

Some Technical Articles for Safety Engineers

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Here are a few articles written by Mr. Lohbeck that may be of interest to safety engineers.

Safety isolation protects (EDN) >

<http://www.edn.com/contents/images/454635.pdf>

Safety certification for the T&M world (T&MW) >

<http://www.reed-electronics.com/tmworld/article/CA439351?pubdate=8%2F1%2F2004>

Safety Design and Certification - part 1 (EDN) >

<http://www.evaluationengineering.com/archive/articles/1103prodsafe.htm>

Safety Design and Certification - part 2 (EDN) >

<http://www.evaluationengineering.com/archive/articles/1203prodsafe.htm>

Intro to Safety Isolation and Certification (training video: 40 mins) >

<http://zone.ni.com/devzone/conceptd.nsf/webmain/EFA48CB646A6C93386256ED300527355>

EMC UK 2006

By Brian Lawrence, Executive Director

The U.K. had not hosted an international EMC conference and exhibition between 1997 and 2004. As there had been many changes in legislation, standards, and design techniques over that time, as well as a much broader involvement of government and industry, EMC UK 2004 was conceived and organized by Nutwood UK, under the direction of Alan Hutley, managing director.

EMC UK 2004 took place at the new exhibition center at Newbury Racecourse in October 2004, and was designed to attract an international audience keen to learn about new techniques and the implications of the broader legislation encompassing not only EMC but related topics such as the Low Voltage Directive,

functional safety, and telecommunications.

The following year EMC UK 2005, at the same Newbury venue, attracted 50 exhibitors and 36 technical papers divided into two streams and five modules.

On October 17-18, 2006, Nutwood UK presented their third EMC UK conference and exhibition, which turned out to be their most successful and enthusiastically supported event in this series. EMC UK 2006 featured 33 presentations spread over into 8 modules. There were 60 exhibitors and over 800 attendees for the two days.

The event was staged in association with the IET EMC Professional Networks and supported by EMCIA, EMCTLA and the IEEE GB and NI Chapter. The conference featured a keynote address from Andy Drozd, President of the IEEE EMC Society.

However, the most significant new feature for 2006 was the presence of NARTE as an exhibitor. Nutwood UK were kind enough to provide a full 3m x 3m booth



for NARTE at very late notice, and to feature a full page article and promotional advertisement from NARTE in the Show Guide edition of *The EMC Journal*.

NARTE experienced an active two days at the exhibition and received almost 40 requests for information about our EMC and ESD programs. Encouragingly, many of the requests were from company and department heads seeking to certify a number of their staff members.

The exhibition was also attended by York University and Kent University, with York able to promote their recently received NARTE Authorized Test Center status.

It is anticipated that this event will become a regular feature on the NARTE calendar and one at which we might run a certification examination in the future.



Solar Flares Cause GPS Failures, Cornell Researchers Warn

Cornell researchers have discovered that strong solar flares cause Global Positioning System (GPS) receivers to fail. Because solar flares are generally unpredictable, such failures could be devastating for “safety-of-life” GPS operations such as navigating passenger jets, stabilizing floating oil rigs and locating mobile phone distress calls.

“If you’re driving to the beach using your car’s navigation system, you’ll be OK. If you’re on a commercial airplane in zero visibility weather, maybe not,” says Paul Kintner Jr., professor of electrical and computer engineering at Cornell and head of Cornell’s GPS Laboratory.

Alessandro Cerruti, a graduate student working for Kintner, accidentally discovered the effect on while operating a GPS receiver at Arecibo Observatory in Puerto Rico, one of six Cornell Scintillation Monitor (SCINTMON) receivers. Cerruti was investigating irregularities in the plasma of the Earth’s ionosphere – a phenomenon unrelated to solar flares – when the flare occurred, causing the receiver’s signal to drop significantly.

To be sure of the effect, Cerruti obtained data from other receivers operated by the Federal Aviation Administration (FAA) and the Brazilian Air Force. He found that all the receivers had suffered exactly the same degradation at the exact time of the flare regardless of the manufacturer. Furthermore, all receivers on the sunlit side of the Earth had been affected.

The flare consisted of two events about 40 minutes apart. The first lasted 70 seconds and caused a 40% signal drop. The second lasted 15 minutes and caused a 50% drop. But this flare was moderate and short-lived; in 2011 and 2012, during the next solar maximum, flares are expected to be 10 times as intense and last much longer, causing signal drops of over 90% for several hours.

“Soon the FAA will require that every plane have a GPS receiver transmitting its position to air traffic controllers on the ground,” warns Cerruti. “But suppose one day you are on an aircraft and a solar radio burst occurs. There’s an outage, and the GPS receiver cannot produce a location. It’s a nightmare situation. But now that we know the burst’s severity,