

Full-scale Development of a Promising Renewable Energy Businesses

Renewable energy sources have many advantages: they are clean and environmentally friendly, they are available anywhere and thus less susceptible to political situations abroad, and they are stable and will never run out. True to its commitment to providing a stable supply of energy, the Cosmo Oil Group is working to expand its renewable energy business, focusing primarily on wind power.

Iwaya Wind Park, Aomori Prefecture

Best-mix Energy Procurement through Wind Power

The Cosmo Oil Group aims to help realize a zero emissions society and build a sustainable energy community on a global scale. By revising its energy policy following the major earthquake in 2011 in Japan, the Group is now promoting best-mix diversification of energy procurement, in order to fulfill its responsibilities as a comprehensive energy company.

After the recent natural disaster, there are growing expectations in Japan for renewable energy to move beyond its current role and become a principal power source of the future. In 2010, EcoPower Co., Ltd., with its proven wind power generation results, was welcomed into the Cosmo Oil Group, marking the Group's full-scale entry into the renewable energy business.

While wind power's greatest attraction is its limitless supply, it also has drawbacks such as frequent periods of downtime due to wind conditions and equipment maintenance. Accordingly, the most important challenge is to improve operating rates and stabilize production. During the last two years, EcoPower has been working on streamlining wind turbine maintenance in order to increase operating efficiency. As a result of these efforts, the company has dramatically improved its turbine operating rates, and was able to turn a profit just one year after joining the Cosmo Oil Group.

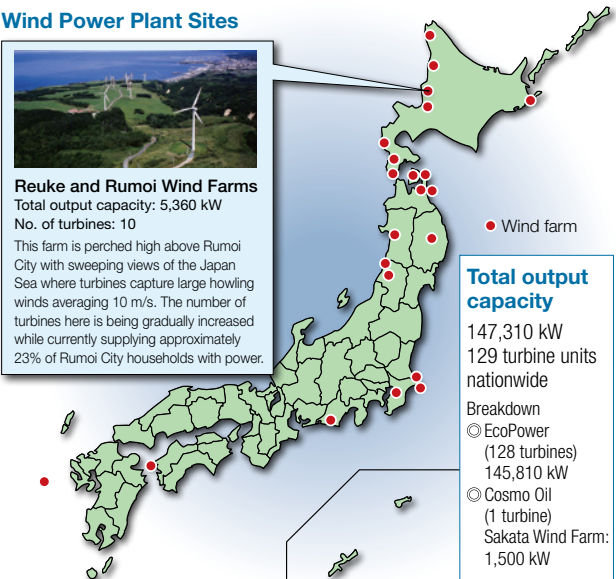
In 2012 and beyond, the Cosmo Oil Group plans to develop three new wind power generation sites in Fukushima, Mie, and Wakayama prefectures. Also eyeing expansion outside Japan in the future, the Group will actively expand its wind power business.

Wind Power Plant Sites



Reuke and Rumoi Wind Farms
Total output capacity: 5,360 kW
No. of turbines: 10

This farm is perched high above Rumoi City with sweeping views of the Japan Sea where turbines capture large howling winds averaging 10 m/s. The number of turbines here is being gradually increased while currently supplying approximately 23% of Rumoi City households with power.



Operating Rate¹ Improvement



1. Operating rate: Operating time – down time (regardless of reason) / total time

EcoPower's Strengths and Future Growth

Established in 1997, EcoPower Co., Ltd., is a pioneer in the Japanese wind power industry and now plays a central role in the Cosmo Oil Group's renewable energy business. It operates 128 wind turbines, mostly in Tohoku and Hokkaido, where wind conditions are ideal. The company's total generating capacity of about 146,000 kW is enough to power 80,000 homes.

Since joining the Cosmo Oil Group, EcoPower has focused on improving its operating rates by rebuilding its maintenance system. It has now established itself as a sustainable and profitable business.

Since the Great East Japan Earthquake, there have been growing expectations for the creation of a renewable energy society. A feed-in tariff (FIT) scheme has also been introduced in Japan, and there has been a major shift toward the popularization of renewable energy. Utilizing the expertise that it has accumulated over the years, EcoPower is actively expanding its business, including the development of new power generation sites.

Visit the official site of EcoPower for more detail on its business activities.

Official site: www.eco-power.co.jp/crp_profile.html



FIT Scheme Helping to Promote Renewable Energy

A feed-in tariff (FIT) scheme for renewable energy was launched in Japan in July 2012. Under this system, electric utilities are required to purchase power generated by solar, wind, hydro, geothermal, and biomass on a fixed-period contract at a fixed price. Power customers are also required to cover part of the cost of purchasing renewable energy, in the form of a surcharge that varies according to the customer's consumption level.¹

1. Excerpt from an online government report

Considering Massive-scale Solar Commercialization

The Cosmo Oil Group is also looking into entering the massive-scale solar power generation ("mega solar") business, leveraging the Group's underutilized land holdings. By incorporating mega solar facilities into the wind power sites of EcoPower, there would be the benefit of developing a more effective renewable energy business, since the electrical transmission equipment and maintenance system could be shared by the two power sources.



Mega solar power plant
(provided for illustrative purposes only)

Optimal Maintenance for Streamlining and More Stable Power Generation

Aiming to raise the operating rate of wind power equipment, I strive to assess the causes of malfunction and find ways to ensure the same problem does not occur again.

Wind turbines are constantly exposed to a very harsh environment for equipment that must continually operate. Since conditions are always changing, regular maintenance has a major impact on operating rates. We focus on five methods of increasing the operating rates of our equipment: (1) revising repair methods; (2) optimizing parts inventory; (3) optimizing inspection items; (4) improving the reliability of parts; and (5) performing preventative maintenance.



Hiroki Hayashi
Technical Administration Division
EcoPower Co., Ltd.

We keep a record of failures for each turbine and ascertain failure trends. Then we ready the right parts in advance, ensure they are more reliable than past ones, and when possible replace them before they fail. As for the actual repair, turbines used to be taken down with a crane and moved to a repair plant, but now we fix them without removing them from their towers. These steps have helped us dramatically cut downtime for wind turbines.

Compared to other types of power generation, wind power has a short history and faces many issues. But we can solve these issues with technology. This is why I find it so rewarding to develop the right wind power technology.