

**Press Release**



**Yokohama Smart Community Established**

**Developing a Smart Energy System Supporting Communities of the Future**

**City of Yokohama, June 14<sup>th</sup> 2011:**

The Yokohama Smart Community has been established with the cooperation of businesses, primarily the participants in the Fukuoka Smart House Consortium and Yokohama businesses, academic organizations, and the City of Yokohama.

Members of the Fukuoka Smart House Consortium have combined their efforts in verification and testing of a combination of renewable energy in the form of solar and wind power generation with storage batteries, coordinated with the power grid, and with an independent, autonomous power supply control system, for a single residential unit.

Based on the results obtained, the participants will employ these elements in coordinating the energy requirements of each of a number of residential units in verification and testing of a smart community able to mutually exchange information and accommodate energy use.

To achieve this objective, it is planned to construct mass housing and multiple residential units for actual human use, to investigate energy integration and billing models, and to recharge electric vehicles.

**The Community Concept**

The Yokohama Smart Community is based on the concept of a community both learning from and using nature, as advocated by Yoshimichi Nakamura, CTO and founder of Smart Energy Laboratory, a company deeply involved in the development of energy-related equipment for many years.

Nakamura developed the vision of a system for the energy requirements of the Smart House based on the mechanisms of production, storage, and control of energy employed by plant cells, and developed a practical energy system which has since been implemented and evaluated by Fukuoka Smart House Consortium.

His work in perfecting the energy system of this single house has resulted in a means for interchange of energy between houses. Based on these results, the energy requirements for a community of houses can be flexibly balanced with the commercial power grid, solar power generation, and wind power generation.

Practical research, and verification and testing, will be conducted on a flexible energy system incorporating storage batteries for autonomous operation to accommodate peak cuts and power outages on the power grid, and smooth introduction of renewable energy, and recharging of electric vehicles. Research and development on mechanisms for coordinating home energy requirements will also be pursued.

**A Verification and Testing Example**

Participation in the Community provides an opportunity for verification of energy-related equipment and concepts, and allows a range of performance testing including the use of power generation equipment (e.g. solar, wind power, fuel cells) necessary for home energy production, power and heat storage, and geothermal resources, experiments with energy conversion equipment, verification of IT equipment such as the Home Energy Management System (HEMS), experiments with energy-efficient household

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appliances, and thermal insulation performance of windows and walls. The most advanced technology, in the form of mathematical models and simulators, is employed to permit participation by regional businesses in the experimental environment, and members also have use the infrastructure developed for verification and testing.

Using the low-cost energy systems obtained here, plant culture, food manufacture (e.g. bread), and research and verification of biomass systems for a recycling society, are planned. A system to display the energy consumed in production for each item produced in the community is also scheduled for investigation.

### **Developments for the Communities of the Future**

This project involves the development of a low-cost flexible energy system skillfully employing natural and recyclable energy, and aims for its use in reducing CO<sub>2</sub> emissions and resolving food shortages.

Research and verification is underway to resolve the question of how best to use grid power and recyclable energy, to develop mechanisms for optimum use of energy in the home and for recharging of electric vehicles, and to develop optimized control to facilitate prediction of power generation capacity and daily life from the weather forecast.

Further research is aimed at developing mechanisms for mutual energy integration between houses and communities, and optimizing purchase of power and community billing, using IT technology.

### **Ensuring Harmony with Nature, and Fusion with Art and Culture**

Design mass housing and individual residences making use of the natural environment and scenery of Yokohama.

Ensure that solar power generation equipment is appropriate to the natural scenery by following artistic requirements in design, and thus bring a sense of home to residents of the community.

Provide a site for communication between residents to suit a diverse cultural background, one of the characteristics of the Yokohama lifestyle.

It is hoped that through these activities, and constant construction and modification for the future, the project will continue evolving, and continue to exist for the next 100 years.

### **Officers and Members**

The Yokohama Smart Community is represented by Hitoshi Arima, President of dSPACE Japan, and deputy representatives Yoshimichi Nakamura, CTO and founder of Smart Energy Laboratory, and Tadahito Takahashi, President of PALTEK.

Hitoshi Arima has applied the model-based design, the standard development methodology in the automobile and aircraft industries, to the development of Smart House energy equipment, and as such has provided the design tools for the project.

Yoshimichi Nakamura has many years of experience on the front-line of development of energy-related equipment, and brings to the project a grand vision of Smart House energy systems, and the vision of the project itself.

Since the establishment of the company in Yokohama, Tadahito Takahashi has brought to the project the philosophy of 'coexistence of diversity', together with a wide community of supporters.

In addition to equipment manufacturers, this project requires a wide range of other specialists, including those in the fields of traffic and transport, and construction, for its implementation.

As well as the obvious need for information and technical exchange, it is essential to develop an environment for coexistence considered in terms of more than simple short-term advantage and disadvantage.

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The expenses of construction of mass housing and individual residences, and verification and testing, are the responsibility of each participant. Each participating organization is able to use the project as an experimental site for its own business purposes.

Hitoshi Arima, representative and founder of the project, comments as follows.

“We are engaged in research, verification and testing of optimum energy systems to answer the question of how best to use efficiently the energy obtained from natural sources.

To ensure that the results of our work are useable in practice, it is necessary to install systems in multiple houses and communities. We have therefore researched energy systems within communities as the minimum unit comprising a number of residences.

In order for people to live in a community, not only is it necessary to have the benefits of science and technology in the energy field, but also to have the benefits of the natural environment for inspiration. Furthermore, culture and the arts are also essential, as is the harmony between the two.

To achieve these goals, it is necessary to have members from a range of fields from both Japan and the rest of the world participating in the project to ensure a multi-generational community able to continue into the future.

I am most gratified to see the start of this project, and invite participation and support from a wide range of fields.”

Verification and testing for the Yokohama Smart Community will commence in August with sequenced planning and construction, and introduction of equipment.

The activities of this project will provide an experience through simulation of energy and graphic simulations, and visualizations.

Yokohama Smart Community results will be periodically announced at seminars and private showings, and presented widely both within Japan and overseas.

With the anticipated wide acceptance and expansion of this model, it is hoped that an integration will develop between the residents of these areas and local characteristics.

Thank you

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## The Yokohama Smart Community

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   Deputy representatives                      Yoshimichi Nakamura, CTO and founder, Smart Energy Laboratory  
   Tadahito Takahashi, President PALTEK

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