

## Golf Cart

Hokkaido University located on the northernmost island of Japan, is the largest University north of Tokyo. It is found at 43° 4' N, and 141° 20' E with a vast natural green area campus.

Since the initiation for environmental sustainability begun in 2005 and the commencing of the sustainability week every year starting from 2007, Hokkaido University in general and the Office for a sustainability campus in particular have been involved in various progressive environmental sustainability activities. For example in the previous years, the university has introduced the use of Velo Taxi (fig. 1) as pilot project around the campus, which was designed in Germany.



Fig.1

From this motivating and rewarding project, the university has started to work on introducing more efficient vehicles around the campus. As a result of the ongoing endeavor, starting in spring of this year, September 2012, the office is launching a new environmentally friendly transporting vehicle, Golf Cart (fig. 2), within the premises of the campus. Originally invented for a Golf sport, it is modified by the researchers and their students in the University to be used as a carbon free emission means of transportation. Using 1.2

KW generating batteries, which can run for a total of 25km per day, the cart is expected to provide service from 9am to 5pm. A total weight of 400kg, including batteries, this cart can accommodate five passengers at a time with an average speed of 10km/hr.



Fig.2

As the overall target of the project is to reduce carbon dioxide emission from fuel usage in the campus to its minimal, the batteries of the cart will be charged from a solar energy accumulated during the sunny days of the University. Furthermore, during the cloudy days and night time, the source of energy to recharge the batteries will be generated from a micro-hydraulic power of the small streams in the campus.

Based on the highly expected positive outcome of the trial period from September to November 2012, the project is anticipated to be extended further. Currently the two Golf carts are going to provide service to passengers to and from inside the campus. But in the future, the plan is to be used as a means of transportation for small laboratory equipment, office furniture, stationeries and teaching materials inside the university vicinities compound.