



January 30, 2018

News Release

Challenergy Inc.  
SKY Perfect JSAT Corporation

**Collaboration of the World's First Magnus Vertical Axis Wind Turbines and  
Satellite Communications for Electricity and Communications Services  
in Remote Island and Mountainous Areas all around the World.**

Challenergy Inc. (Head Office: Sumida-ku, Tokyo; President and CEO: Atsushi Shimizu; "Challenergy") and SKY Perfect JSAT Corporation (Head Office: Minato-ku, Tokyo; Representative Director, President & Chief Executive Officer: Shinji Takada; "SJC") will be collaborating with the aim of commercializing a service that combines wind power and satellite communications primarily for countries and regions with poor access to electricity and communication infrastructure by FY2019. A joint demonstration test was commenced in Okinawa Prefecture on January 10, 2018, as the first step of this collaboration.

The global wind power market (including offshore wind power) is expected to expand to 9.7 trillion yen by 2030.<sup>1</sup> The Magnus Vertical Axis Wind Turbine ("Magnus VAWT") currently being developed by Challenergy makes stable power generation possible even in strong wind and turbulence. Furthermore, because it does not rotate at fast speeds like conventional propeller wind turbines, the Magnus VAWT reduces environmental impact, such as noise and bird-strike accidents. There are expectations placed on Magnus VAWTs as the world's first technology that is suitable for use on remote islands and in mountainous areas, where propeller wind turbines are not suitable for use due to accident and breakdown risks. Up to now, such areas have had no choice but to depend on diesel generators, which are costly and place a high burden on the environment.

Meanwhile, the strengths of satellite communications are the provision of advanced communications services in digital divide areas, such as remote islands and mountainous regions, as well as the use as disaster restoration communications following large-scale natural disasters. However, electricity is indispensable for the communications equipment on the ground. Magnus VAWT will enable the stable operation of such communications equipment on the ground even on the above mentioned areas, where there have been difficulties in securing electricity. It will also maintain communications even after disasters, in case that the interruption of power is a concern. The collaboration between Challenergy and SJC will further reinforce the biggest benefit of satellite communications—to be connected anywhere and at any time. SJC plans to strengthen its solutions toward Japanese domestic disaster communications demand, which calls for even further advanced and sound use, as well as expand the services to the world's digital divide areas, such as Southeast Asia and Pacific island countries, which have poor access to electricity and communication infrastructure.

As the first step toward commercialization of services under this collaboration, SJC's satellite communications system was connected to Challenergy's field test unit in Nanjo City, Okinawa Prefecture, and a joint demonstration test was commenced as follows.

[Outline of Joint Demonstration Test]

Period: January 10, 2018, to March 31, 2019 (plan)

- Location: Challenergy Inc., Okinawa test site (Nanjo City, Okinawa)
- Rated output of test unit: About 1kW
- Communication satellite used: JCSAT-2B (maximum upload speed of 400Kbps / download speed of 4Mbps; power requirement: about 45W maximum)
- Objectives:
1. To operate ground communications equipment using power generated by the test unit and maintain a satellite communications.
  2. To operate a system that can monitor the operational state of the test unit through satellite communications.
  3. To maintain autonomous Wi-Fi Internet communications utilizing the test unit and satellite communications.



Test station

In September 2017—in advance of the aforementioned joint demonstration test—Challenergy and SJC were jointly selected for the Japanese Ministry of Economy, Trade and Industry (METI) "Fiscal Year 2017 Climate Change Adaptation Effect Visualization Project (Contribution visualization project of Japanese private sector in the field of adaptation in developing countries)"<sup>2</sup> and a survey on the feasibility of commercialization was launched in the Republic of the Philippines. An issue in the remote islands of the Philippines is increased damage and delayed disaster restoration due to the interruption of power and communications from frequently-occurring typhoon disasters. About 550,000 people were afflicted in the Philippines by typhoon damage in 2017.<sup>3</sup> What is more, the basic infrastructure of power and communications is poor in its remote islands even during ordinary times. In fact, 45% of the Philippines' total population is still living without Internet access<sup>4</sup>, and the demand for power and communications is expected to rapidly increase going forward.

Aiming to provide a stable power supply and communications environment through utilization of the Magnus VAWT, Challenergy and SJC also plan to provide after-sales services of Magnus VAWT. An after-sales service network of Magnus VAWT—which will monitor in real time the operation of the turbines as well as need for repairs and maintenance through satellite communications—will be built with the aim of providing reliable after-sales services in any country or region around the world.

The two companies will carry on joint feasibility studies, targeting to provide a Challenergy's Magnus VAWT with SJC's satellite communication services by FY2019, and will further explore other business possibilities beyond current collaboration.

<sup>1</sup> "Reality and Future Prospect of Worldwide Wind Power Generation in Land and Offshore on Ocean 2017 " Fuji Keizai  
<https://www.fuji-keizai.co.jp/report/index/111607808.html>

<sup>2</sup> A project with the objective of carrying out feasibility surveys regarding the realizability of contributions toward emerging countries in application fields utilizing the superior technologies, etc., of Japanese companies, measurement methods and metrics formulation. The project has been in place since 2012.

<http://www.sc.mufg.jp/company/news/inform/info20170821.html>

<sup>3</sup> Asian Disaster Reduction Center website

[http://www.adrc.asia/view\\_disaster\\_en.php?Lang=en&Key=2243&NationCode=608&Frame=no](http://www.adrc.asia/view_disaster_en.php?Lang=en&Key=2243&NationCode=608&Frame=no)

<sup>4</sup> Internet World Stats website

<http://www.internetworldstats.com/asia.htm - ph>

## [Challenergy Inc.]

Representative: Atsushi Shimizu, President and CEO

Established: October 1, 2014

Capital: 48 million yen (not including capital reserve)

Head office: 4-36-21 Yahiyo, Sumida-ku, Tokyo

Main business: Challenergy is a start-up working towards developing Magnus Vertical Axis Wind Turbine, a next-generation wind turbine that is capable of stable power generation even during storms. The company's vision is "to supply safe electricity to all human beings by our innovative wind turbine." It is currently working toward the commercialization of 10kW Magnus VAWT by 2020. In the medium- to long-term, Challenergy will achieve a global shift in energy sources by promoting a hydrogen energy society through large-scale Magnus VAWTs.

Website: <https://challenergy.com/>

## [SKY Perfect JSAT Corporation (SJC)]

Representative: Shinji Takada, Representative Director, President and CEO

Established: November 10, 1994

Capital: 50.083 billion yen

Head office: 1-8-1 Akasaka, Minato-ku, Tokyo

Main businesses: A top-runner in the merger of broadcasting with communications, SJC possesses 17 satellites (the largest number in Asia) and provides multichannel paid satellite channels. It is Japan's only operating company providing both satellite communication and broadcast services. SJC boasts roughly 3 million subscribers on its SKY PerfectTV! platform, which is Japan's largest communication satellite multichannel pay TV broadcasting service, delivering a wide variety of entertainment. Its satellite communication service covers Japan, Asia, Oceania, Russia, the Middle East, Hawaii and North America, supporting the realization of safety, security and convenience in society.

Website: <https://www.sptvjsat.com/>



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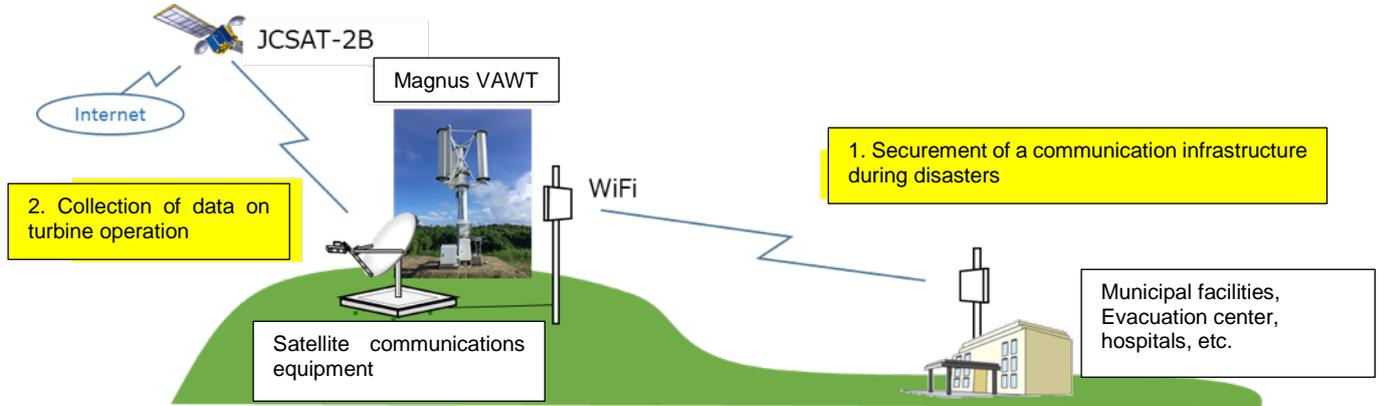
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[Reference Materials]

<Concept of the Joint Demonstration Test>



<Survey in the Philippines>



Left: Checking wind conditions on a remote island in the Philippines (November 2017)

Right: A seminar hosted by Challenergy and SJC in the Philippines attended by more than 50 individuals from local government agencies and private firms (January 2018).

<Future Service Concept>

