**New Method for Estimating the Remaining Life of Power Converters in Real-Time**

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<th>Patent Title:</th>
<th>Power Converter Remaining Life Estimation</th>
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<tr>
<td>US Regular Patent Application No:</td>
<td>12/622,003</td>
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<td>PRC (PCT) Application No:</td>
<td>200980147089.1</td>
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<td>Versitech Ref No:</td>
<td>IP00292</td>
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<td>Priority Date:</td>
<td>November 20, 2008</td>
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This invention enables continuous online life monitoring of switching power supplies. It tells in advance when a power supply will expire.

**Market Opportunity**

Predicting the expected life of a switching power supply is essential since unexpected failure of the subsystem can produce major inconvenience or even enormous loss. Virtually all electronic equipment, such as computers, communication switches and base stations, medical monitoring systems, etc, employ switching power supplies to convert AC power obtained from wall sockets to DC power for their operations. According to Frost & Sullivan, the worldwide AC-DC switching power supplies market was estimated at US$ 8.7 billion in 2008 with a shipment of 54.7 million units. The market is forecast to have a CAGR of 1.5%.

Our invention enables users to undertake preventive measures to avoid unexpected equipment failures as well as to minimize system downtime.

**The HKU Invention**

Currently, most power supplies only have their life estimation done in the design stage [1]. This is neither sufficient nor accurate. The working environment varies for different installations of power supplies and such variation dominates their life expectations. Our invention gives intelligence to the power supply so that it can monitor the working conditions and tell the user how long it can operate without problems. This is useful information for those who perform preventive maintenance, especially in large systems where maintenance costs are significant.

There are a few researchers working on the life prediction of power supply. Their focus is on high reliability, high power and cost insensitive applications. Most of these require expensive sensing equipment and calculation units [2]. Others only work under fixed topology which is insufficient for varying loading conditions [3]. Our technology gets rid of expensive units, suits all favorable topologies and favors mass production.
With advanced technologies, the current market is looking for more reliable power supply systems, especially for those installed in remote areas. Power supplies with a self-monitoring function favor scheduled maintenance. This invention helps to reduce the costs of downtime and repairs, in addition to increasing the utilization of equipment.

About the Lead Inventor
Dr. Bryan M.H. Pong graduated from Birmingham University and obtained his PhD degree from Cambridge University. Currently, Dr Pong is an Associate Professor at the Hong Kong University and his research interest is Power Electronics & Switching Power Supply. Dr. Pong is a co-inventor of several US patents and has authored and co-authored a number of technical publications.

References

About Versitech Limited and the University of Hong Kong
Versitech Limited is the technology transfer and commercial arm of the University of Hong Kong (HKU). Being the first and foremost university in Hong Kong, HKU is an institution with a long and distinguished academic heritage, in addition to an international reputation for forward-looking pioneering research. HKU is consistently ranked among the very best in Asia by QS and Times Higher Education.

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