Introducing the i-Cool Solar air conditioning for trucks

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The truck used for a field test of the i-Cool Solar. Image via Tech on.

(PhysOrg.com) -- A solar-powered air conditioning system has been developed for use in trucks, and should be available commercially by early 2012. The "i-Cool Solar" system was the brainchild of companies Mitsubishi Chemical Corporation, ICL Co. Ltd, and Nippon Fruehauf Co. Ltd, who together developed the system, which uses a series of Mitsubishi Chemical photovoltaic (PV) cells on a Nippon Fruehauf mount fixed to the container of the truck to power the air conditioner in the cabin while the truck is stationary.

The new system adds photovoltaic cells to ICL's "i-Cool," which was released in May this year. The i-Cool air conditioner stores electricity in the storage battery while the truck is moving and uses it when the truck's engine is turned off. The addition of solar cells ensures the storage battery is kept fully charged.

When the truck is stationary, the i-Cool Solar system can save around 1.8 liters of light oil per hour, and when moving can save an average of about 1% of fuel per year, depending on weather and driving conditions. For a 10 ton truck this equates to approximately 1,500 liters of light oil saved each year.

The i-Cool Solar system PV cells are thin-film cells mounted on the tops of the wings that are lowered onto the container, an area that provides a relatively large solar collection area. The maximum output of the cells is 900 W and excess power is stored in the battery for use on overcast days.

Mitsubishi Chemical is the largest chemical manufacturing company in Japan, and their calculations estimate that if all the trucks in Japan (around 1.4 million) used the i-Cool Solar system the country's carbon emissions would be reduced by 1.65 million tons.

The companies plan to run trials of the truck system to enable it to be marketed in 2012. They are also planning a smaller version for use in cars. Japanese company Kyocera is also producing thin-film solar panels for roof-mounting on the next version of the Toyota Prius hybrid car.