



Newsletter



Arbin FCTS in the Spotlight

With the delivery of its first integrated fuel cell testing system, Arbin officially enters the fuel cell testing market with full force. A full-page advertisement on FCTS will be published starting on the June 2001 issue of the *Advanced Fuel Cell Technology*, as well as a full-page internet promotion at www.fuelcelltestings.com. Promotion also took place during the recent "Small Fuel Cell 2001" conference sponsored by The Knowledge Foundation, Inc., in Washington, DC.

Arbin's interest in fuel cell

testing system has existed since the company's inception. The fuel cell testing market, however, was not as active as the battery testing market for many years. Orders were coming mainly for battery testing systems, followed by supercapacitor testing systems. There were a few orders for Arbin proprietary electronic load to be used in fuel cell testing applications. It is during the first quarter of 2001 when Arbin has successfully delivered its first integrated fuel cell testing system. Arbin integrated FCTS, which combines electronic load, gas handling and

control, humidifier, and data acquisition into one system could possibly be the world's first integrated fuel cell testing system; providing a total solution for fuel cell testing applications.

Market interests on Arbin FCTS have started to pick up during the first two quarters of this year. Arbin sales engineers have been busy fielding inquiries and requests for quotations on Arbin FCTS.

For more information on the FCTS, visit www.fuelcelltestings.com or call us at (979) 693-0344. ☘

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Industry Events

June 4-5
EPRI Electric Conference
San Diego, CA
Phone: (248) 740-1809
www.epri.com

June 6-7
2nd Annual Pan Asia Battery Conference 2001
Hong Kong
Phone: (65) 346 9132
cynthia@cmtsp.com.sg

June 8-11
China Int'l Battery Fair 2001
Beijing, China
Phone: +86-22-23380938
www.chinabatteryonline.com

June 18-22
2nd Advanced Batteries & Accumulators
Brno, Czech Republic
Phone: +4205 43167 143
www.fee.vutbr.cz/uete/aba

June 19-21
Power Electronics-Intelligent Motion
Nuremberg, Germany
Phone: +49 (0) 911/981 740
www.pcim2001.de

September 2-7
200th Meeting of ECS and 52nd Meeting of Int'l Society of Electrochemistry

San Francisco, CA
Phone: (609) 737-1902 Ext. 103
www.electrochem.org

September 9-13
PowerSystems World 2001
Rosemont, IL
Phone: (805) 650-7070
www.powersystems.com

September 12-14
9th Asian Battery Conference
Bali, Indonesia
Phone: 613 9288 0205
Colin@conference-assoc.com.au

Arbin New Chinese Website

Interests from Chinese companies in battery and fuel cell research have been growing tremendously during the past year. Arbin has sold testing systems for cell phone and electric vehicle battery research, as well as fuel cell research applications to customers in China, Hong Kong and Taiwan. Arbin has catered to Chinese companies by opening sales office in Beijing in 1998 and a service center in Tianjin in 2000. Both locations expect to increase the number of personnel on their staff by this year-end.

Besides employing Chinese-speaking sales personnel, Ar-

bin also publishes its product literatures and advertisements in Chinese (simplified) language. The latest addition to marketing to China market is the launching of Chinese (simplified) version of Arbin company website. The web address is:

www.arbin.com/china.

The website will be maintained from Beijing office, with cooperation from the company headquarters.

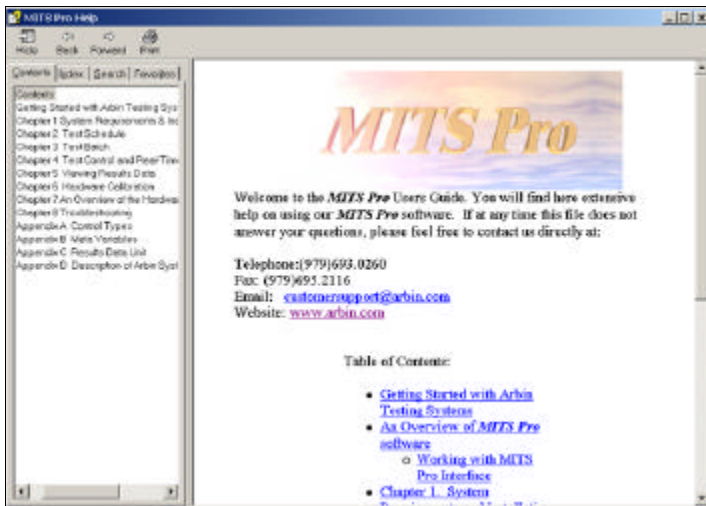
Other efforts to provide customized marketing include supplying product literatures in Japanese and launching Japanese-version of Arbin website in near future. 🌸



Dr. John Zhang (left in this picture), Arbin President and Chief Engineer makes frequent visit to China offices. The picture shows him talking to Tianjin Service Center-engineers during his recent trip there.



Chinese-version of Arbin website displayed on Netscape 6.0 internet browser.



Online Makes Easy

Users of Arbin testing systems and software are given more options now to download software help file from the company website. The MITS Pro Help file for BT2000 has just been updated and is available by accessing the following address on the internet:

www.arbin.com/Products/Services/download.htm

The help file is of *.CHM (Compiled Help Modular) type and is created with Microsoft's HTML Help authoring tools. Users can either

download it directly from the web or save it to the computer for later viewing. The .CHM file can be opened directly by double-clicking on it and viewing through Microsoft's integrated HTML help viewer; there is no need for additional software to view the file. The new help utility will be integrated with Arbin's MITS Pro software, beginning with version 2.8 (anticipated by 6/1). A printed copy of the MITS Pro Help file will be available upon request. 🌸

Arbin Exhibition

**China International Battery Fair 2001
(CIBF 2001)
June 8-11, Beijing, China**

A Look at Linear and PWM Systems

Arbin custom-designed systems are based on two types of current and voltage regulations, namely linear and PWM (pulse width modulation). Linear regulator absorbs the voltage difference between the power supply and the load. It consumes the energy proportionally to the voltage drop as well as the current, and dissipates this energy as heat to the environment. The process is simple, and it is smooth with a rapid rise time.

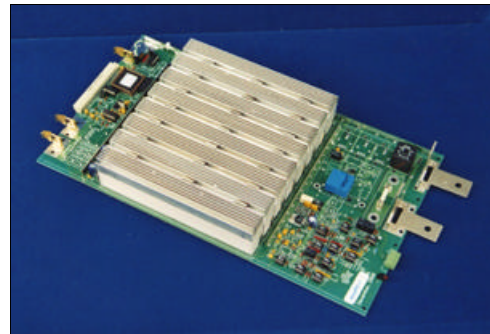
PWM regulator on the other hand employs a high frequency pulse to transfer and control power with minimum power consumption by the regulator itself. Although the circuit is more complicated and has a higher noise level than the linear regulation, the PWM handles both high power and high voltage systems better, and does so with lower levels of volume and weight.

Arbin's PWM-based systems can be differentiated further

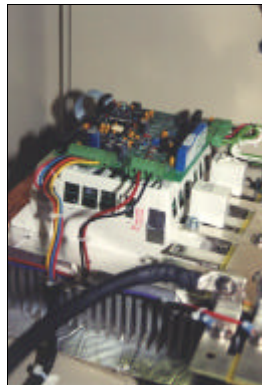
into PWM-MOSFET (Metal-Oxide-Silicon Field-Effect-Transistor) and PWM-IGBT (Insulated Gate Bipolar Transistor) depending on the current, voltage and/or power requirements. The table on the right displays the comparisons of Arbin BT2000 according to the regulation types.

The linear and PWM-MOSFET systems are designed with plug and play module, while the PWM-IGBT systems are not due to the more complicated circuitry, which normally includes regenerative power supply. In term of testing needs, linear circuitry design is optimized for low current-low voltage or high current-low voltage testing applications while both PWM circuitries are best for low current-high voltage or high current-high voltage testing applications with PWM-IGBT having the capability to deliver the highest power (see the comparison table). ❁

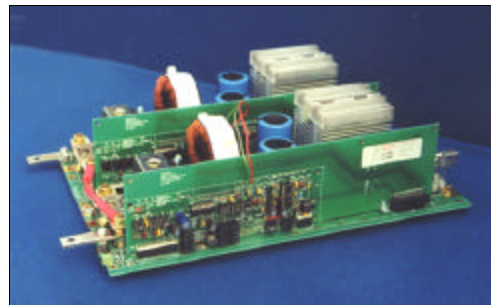
TECHNOLOGY	LINEAR	PWM	IGBT
Current Range per channel	<= 2000 A	<= 400A	<= 400A
Voltage Range per channel	<= 40 V	<= 100V	<= 400V
Power Range per channel	<= 40 kW	<= 40 kW	<= 100 kW
Max Current Ranges per channel	<= 3	<= 3	1
Minimum Rise Time to Full Charge or Full Discharge	20 μ s ~ 1 ms	~ 10 ms	<100 ms
Accuracy	0.1% FSR	0.1% FSR	0.3% FSR
Special Features	<ul style="list-style-type: none"> • Low noise. • Fast rise time. 	<ul style="list-style-type: none"> • Lower cost per watt than linear. 	<ul style="list-style-type: none"> • Lower cost per watt than linear.



Picture of the highest power linear BT2000 module of one channel, 40V and 1200W per channel. Larger size heat sinks are required to dissipate the heat as the power requirement increases.



Picture of an IGBT control module. The design is not plug and play considering the more complicated circuit design compared to PWM-MOSFET or linear circuitry.



Picture of a PWM-MOS 2-channel module, 100V and 50A per channel. The two channels may be paralleled to form one channel of 100V and 100A.

Arbin Factory Training

May 7-8 & 21-22
Jun 4-5 & 18-19
Jul 9-10 & 23-24
Aug 6-7 & 20-21
Sep 10-11 & 24-25
Oct 8-9 & 22-23
Nov 12-13 & 26-27
Dec 10-11

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WE'RE ON THE WEB!
WWW.ARBIN.COM

A Total Solution the World Over

Software Updates



Today, Arbin's software is unequivocally, the best selling testing software and the envy of its competitors. MITS Pro has provided our users with a blazing fast working environment without compromising the robustness that is inherent to Arbin. Several hours of hard labor by Arbin's software engineers have resulted in this marvel today.

Several procedures of testing and phase implementation ensure that every version of the software that is released has been thoroughly tested and diagnosed for problems.

The strict version control ensures that the bugs are fixed at a much higher priority than addition of new features. The new features, although very important in Arbin's future success, are added at the end of any release cycle. This ensures a software version that is almost bug-free and very stable. Independent testing is conducted not only at Arbin headquarters in Texas but also at our China facility to ensure maximum diagnosis and beta testing.

Granted we cannot beat Microsoft in releasing new versions of software, we can certainly compete with them in making the versions as stable as possible. ❁

FAQ Corner

Q: When I do a taper charge, the current resolution falls as the current drops and towards the end of the charge, all I see is noise. Is there a way to get better data for this step?

A: Absolutely. This is easily performed using three steps of the same constant voltage type, but with reducing current ranges progressively. As you perform a taper charge step, the voltage is constant as the current decreases. As the current decreases and goes into the range where middle range can handle it, let it go to the next step where the voltage is still the same but now the current resolution is that much better. The third step would be the same one going from medium current range to low.

