bull session about a battery being developed by Exxon Engineering Ltd. in the U.S. He realized that molybdenum sulphide would work just as well as the titanium sulphide used in the Exxon battery. But unlike titanium sulphide, which has to be produced in a costly vacuum-furnace operation, molybdenum sulphide is a mining byproduct.

Since then, Haering has worked on the battery with the assistance of Dr. James Styles, a PhD research associate, and Nelson Shen, a master of science in chemistry and an expert on electrolyte chemistry. Three graduate students, working part time, were also involved.