

1 The New Lego - a Bug lab platform, an exciting rarity

WHEN WE LOOK AROUND US, WE SEE MANY people with an electronic gadget designed by someone who has followed the advice of the company's marketing department that has determined what kind of product is needed by the market. When you go to the store you will see the next generation of devices with a range of functions that make it appealing to the different consumers. But since all consumers are different, there is no perfect device that will meet the requirements of every single person.

Now this is changing thanks to Peter Semmelhack, the founder of BugLabs. A few years ago he was inspired by the open source software development that has increased productivity by lowering the barriers to getting involved. Since that was not the case with hardware, he decided to do something about open source hardware. The goal of the company and its founder is to create an environment for the development of a Lego-like collection of open source hardware and software that customers can use to build their own devices. This is achieved through own or joint development with other companies with a similar mind set.

"The mission for us," Semmelhack says, "is to create a platform that allows anyone to build any project they want by snapping it together like Lego. And to have the gadget be reliable, robust, and not too ugly or clunky-looking, and to make it

easy to innovate in electronics in a way that hasn't been possible before."

In the foundation of every Bug Labs based product is a Bugbase – the module which consists of a CPU, RAM, battery, USB hubs and other connectors for adding modules running on GNU/Linux. At the 2009 Consumer Electronics Show in Las Vegas the company introduced five new modules:

■ BUGprojector - a mini DLP projector developed in conjunction with Texas Instruments

■ BUGsound - an audio processing module with four stereo input/output jacks, a microphone, a speaker, and builtin hardware codecs

■ BUGbee (802.15.4)

■ BUGwifi (802.11 and Bluetooth 2.0+EDR), which will let you connect wirelessly with your PAN and WLAN, respectively

■ BUG3g GSM - for connecting to networks

The existing and new modules give the user the ability to create additional models as required.

Thinking about the BugLabs approach in light of the recent changes in the PAC industry and the availability and expanding use of IEC 61850, we wonder how long it will take when we will have a PAC Lego – a bunch of hardware modules that can be used to create specific applications, without the need for new hardware development.

For further information on the different BugLabs products and for inspiration, you can go to <http://www.buglabs.net/> ■

BugLabs, is a company that is trying to change the way we make and use electronic gadgets.



Building your own gadget



Several different modules are already available

Images courtesy of BugLabs

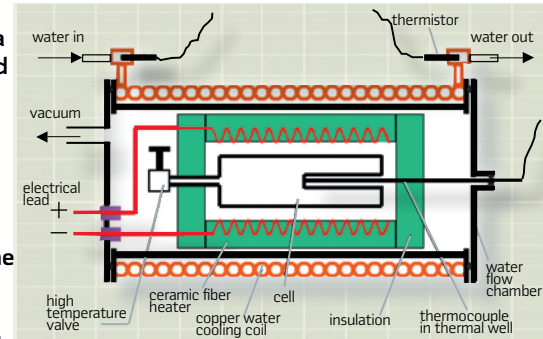
2 Cheap, Clean Power – is it Real? - Sounds too good to be true, but...

In 1991 Randell Mills, a Harvard medical doctor, claimed that he had discovered the hydrino - a theoretical form of the hydrogen atom in which the electron is at a lower orbit - meaning the atom itself contains less energy. The inventor decided that he could produce hydrinos and in the process capture the energy released during the transition from hydrogen, using it to generate electricity. This all sounds good, but most scientists deny that such a state of the hydrogen atom exists because the resting state of hydrogen is the lowest energy state ever demonstrated. Quantum physics does not accept that hydrogen could be pushed to a lower state. As a result, most quantum physicists declare that the Blacklight process is nonsense. And normally the story

ends there. Not in this case. Obviously Dr. Mills believed in his invention and established Blacklight Power - the company which today claims that energy this atomic push releases can create electricity for 1 cent / kWh. This is less than any known process, including burning cheap, dirty coal. The company states that it can produce heat or electricity in a process that mostly feeds itself with common water. According to Mills, the hydrino is created through a reaction between hydrogen and a catalyst. In the process it releases more than enough energy to fuel electrolysis in common water, thus producing more hydrogen. The majority of excess energy can be used to produce electricity. The conversion needs heat and

Images: Courtesy to Blacklight Power

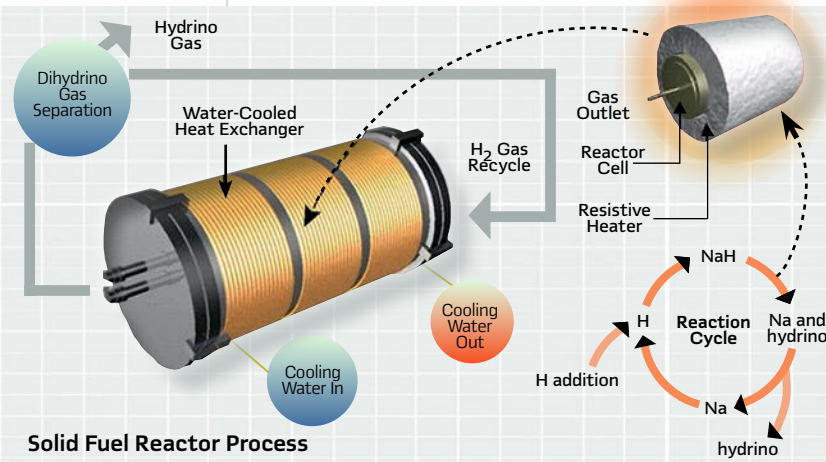
an outside ingredient - a catalyst used to turn the hydrogen to hydrinos. Once the reaction is started it generates the heat used in the process.



Solid Fuel Reactor: Diagram

The hydrinos created by the process are non-reactive and lighter than helium, so if they are released they will float up into space. They also may be processed into unique chemicals with a range of useful applications. Most engineers and scientists are skeptical, because they have seen too many people pretending that they have invented a new method for energy production. However, in the case of Blacklight Power there are plenty of people that believe in the future of this technology to the extent that they are ready to invest millions in it. After a couple of years in silence, in 2008 the company made several announcements. The first one was that an independent review by an outside team of engineers at Rowan University has verified that the process using a substance provided by

Blacklight released a quick burst of heat far beyond anything anticipated. At the same time, Blacklight Power claims that they have a functioning 2 kW prototype and are working on a 50 kW reactor. In the last couple of months the company has announced issuing two commercial licensing agreements - with Estacado Energy Services and Farmers' Electric Cooperative, both of New Mexico, USA to use the BlackLight Process and certain BLP energy technology for the production of thermal or electric power up to a maximum continuous capacity of 250 MW. If you want to come to your own conclusion if it is real, you can download Dr. Mills' book advancing the fundamentals of Quantum Mechanics in his new atomic theory - The Grand Unified Theory of Classical Physics. ■



Solid Fuel Reactor Process

You can start researching from the company's web site:

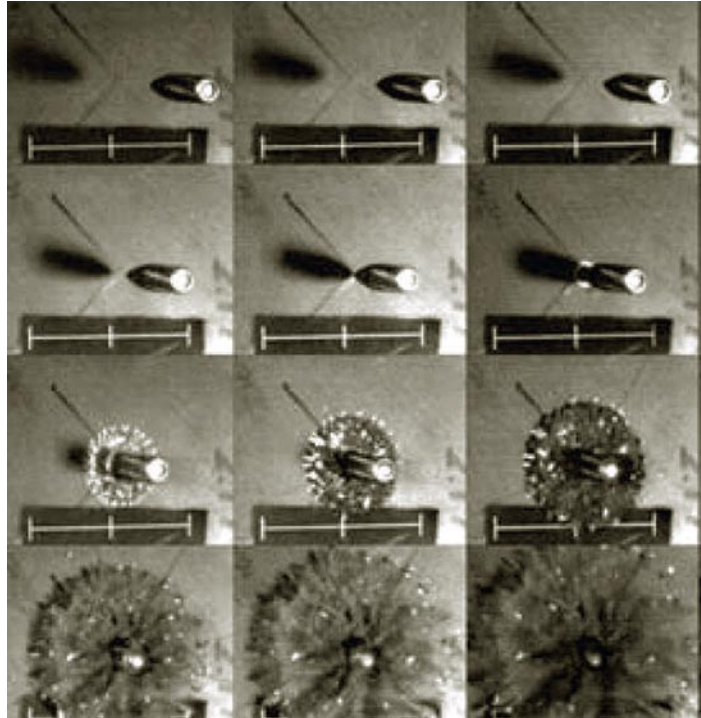
<http://www.blacklightpower.com/>

3 High-Speed Cameras new solutions

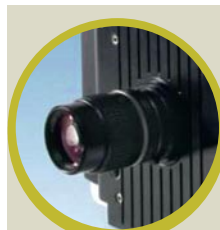
SPECIALISTS IN THE FIELD OF ELECTRIC POWER SYSTEMS are used to thinking in milliseconds when analyzing the operation of protection relays during short circuit faults or other abnormal conditions. And they always look for ways to further improve the speed of fault detection.

In order to find new ways to achieve better results, it may be helpful to better understand what happens before the fault occurs, and how the conditions at the location of the fault change during the very short time. High-speed cameras can be used to record the process in order to perform the analysis and look for new methods for fault detection or even fault prediction. As in any other activity we need to know the requirements we have, the market availability, and the resources needed for the desired results.

If money is not an issue, there is no question what to buy – the DRS's Imacon 200 - the most advanced and sophisticated ultra high-speed digital imaging system in the world. The user can set the number of frames from 1000 to 200 million per second. Since the requirements for use can vary significantly depending on the application, the system offers mounting flexibility based on a Nikon® Bayonet 'F' style lens mount. This allows the use of a variety of lenses, microscopes and custom optical applications. In order to support 3-dimensional and stereo imaging it is possible to synchronize two cameras using a fiber optic cable. The imaging system is based on multiples of intensified CCD modules



Record of a high speed process:
Bullet penetration.



DRS's Imacon 200's flexibility is achieved by a Nikon® Bayonet 'F' style lens mount.



Phantom V12.1's CMOS sensor with a recording speed of 1 million frames-per-second offers an impressive performance.

and provides a resolution of 1360 x 1024 pixels. The system is used by military, commercial and other institutions and comes with a price that is as high as its capabilities.

The Phantom V12.1 is a lower budget solution. In the heart of this camera is a specially designed, high-definition CMOS sensor available in color or monochrome, and built specifically for high-speed imaging applications. Even though the characteristics of the camera are much lower than the Imacon 2000, the price of less than 3000 US dollars makes it affordable to a much wider range of users and applications. ■

For more information visit: <http://www.drdsi.com/i200.htm> and <http://www.visionresearch.com/>



The DRS's Imacon 200 - the most advanced and sophisticated ultra high-speed digital imaging system in the world.