1 280 MW Sun Power Plant in Arizona, USA

THE SPANISH COMPANY ABENGOA SOLAR, one of the leaders in developing and building large solar plants, has signed a contract with Arizona Public Service Co. (APS) – the largest energy utility in the state of Arizona (USA), to build a 280 MW solar power plant, scheduled to go into operation by 2011.

The solar plant will be located about 100 km west of Phoenix, near Gila Bend, Arizona. It has been named Solana, meaning "a sunny place" in Spanish. The plant will employ a proprietary Concentrating Solar Power (CSP) trough technology developed by Abengoa Solar. It will cover a surface of around 1,900 acres.

The solar trough technology uses trackers with high precision parabolic mirrors that follow the sun's path and concentrate its energy, heating a fluid to over 700 degrees Fahrenheit and using that heat to turn steam turbines. The solar plant will also include a thermal energy storage system that allows for electricity to be produced as required, even after the sun has set.

The operational scheme is similar to that of Solnova 1 (Spain), with the addition of storage capacity as shown in the diagram below.

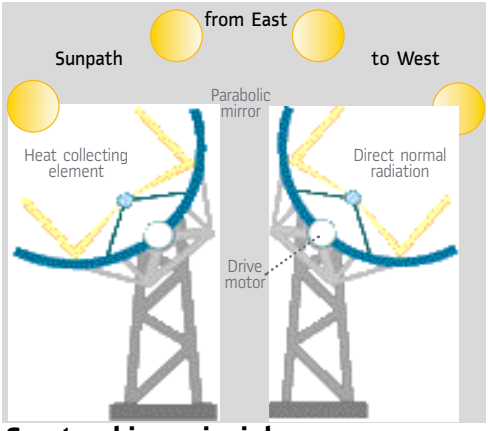
Parabolic trough systems use an absorber tube as the collector. Solar radiation is reflected from the parabolic trough to the focal point of the parabola. The absorber tube is located at the focal point and it transfers the solar radiation energy to the working fluid. This energy is then used to run a conventional power cycle.

A large benefit of parabolic trough systems compared to other solar technologies is its maturity as a technology for being installed at a commercial level. The first trough plants were installed in the US in the 1980's and have since undergone vast improvement both in cost and efficiency.

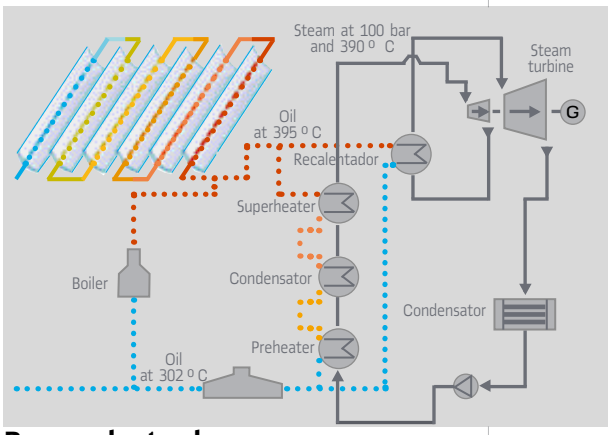
For more information on Abengoa Solar's solar trough technology, please visit their website at: www.abengoasolar.com ■

Solar through technology plant

If only 2% of the solar radiation from the world's deserts were used it would be enough to supply the world's power demands.

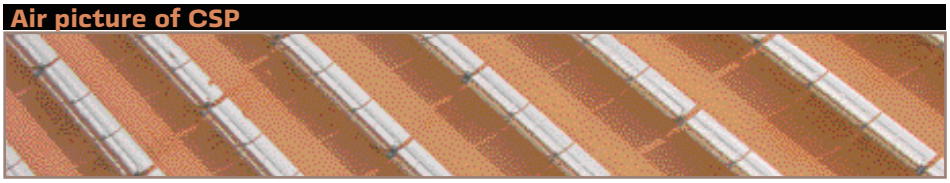


Sun tracking principle



Power plant scheme

Air picture of CSP

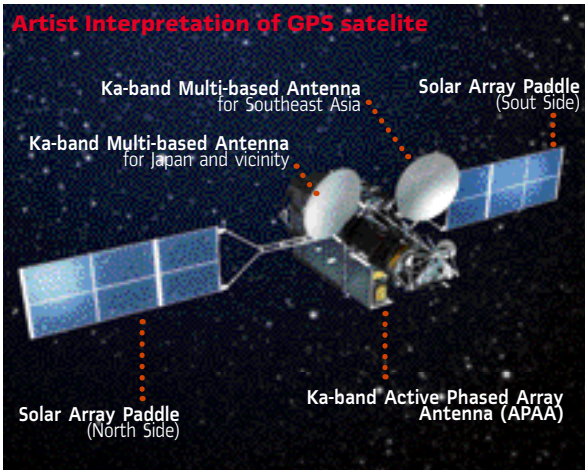


The benefit of this technology is that it is a conventional thermal power plant with a solar energy source.

2 Japan Launches
High-speed Communications Satellite

Mitsubishi Heavy Industries, Ltd. and the Japan Aerospace Exploration Agency (JAXA) launched the super high-speed Internet satellite "KIZUNA" (WINDS) by the H-IIA Launch Vehicle No. 14 (H-IIA F14) at 5:55 p.m. on February 23, 2008 (Japan Standard Time, JST) from the Tanegashima Space Center.
The launch vehicle flew smoothly and, at about 28 minutes and 3 seconds after liftoff, the separation of the KIZUNA was confirmed.
We would like to express our profound appreciation for the cooperation and support of all related personnel and organizations that helped contribute to the successful launch of the KIZUNA aboard the H-IIA F14.
At the time of the launch, the weather was cloudy, wind speed was 15.2 m/second from the northeast and the temperature was 9.7 degrees Celsius.
The "KIZUNA" is a communications satellite that enables super high-speed data communications of up to 1.2 Gbps to develop a society without any information availability disparity, in which everybody can equally enjoy high-speed communications wherever they live.
Using an antenna for South East Asian countries, we are aiming to achieve super high-speed communications with nations in the Asia/Pacific region with which Japan has close ties.
Large-volume and high-speed communications provided by the KIZUNA (WINDS) are expected to be useful in various areas. For example, we will be able to contribute to "remote medicine" that enables everybody to receive sophisticated medical treatment regardless of time and location by transmitting clear images of the conditions of a patient to a doctor in an urban area from a remote area or island where few doctors are available. In academic and educational fields, schools and researchers in remote areas can exchange information easily. To help cope with disasters, information can be swiftly provided through space.
The Internet is now an integral part of our lives; but its infrastructure levels vary. In general, urban areas with a large population have a better Internet environment, whereas some mountainous regions and remote islands are not well-equipped with Internet infrastructure due to its costs.
The KIZUNA (WINDS) does not require costly ground equipment. If you install a small antenna (about 45 cm in diameter) at your house, you can receive data at up to 155 Mbps and transmit data at up to 6 Mbps.
With a larger antenna of about 5 meters in diameter, super high-speed data communications of up to 1.2 Gbps will be available. (Such a service is mainly for organizations and companies.)
Therefore, even in some areas where major ground infrastructure for the Internet is difficult to establish, people can enjoy the same level of Internet service as that in urban areas. ■

All Composite Images: courtesy of JAXA

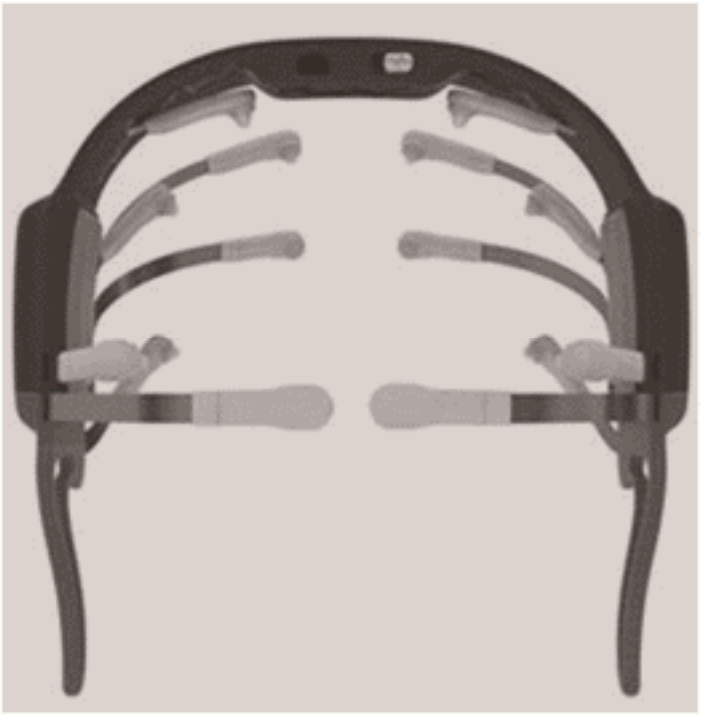


The "KIZUNA" is a communications satellite that enables super high-speed data communications of up to 1.2 Gbps

Artist's View: KIZUNA (WINDS) mission logo.

See: http://www.jaxa.jp/countdown/f14/index_e.html.

3 Mind Control of Computers



The neuroheadset is a light-weight, sleek and easy-to-use wireless device.

EMOTIV SYSTEMS, THE PIONEER IN BRAIN computer interface technology, has revealed the Emotiv EPOC™, a neuroheadset that allows players to control game play with their thoughts, expressions and emotions. The Emotiv EPOC is the first high-fidelity brain computer interface (BCI) device for the video gaming market and will be available to consumers via Emotiv's web site and through selected retailers in late 2008.

The neuroheadset is a lightweight, sleek and easy-to-use wireless device, featuring sensors that detect conscious thoughts, expressions and non-conscious emotions based on electrical signals around the brain. Emotiv's technology processes these signals, enabling players to control their in-game character's expressions or actions and influence game play using their thoughts, expressions and emotions.

"*Being able to control a computer with your mind is the ultimate quest of human-machine interaction,*" said Nam Do, CEO of Emotiv Systems. "*When integrated into games, virtual worlds and other simulated environments, this technology will have a profound impact on the user's experience.*"

The Emotiv EPOC detects over 30 different expressions, emotions and actions. As a result of these detections, players will enjoy a more immersive, lifelike experience. Games will be able to respond dynamically to player emotions, enabling, for example, more sophisticated dynamic difficulty adjustment. Players can more easily simulate the aspects of gaming by controlling certain actions and expressions and manipulating objects in the game using their brains instead of a keyboard or controller.

In addition to these detections, the Emotiv EPOC incorporates a gyroscope, which enables the camera or cursor to be controlled by head motions. Emotiv and IBM announced that they intend to explore the potential of Emotiv's BCI technology beyond the gaming market, into more strategic enterprise business markets and virtual worlds. IBM and Emotiv plan to explore how to make these environments more personal, intuitive, immersive and ultimately more lifelike. IBM also intends to explore how the Emotiv headset may be used for researching other possible applications of Emotiv's BCI technology, including virtual training and learning, collaboration, development, design and sophisticated simulation platforms for industries such as enterprise and government.

Human thoughts, expressions and emotions are captured by the neuroheadset.

To share your ideas about what we can do with "*mind control of computers*", please send an e-mail to: editor@pacw.org

"*The use of BCI technology represents a potential breakthrough in human-machine interfaces, changing the realm of possibilities not only for games, but in the way that humans and computers interact,*" said Paul Ledak, vice president, IBM Digital Convergence. "*As interactions in virtual environments become more complex, mice and keyboards alone may soon be inadequate. BCI is an important component of the 3D Internet and the future of virtual communication.*"

The brain is made up of approximately 100 billion nerve cells, which are called neurons. When these neurons interact, an electrical impulse is emitted, which can be observed using non-invasive electroencephalography (EEG). ■

Brain computer interface technology works by observing an individual's electrical brain activity and processing it so that computers can take inputs from the human brain.