The Product Safety Newsletter

IEEE

Vol. 3, No. 1 January/February 1990

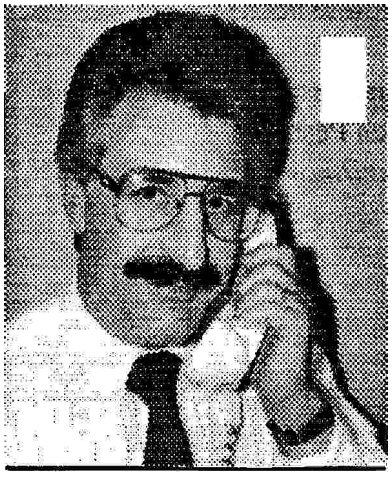
In this issue

Chairman's Message

It's that time of year again; time to reflect, time to project.

Reflections:
Nineteen eighty-nine was a year that saw the U.S. struck by many natural disasters, what with hurricanes, tornadoes, and earthquakes. I sincerely hope that none of you were severely impacted by these events and that your holiday season was filled with joy.

I am happy to report that the PSTC did not suffer from such calamities (except for John McBain, our Secretary/Treasurer, who broke his foot, in an unnatural disaster). In fact, I would characterize 1989 as a good year for the PSTC. Interest in what we do has grown at a rapid rate and, believe it or not, we are getting organized.



Rich Pescatore

The year's highlights include:

• The *Product Safety Newsletter* circulation has increased by about 33 percent. The last mailing was slightly over 1200 copies.

• The newsletter size has increased by about 25 percent.

• Financial support has been expanded to include funding from the EMC Society and Institutional Listings.

• Active participation from our membership is growing. (This is *not* to say we don't need *your* help. We do.)

• A Standards Committee and a Symposium Committee have been formed.

• Meeting locations have grown from five to eight (with additional inquiries from Florida, New Jersey, and Southern California).

• A reader survey was conducted.

It is gratifying to see that we are meeting our chapter objectives with more vigor as time passes.

I would like to thank each and every one of you who has helped to form the PSTC and continue to make it a success. This includes officers, both local and national, chairpersons, committee members, individual members, and guest speakers.

In addition, my thanks goes out to the following groups for their financial support.

Continued

The Product Safety Newsletter

Vol. 3, No. 1 January/February 1990

 Comments and questions about the newsletter may be addressed to the *Product Safety Newsletter,* Attention: Roger Volgstadt, c/o Tandem, Loc. 55, 10300 N. Tantau Ave., Cupertino, CA 95014-0708, fax no. (408) 285-0505.

This newsletter is prepared by the Corporate Creative Services Group of Tandem Computers Incorporated. The editor wishes to extend a special thanks to Michael Barnett and Jodi Elgin of Tandem for their work in preparing this newsletter.

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Chariman's Message

Continued

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Yes, 1989 was indeed a good year for the Product Safety Technical Committee.

Projections:

We will continue with our "day-to-day" activities that allow us to function, hosting of guest speakers at local meetings, and publishing the newsletter.

In addition, our intent is to focus on the following objectives:

- Tabulate the results of the reader survey and implement the general consensus "wants" that have been expressed. (Watch for results of the reader survey in the next issue of the newsletter.)
- Seek additional financial support through expanded Institutional Listings.
- Successful participation in the 1990 Symposium and preparation for the 1991 Symposium.
- Develop an "Action Plan" with the Standards Committee.
- Pursue support toward becoming a Technical Council of the IEEE.

I am looking forward to another busy, but rewarding, year: To continue our success, your help is needed. If you are not presently an active participant in one capacity or another, become one. You will meet new friends and reap a feeling of self satisfaction by contributing to your profession.

As always, let us know what you're thinking. What you like. What you don't like. We look forward to hearing from you.

With best regards,
Rich Pescatore
Chairman

Technically Speaking

Rich Nute

The Pitfalls of Pass/Fail Testing

Rich Nute

Hello from Vancouver, Washington, USA:

You're at your desk when the phone rings. It's one of your production lines; they're having failures with a part or a test that is critical to the safety of the product. They've shut down the line. You drop everything, and head to the line to investigate.

As you walk to the line, your mind is filled with both questions and hope.

What are you going to do when you get there? Will you be able to get the line back up and running? Is it a true failure, or did they make a mistake? You hope it's a mistake, or interpretation error. Or, maybe it's not a problem at all; you hope they're being over-zealous and over-cautious. And, you hope that whatever it is, they've caught them all before. they've been shipped to the field so that you don't have to consider a product recall.

The first thing you want to do is to see the failure for yourself. This will answer all your questions. You hope. If it is a true failure, you hope the cause is obvious and the fix is easy.

Already, you feel the pressure. You've been here before; if you can't fix it in a few minutes, the manufacturing manager will have you and a bunch of others in his office. They'll be looking to you for instructions as to how to proceed. And, they'll want those instructions fast!

The pressure is on! You've gotta find the root cause, and fast! Once you've identified the root cause, the pressure is off you and onto the manufacturing folks who will deal with the problem. So, you're hoping this will be easy.

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Here's one scenario:

When you get to the line, they show you damage to the power cord jacket adjacent to the strain-relief mechanism. It's a strange mark, neither a cut nor a bum, but something of a cross between the two.

Is the damage acceptable or not?

You decide a pull-strength test is probably appropriate. So, you apply 35 pounds. At about 30 seconds, the jacket separates.

Clearly not acceptable. You do have a problem.

You look at other units. Some have damage, some don't. The ones that have damage are not uniform. The damage varies from barely discernible to quite extensive. Now you're faced with the question: How bad is bad?

This should be easy: Test a number of units at 35 pounds for one minute. Then, relate the degree of damage to breakage.

But, it doesn't work. Some severely damaged units which should have broken do not break! What is going on here? The problem seems to have shifted from one which should have been easy, to onewl1ich seerf1s to have no bounds. How are you going to get control of this situation?

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Here's another scene:

When you get toth6 line, they explain that about' half of the units are failing the hi-pot test.

You check the hipot tester and find that it's both calibrated and working properly. You watch the operator do the test and, again everything is okay. The units are truly failing the hi-pot test: You do have a problem.

It only takes a few minutes more to isolate the partici.i1ar part in the primary circuit that is the culprit. Let's say, for discussion, the part is a fan motor. And, it is certified by several certification

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Technically Speaking

Continued

houses. So, you know that the fan was successfully. hi-pot tested as a part of the fan manufacturer's production process.

Why do some of the fans, all of which passed the manufacturer's hi-pot test, fail our hi-pot test? What is going on here? The problem should have been easy, but some are okay, and some are not. How are you going to get control of this situation?

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Let's step out of the woods, and look at the forest from afar., What is common to these two scenarios?

In both scenarios, we are dealing with some units failing, and some units passing a requirement specified in a third party test standard. The test process is pass-fail; tested units, by definition, must fit in one category or the other.

Often, our thinking is driven by the standards and by the pass-fail certification submittal process. We tend to think only in terms of pass-fail. So, when we appear at the production line, our concern is for the failed units, and not for the passed units.

Pass-fail thinking and testing is appropriate and acceptable when qualifying a product to a standard. Pass-fail thinking and testing is an appropriate and acceptable process for a certification house. But, pass-fail testing is seldom appropriate and acceptable for the manufacturer. And, it doesn't work for problem solving.

Your objective is to find what is causing the failures, not to segregate the bad from the good.

The failed units are bad, but we don't necessarily know how bad. The passed units are good, but we don't know how good. When we perform pass-fail testing, we don't *measure* the actual performance of each unit.

When we perform a pull test at 35 pounds, and the unit fails, we don't know the pull value that it will pass. When we perform a hi-pot test, and the unit fails, we may not note the voltage at which it failed.

More importantly, for a unit that passes, how good is it? If it passes a 35-pound pull test, will it pass a 50-pound pull test? If it passes a 1000-volt hi-pot, will it pass a 1500-volt hi-pot? If it passes 1500, will it pass 2000?

Exactly how good is it? If we test to failure, we have a measure of the performance of the particular unit.

Are the units marginal, or is there a clear distinction between the units that measure above 35 pounds and the units that measure below 35 pounds? Is there a clear distinction between the units that measure above 1000 volts hi-pot and the units that measure below 1000 volts hi-pot?

The answer to this question quickly narrows the scope of the problem. Here's an example:

If, in investigating the power cord jacket damage, we pull the power cord to failure, we learn that some cords, regardless of the extent of jacket damage, fail at or around the ultimate strain-relief strength of 125 to 150 pounds. Others, depending on the extent of jacket damage, fail between 30. and 50 pounds. We examine the measurement data and note that only one brand of cord fails as a function of jacket damage.

Presto! The scope of the problem is now defined, and the issue can be handed off to the manufacturing folks.

Imagine how many pass-fall tests would be necessary before you finally discovered that the problem occurs in only one brand!

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Measuring the performance of a strain-relief mechanism on a number of production units need not sacrifice the unit; upon failure, the unit probably can be repaired at relatively little expense compared to the time to understand and put bounds on the problem.

On the other hand, hi-pot testing to failure may be very expensive to repair. So, you may not want to subject a number of units to a test-to-failure. Let's

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Technically Speaking

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look at some other techniques for investigating hi-pot failures. Remember, the objective is to find the root cause for the production-line hi-pot failure.

The hi-pot test tests insulations. It tests, simultaneously, both air and solid insulations--which always exist in parallel, and often exist in series.

While some may argue, I believe it is seldom that solid insulation fails at potentials below about 2000 volts rms.

Since every construction employs air as insulation, when a hi-pot failure occurs, there is a good likelihood the breakdown is in air. (Note that, in the event a breakdown occurs across the surface of an insulator, the "thing" that breaks down is the air, the arc in the air at the surface of the insulator burns the insulator resulting in carbon tracks on the surface.)

The air that breaks down is likely that of a series "circuit" of air and solid insulation. The two insulations in series constitute two capacitors in series. The voltage across each insulation is inversely proportional to the value of the individual capacitances. Where the distance in the air portion of the series is very small (about 0.5 mm or less), the air is a candidate for breakdown during the hi-pot test.

One method of finding the hipot failure is to take the unit apart, one piece at a time. Each time you remove a pan, you hi-pot that part by itself, and you repeat the hi-pot test on the remaining pans. These two tests will tell you when have removed the pan that caused the failure.

Okay. You've found that the hi-pot failure is occurring in the fan. But you don't stop there. You've got to find the particular insulation that is breaking down. You should continue taking things apart.

You're looking for about 0.5 mm in series with a thin, solid insulation. Maybe the magnet wire to rotor shaft, where the wire can be spaced a fraction of a millimeter from the metal shaft giving you the air-solid series construction.

You may get a low-energy arc through the air, from the shaft to the magnet wire. It mayor may not trip your hi-pot tester, depending on how sensitive you've set the trip. The arc current is limited by the impedance of the capacitance of the solid insulation portion of the series-connected insulations.

The problem with either corona or the low-energy arc is the very high temperatures in the arc. The temperature is high enough to burn the solid insulation pan of the two insulations. (In switches, the arc temperature during the opening process is high enough to melt the metal at the ends of the arc!)

You may not get a complete punch-through of the solid insulation because there isn't enough energy in the arc to burn all of the series solid insulation. However, with repeated testing, more of the solid insulation is burned away, the hole gets deeper, and successive hi-pot tests trip at lower and lower voltages. When the solid insulation finally has a carbon path all the way through, it is shorted out, and all that is left is the air. This now breaks down consistently at the same relatively low voltage compared to the initial breakdown. But, it doesn't go to zero because there is always some air between the two conductors.

Yet another technique is to use a high-voltage insulation resistance meter to find the fault as you take the fan apart. Some insulation resistance meters include a switch-selectable voltage source; you want one that goes to at least 1000 volts. The insulation resistance meter is a low-current, high voltage source that will make a small, continuous arc that doesn't do much damage. The meter tells you what's happening.

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Technically Speaking

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When I evaluate a prototype product, I like to measure the value required to break the unit rather than simply test for pass-fail. In this way, I know how weak or how strong the unit is. I also know what the weakest link is. Then, I take it out and test the remaining parts to failure, and again determine the weakest link.

Pull on the strain-relief until it fails. Run the hi-pot test voltage up until it fails. Increase the 25-amp ground continuity test until it fails. Pull on the handle until it breaks. Increase the impact test until the enclosure breaks.

Later, should a problem arise on the production line, I can guess at what might be the problem, and can quickly test for it. I either know what the problem part is likely to be, or I know what it is not likely to be.

Finding a problem with pass-fail testing requires lots and lots of testing and, consequently, a long time. Finding a problem by measuring the magnitude at which both "passed" and "failed" units fail only requires a few units and, consequently, a short time.

Pass-fail thinking and testing does not tell you how good or how bad, or how strong or how weak. If you don't know how good or how strong, then you don't know how close you are to failing. If you don't know how close you are to failing, then you run the risk of some units failing in production or, worse yet, in the field.

The "passed" ones often can tell you more than the "failed" ones---if you know what breaks, and what it takes to break it.

Measurement is the answer. Run the unit to failure. Then, measure the magnitude of the force that causes failure. Now, you know how good, how bad, how strong, or how weak.

Pass-fail testing necessarily must be the kind of test in a standard. Pass-fail testing necessarily must be the process of a certification house. But, for you, every pass-fail test should be changed into one of measurement. When. you make the measurement and get a value, the value proves whether you pass or fail. If you perform a pull test on a strain-relief and find that it fails at 125 pounds, you have proved that it passed the 35-pound test. If you fail a hi-pot test at 4100 volts, you have proved that it passed the 1500-volt test.

Don't just know your product passed the test; know how good your product is. It gives you power.

Your comments on this article are welcome. Please address your comments to the Editor, *Product Safety Newsletter,* at the address listed on page 2.

1990 IEEE International Symposium on Electromagnetic Compatibility

Spectrum of EMC Issues for the Nieties

August 21-23, 1990, Washington Hilton Hotel Washington, D.C.

CALL FOR PAPERS
for the
Product Safety Session

The Product Safety Technical Committee (PSTC/TC8) of the IEEE EMC Society seeks original, unpublished papers on all aspects of providing protection from electric shock m the design of electrical and electronic products, which include, but are not limited to, the following means:

Grounding	Double and Reinforced Insulation
Shielding	Ground Fault circuit Interrupter (GFCI)
Polarization	Immersion Detection circuit Interrupter (lDCI)

Papers on the above topics will be incorporated into a program which will provide a brief overview to define each topic and describe the advantages of each method. Note that papers should mention any connection or conflict between the electric shock protection means and EMC control methods (e.g.-leakage current, grounding points, etc.).

The Session title is "Electric Shock - Means of Providing Protection in the Design of Electric Products".

Prospective authors should submit a 5O to 75 word abstract and a 300 to 500 word summary with a minimum of five illustrations covering their selected topic. Upon acceptance, authors will receive their manuscript preparation kits.

We would appreciate receiving the abstract and summary before the end of January, 1990!

The abstract and summary should be sent to the PSTC Symposium Liaison Chairperson:

John Knecht
Underwriters Laboratories lnc.
333 N. Pfingsten Road
Northbrook, XL 60062
tel. 708-272-8800 X3416
fax. 708-272-8129

PLEASE CALL.. JOHN IF YOU WOULD LIKE TO PARTICIPATE IN THIS EVENT!
WE NEED MEMBER PARTIOPATION TO MAKE OUR FIRST SYMPOSIUM EFFORT A SUCCESS

News and Notes

Dave Edmunds

Dave Edmunds

UL Modifies 1950 File Review

The UL bulletin dated December 12, 1989 contained the following information which greatly modifies the review of products to UL 1950:

The current file review for UL 1950 required all products covered under UL 114 and 478 to be reevaluated to determine compliance with UL 1950. In the December 12 bulletin, UL proposes that the listee determine whether he wants his products to be listed under the new UL 1950 or be transferred to a category requiring compliance only to UL 114 and 478. "Based on industry concern over the need to review products that have demonstrated a good field record, UL proposes that the industry review program for UL 1950 be modified ..."

Four actions are listed:

1) UL proposes that a bulletin be issued that clarify the differences between the UL 114, 478 and 1950 categories.
2) UL 114 and 478 would be used to evaluate products currently covered under the Office Appliances category and EDP category, while new product submittals would be evaluated to UL 1950 and listed in the ITE category.
3) Products now listed under the ITE category would have their listing marks indicate reference to UL 1950.
4) Products now listed under the ITE category would need to be reviewed to UL 1950 prior to March 15, 1990 or be transferred to the Office Appliances or EDP categories. Comments to the above proposal should be submitted to UL by January 16, 1990.

Further details of the program may be obtained by reviewing the above referenced bulletin available at your local UL office.

CSA 950

CSA document 950 is now available with a publication date of October 1989. CSA personnel have conducted several symposia on CSA 950. One of the documents used in this symposium is side by side comparison of IEC 950/CSA 950 and UL 1950. Contact your local CSA office for a copy of the comparison article.

Labels and Signs

Mr. Grant Ferris of FM has been designated as the CBEMA representative to ANSI committee Z535, Signs and Labels.

DOC

In October, a joint communique was issued by the U.S. Department of Commerce and officials from the EC (European Community). This release highlighted efforts to create a single European product standard, testing environment and certification requirement throughout the European Community by December 1992. In separate documents, the U.S. DOC also raised several issues the United States must address.

Telcom

The Telecommunication Industry Association (TIA) has issued a "Goals and Objectives" statement. This document is to familiarize others in the industry with their work. The goal is "within one year to have a set of requirements for the safety of telecommunication equipment that is harmonized with IEC 950 and TC 74 documents."

Continued

News and Notes

Continued

Computer Viruses

Dr. J. M. Richardson, Chairman of IEEE U.S. Committee on Communication and Information Policy, sent a letter to Representative W. Herger that the IEEE-USA is not able to endorse H.R. 55, a congressional bill intended to "reduce losses from harmful code in computing systems."

Retirement Savings

The IEEE-USA Pension Committee has developed several policies regarding retirement savings. A brief description of the issues, a detailed explanation of IEEE position, a summary of pending legislation, and suggestions on what members can do is available from the IEEE-USA Office in Washington, D.C.

Safety Seminar

The American Society of Safety Engineers (ASSE) has issued the program for their 29th annual conference and exposition to be held June 23-29 in Washington, D.C. The ASSE may be contacted at:

American Society of Safety Engineers
1800 E. Oakton Street
Des Plaine, IL 60818-2187
(708) 692-4121

960 Second Edition

TC 74 is in the process of issuing a second edition to IEC 950. The second edition is in the editorial committee, while there are several changes to the document. The major item is the inclusion of the two month rule document 74 (Central Office) 114. This document deals with "limited power source" and has an 8 amp short circuit limit similar to UL 478 clause 9.6-9.12.

Late News Flash

The Suffolk County law regulating the use of video display terminals (VDTs) in the workplace was struck down last month by a judge from the New York State Supreme Court. The judge called the law "well-intentioned" but said that the state, rather than the county, has the authority to pass such legislation.

The law had been in effect from July, 1988, and covered all workers in Suffolk County, Long Island, New York. It required better design of workstations and routine breaks from using VDTs to protect the health and safety of workers. It also covered education and training of employees and specified that employers pay for annual vision checks and corrective eyewear.

The counsel for the Suffolk County Legislature said he expected to appeal the decision, particularly since there has been no precedent.

EC 1992; Standards and Certification

An Industry Viewpoint

P. E. Perkins

A lot of attention is being paid to the development of the unified European common market as barriers are removed to meet the 1992 goal of an open market. This current phase is the result of some actions of the European Council taken in the early '80s to accelerate the movement toward this open, common market. A key issue that is being dealt with in this phase is that of unifying the requirements for certification of safe products. This involves removing certification barriers that have existed between countries.

In this discussion, we will build upon our own company experience both here in North America and in Europe. Tektronix has a 10-year, going on 15-year, history of evaluating products for safety and getting North American (UL and CSA) safety approvals. We have been successfully selling our U.S. certifications into the European market as being equivalent to European laboratory approvals normally seen there. We are dealing, of course, with industrial and commercial equipment; principally test and measuring equipment or EDP computer and peripherals.

The Directive

The basis for these safety requirements comes from the GAIT Treaty (General Agreement for Tariffs and Trades). Many countries are signatories to this treaty, including the United States and the EC countries. This treaty has a key safety provision: "...safety may not be used as a barrier to trade..." This provision has driven the efforts to harmonize requirements among the EC members.

The EC has drawn up a long list of products in which EC is planning to have harmonized standards, testing and certification. This includes foods and agricultural goods, consumer and industrial equipment. This is a broad range of products.

What is the issue? Electrical and electronic products must be safe! Manufacturers must prove safe design in products offered in the EC market. They must be able to show maintenance of safety characteristics during the manufacturing life cycle of the product.

This is driven by the Low Voltage Directive of 1973 issued by the EC Commission. Directives are intended to be broad brush moves meant to be fleshed out by regulations. The safety goals of this directive require markings for safe use in normal applications; require identification of the manufacturer with the product; assure safe installation in the field; and protect the user from hazards due to expected wear. The Low Voltage Directive applies to all mains connected equipment and is intended to assure safe equipment is placed on the market. The Directive also deals with the handling of special cases, and it also describes the method of prohibition of unsafe equipment. This notice of prohibition must be circulated to all other member states; it will be a new pressure to meet requirements since the entire EC market will quickly know of unsafe equipment.

Standards

European standards organizations are important to U.S. manufacturers in the EC market. They are organized around the technical requirements developed by *CENt* CENELEC under contract with the European Council. These standards are issued as HD (Harmonized Documents) or EN (Engineering Norms) standards.

One key issue is the points of U.S. manufacturers' access to influence the standards requirements. One route is through the U.S./ANSI input route. Firms here should participate in U.S. standards development to introduce current U.S. practice into U.S. standards. They should also take part in U.S. Technical Advisory Groups (US/TAG) to the

Continued

EC 1992; Standards and Certifications

Continued

IEC to introduce U.S. practice into IEC standards. Multinational firms have additional access through their companies operating within EC countries as part of their IEC/TAGs.

What is the relationship of International standards to European standards? International cooperation has existed for more than 80 years, since the early part of this century. The __C-lnternational Electrotechnical Commission-writes standards for electrical equipment. The ISO International Standards Organization-writes standards for most other equipment. Historically, the Germans, through VDE, have driven the technical requirements. Americans have ignored these activities until the last ten years or so. We believed that these were primarily European requirements, rather than truly international. We felt that Europeans would buy American products anyway and the standards weren't important.

In some U.S. industries, such as the electronics industry, it is recognized there is a concerted effort to develop common requirements. We see the efforts already underway in Europe to do this where ISO standards become CEN standards and IEC standards become CENELEC standards. For the electromagnetic emanations requirements there is a mandated set of CISPR requirements; these are being brought into the European Community in a similar relationship. Technically, there is a hierarchy in all of this: ISO; IEC; CISPR--there is also a political effort underway to merge these independent organizations. This might happen in the next five years, certainly in the next ten years.

Let's look at an example of this Hierarchy of IEC Safety Standards. The entire system is built upon the international version of the electrical code: IEC 364 Electrical Installations of Buildings. This is an extensive set of requirements that are broader than our U.S. National Electric Code.

The next level of requirements is the Basic Safety Standards. These standards are developed under a Safety Pilot function. This indicates the treatment of a specific safety aspect (characteristic) on the majority of electrotechnical products. Currently, there are eight pilot functions assigned to separate IEC Technical Committees. Here is a summary of these Safety Pilot activities:

1) Short time tests for insulating materials (SC15A). IEC 112 and IEC 587 have been published.

2) Terminal markings and other identifications (TC16). IEC 73, IEC 445, IEC 446, IEC 447, and IEC 757 are published.

3) Insulation coordination for low voltage equipment (SC28A). IEC 664 and IEC 664A published.

4) Fire hazard testing (SC50D). IEC 695 family of standards published.

5) Specific protections from electrical installations of buildings (TC64). IEC 364-4-41, IEC 3645-54, IEC 449, IEC 479, and IEC 536 have been published.

6) Degrees of protection by enclosures (TC70). IEC 529 available.

7) Measurement of leakage current (TC74/WG5). IEC 990 in publication.

8) Safety aspects of electromagnetic interference (TC77). Work in progress.

These standards are all contained in the IEC Safety Handbook, which contains all IEC basic safety standards. This book is available through ANSI as well as directly from the IEC in Geneva.

The next level is called Group Safety Standards. The group safety function denotes the treatment of requirements that could. apply to more than one product area. This is assigned to one

Continued

EC 1992; Standards and Certifications

Continued

Technical Committee. There are four group functions operating today. Here is a summary.

1) Mains operated electronic apparatus for household and general use (SC12B). IEC 65 is their document.

2) Special (isolation) transformers for protection against electric shock (SCI4D). IEC 742 gives their requirements.

3) Power cords, wiring and other mains connecting devices (SC23F). IEC 685 is published.

4) Electronic measuring, control and laboratory equipment, general requirements (SC66E). IEC 1010 is just being published.

At the highest level are the Product Safety Standards themselves. For the businesses we are in, we use the Electronic Equipment standards and are most familiar with them. We'll use them for our examples.

The first example is IEC 348 Ed 2; Safety Requirements for Electronic Measuring Equipment. It has been accepted as a Harmonized Document as CENELEC HD 401 *SI;* same title. This same standard is a British standard BS 4743, and a Spanish standard UNE 20-553. Others (German, Dutch, etc.) are developed in a parallel way.

The other example is IEC 950 (1986-1st ed, mod); Safety of Information Technology Equipment including Electrical Business Equipment. This has been accepted as a European norm as CENELEC EN 60 950; same title. The Spanish standard is UNE 20400, and equivalent German, British (etc.) standards exist.

Certification

Let us examine the situation concerning certification. What does certification mean in the European context?

First, let us review the current situation. Consumer appliances require safety lab approval marks. Historically, in Europe as well as in North America, consumer appliances must be third party safety certified. National marks have been required country by country, VDE in Germany, KEMA-in Holland, BSI in the UK, Semko in Sweden, etc. There is a simplified two-country CB scheme for some product classes. For industrial or commercial equipment a safety lab approval mark is helpful but not required. The equipment must meet safety requirements; the manufacturers declaration has usually been sufficient. The German market has been the most demanding of proof of conformance. For data processing equipment, our company has been using UL to Classify the equipment to IEC 435. In the test equipment area, we have been using the UL listing mark along with the explanation that the UL requirements are the American interpretation of IEC 348. With either assurance our subsidiary has been willing to issue a letter of conformance to customers.

Now to review the apparent direction. Consumer appliances will still require safety lab marks. Industrial and commercial equipment will be required to bear EC safety lab marks where IEC/CENELEC standards exist. The Spanish have already been trying to drive in this direction.

What is accepted as Proof of Conformity to the Low Voltage Directive? The Directive itself gives three simple alternatives: 1) a mark of conformity on the equipment; 2) a certificate of conformity; or 3) a manufacturer's declaration of conformity. For added clarification we will have to examine this further. The regulations implementing the proof of conformance to the Directive have not been issued to date. They have been drafted in the European Commission report

Continued

EC 1992; Standards and Certifications

Continued

on "A Global Approach to Certification and Testing." Several of the eight routes to certification will be specified under the Directive for each product class. The enactment should occur in 1989 yet.

Certainly the simplest to understand is the use of certification marks on the equipment. We are familiar with lots of marks from lots of labs. Some marks are for equipment; some for components. American manufacturers have used some of the marks already; although some specific marks (the HAR marks on cables and cords or the CEN mark) are limited to European manufacturers today. The European Council is promoting a pan-European mark (the CE mark) for use on equipment meeting all EC Directives. The ground rules for using this mark are not clear for American based companies.

As a pan of continuing proof of conformance the Europeans are looking to use the Quality Requirements from the ISO 9000 series of standards. This shows that the manufacturer is in control of his own operation. The use of quality standards is already accepted in some applications. The Dutch lab KEMA requires those companies involved in Supervised Manufacturers Testing to meet their quality requirements. Denmark and the UK require quality approval before they allow the use of their safety mark. The ISO 9000 series has three levels for quality approval. The four corresponding standards are:

- Assurance model for design development, production, installation and servicing capability---ISO 9001

- Model for quality assurance in production and installation--ISO 9002

- Assurance model for final inspection and test capability--ISO 9003

- Quality management and quality system elements -- Guidelines---ISO 9004.

Let us examine each standard in detail.

ISO 9001 assurance model for design, development, production, installation and servicing capability. This is for use where the product, process or service requirements have been stated principally in performance terms and where the supplier may be required to undertake quality management responsibility from design through and to including installation and servicing. This standard identifies 20 specific Quality System requirements from design through manufacturing and servicing. It is similar to the U.S. MIL-Q program.

ISO 9002 assurance model for production and installation capability. For use when the requirement is principally for manufacturing/relating and installation capability to already established designs, product/process and/or operational specifications (e.g., within the state of the an). Eighteen specific Quality System requirements are specified here.

ISO 9003 assurance model for final inspection and test capability. For use when the requirement is principally for final inspection and testing of a product, system or service, for which the process/product specification (or design, production and use) has been long established. Eleven Quality Management requirements are given centered around inspection and testing in the traditional quality control manner. It is like the U.S. MIL I inspection requirement.

A Case Study

With this background, let's look at a case study; that of Spain and the Low Voltage Directive implementation there. Spain was accepted into the EC in 1986. They were ordered to carry out the Low Voltage Directive.

Continued

EC 1992; Standards and Certifications

Continued

The first Spanish action of implementation was Homologation. Homologation-a form of test inspection and acceptance procedure-is applied to display units, keyboards, matrix printers and telecom equipment. This required a safety inspection of the equipment by a Spanish lab and an audit of the manufacturer's Quality Assurance system by Spanish authorities. Our company has done this as required; it was not inordinately difficult.

Due to some complaints, the EC ruled that the first efforts were not in compliance with the Low Voltage Directive. The next Spanish action of implementation was the Spanish Royal Decree RD7 (1988) to fully implement the Low Voltage Directive, L VD 73/23/EEC. The Royal Decree had several requirements. All mains connected electrical equipment must comply to the appropriate IEC standard. There were three methods of demonstrating compliance given. The first is a certification mark from a European safety test lab-this is expected for any equipment for which there is a harmonized CENELEC standard. The second method is a Certificate of Conformity from a European safety test lab-for equipment for which a harmonized standard doesn't exist, may use a country standard which is appropriate. The third method is the Manufacturer's Declaration of Conformity-the least desirable form of compliance; intended for custom manufactured industrial products. Manufacturer's Declaration must be guaranteed by a conformity declaration issued by an approved lab (a notified body).

Electromagnetic Compatibility

EMI suppression is the final area to examine. The requirement is that equipment must meet appropriate CISPR requirements as specified by the Directive. Directives currently exist for electrical household appliances and fluorescent lamps. Compliance is shown by an equipment mark or a statement on the packaging. An EC Directive covering EMC for all electrical equipment is expected in 1989. It will cover susceptibility as well as emissions; this brings additional requirements over those already in use. Since the use of the CE mark shows that all directives are met, EMC requirements will be met along with the safety requirements. Spain will follow along with the others as required for an EC country.

A Plan of Action

In light of all of this, what should the American company do? The specific things that are important today are listed here.

1) Understand the importance of standards and certification in the new European market.

2) Develop European contacts through sales and distribution channels to have the latest information on the requirements for your business.

3) Work through your trade associations here to gain the latest information available.

4) Develop your own staff expertise in the detailed requirements.

5) Participate in American efforts to harmonize requirements.

6) Get experience with appropriate European certification labs.

This should provide a sound basis for your company to be prepared to meet the challenge of EC 1992 in the safety and certification arena.

Ask Doctor Z

Doctor Z

In the world of Product Safety and Certification, there are many pitfalls for the unwary. If you have a problem that seems insoluble, then it's time to ask Doctor Z! *He has the answers, derived from his many years of training and experience in the Science of Product Safetiology. Pitfalls hold no fearers for Dr.* Z, *since he is on a first name basis with most of them. Any resemblance to persons, places, products, agencies, or good advice is purely coincidental, but don't let that stop you. Write to Dr.* Z *today!*

NOTICE-The following letter is constructed from a real letter sent to Dr. Z that had two questions at the core. This reconstruction is provided to partially hide the fact that Dr Z. doesn't have a patented E-Z answer to the real situation. But he is still working on it!

Dr.Z:

During the testing of a new product, a certain abnormal condition caused an electrolytic capacitor to overheat and vent. The vent did exactly what it was designed to do, and that is prevent the capacitor from exploding. As it turns out, this test was witnessed by a well known test house, and the test house engineer said the venting of the capacitor was unacceptable as the material vented may be toxic.

After several discussions with the test house engineer, the capacitor manufacturer was asked if the material in the capacitor was hazardous. We were able to find out what the electrolyte was, along with the statement that it was not on any hazardous materials list. The test house finally agreed to accept the venting capacitor. I thought the standards looked at fire shock or explosion as the criteria for an abnormal test.

Do you have any idea what is going on here???? Was the test house doing the right thing?

Signed,
Worried About Harmful Materials

Dear Worried,

Dr. Z is way out o(his area of expertise on this question set. However, anyone who has not been asleep for the last decade recognizes that the harmful effects of materials, both on people and the environment, is a hot issue. For a look a little closer to home, contrast the IEC 380 requirements for toxicity and similar hazards to IEC 950 requirements. In IEC 380, clause 32 stated requirements were under consideration. In IEC 950, the foreword has a sentence on chemical hazards, and several clauses address "liquids, gases and dust" hinting at protection from harmful effects. Not much to go on, but this does represent an increase in awareness.

Outside of the traditional electronic product safety community is where the expertise and data exist. It is to these other sources that you need to turn for specific information. However, it is not necessary to be a chemical guru to be able to understand if your product can be considered safe. The same basic process for engineering safe products holds up in this case .as well, and it is this process that will allow you to work with the experts on chemicals and toxicity.

A) Identify the hazard-the source and associated injuries. (If the source or agent can be eliminated by considering a different product design, you are finished. No hazard to address.)

Continued

Ask Doctor Z

Continued

B) Search out all conditions! events paths the source can take in your product that can lead to injury.

C) Design mechanisms into the product to break the paths, events or conditions that lead to injury. (In some cases the source can only be attenuated to a level considered safe by means of the safeguard mechanism.)

D) Test the product to measure the effectiveness of the safeguard mechanism, and test the safeguard to measure its ability to function under adverse conditions. Find the weaknesses, design out the weak- , nesses if the margin to failure is not comfortable (no, Dr. Z doesn't have a good fix on "comfortable").

E) Evaluate the results. Analyze failures and take corrective steps as needed to address the core issue.

Use your lab notebook to document the entire process, and generate sections as needed to the formal product safety report used at your company.

In the specific case of the venting capacitor and the test house, Dr. Z thinks you handled the certification issue quite well. The test house, as owner of their mark, certainly has the right to ask the prospective purchaser of the right to use the test house mark any question they want as covered by the certification contract. Even though the question came as a surprise as it is not straight from the standards usually used for the certification process, you did address the basic concern of the test house which is protecting the image and integrity of their mark. The image and integrity of the mark is protected as long as it is associated with products that do not injure people. In this case, you were able to demonstrate the condition was safe, even when the test engineer was not sure of the subject himself (herself?). This is something a practicing safety engineer must be able to do, even without the prodding of a test house!

If Dr. Z can provide some help with other points in the original letter, he will publish the info in a future column.

The editor of the *PSN* has promised Dr. Z some interesting reading as a result of the reader survey, so there may be changes in this column yet (other than doing a better job of meeting publication deadlines in 1990).

Doctor Z

1990 IEEE International Symposium on Electromagnetic Compatibility

Spectrum of EMC Issues for the Nieties

August 21-23, 1990, Washington Hilton Hotel Washington, D.C.

CALL FOR PAPERS
for the
Product Safety Session

The Product Safety Technical Committee (PSTC/TC8) of the IEEE EMC Society seeks original, unpublished papers on all aspects of providing protection from electric shock m the design of electrical and electronic products, which include, but are not limited to, the following means:

Grounding	Double and Reinforced Insulation
Shielding	Ground Fault circuit Interrupter (GFCI)
Polarization	Immersion Detection circuit Interrupter (lDCI)

Papers on the above topics will be incorporated into a program which will provide a brief overview to define each topic and describe the advantages of each method. Note that papers should mention any connection or conflict between the electric shock protection means and EMC control methods (e.g.-leakage current, grounding points, etc.).

The Session title is "Electric Shock - Means of Providing Protection in the Design of Electric Products".

Prospective authors should submit a 5O to 75 word abstract and a 300 to 500 word summary with a minimum of five illustrations covering their selected topic. Upon acceptance, authors will receive their manuscript preparation kits.

We would appreciate receiving the abstract and summary before the end of January, 1990!

The abstract and summary should be sent to the PSTC Symposium Liaison Chairperson:

John Knecht
Underwriters Laboratories lnc.
333 N. Pfingsten Road
Northbrook, XL 60062
tel. 708-272-8800 X3416
fax. 708-272-8129

PLEASE CALL.. JOHN IF YOU WOULD LIKE TO PARTICIPATE IN THIS EVENT!
WE NEED MEMBER PARTIOPATION TO MAKE OUR FIRST SYMPOSIUM EFFORT A SUCCESS

Product Safety Marking and Translations

In response to the ECMA TCI2 questionnaire, IBM suggests the attached table will find general acceptability for product safety purposes in the various countries as required by EN 6O950/IEC 950 paragraph 1.7.14. This applies to product safety information, instructions and markings for operators, service personnel and dealers/agents, etc.

We suggest the consolidated TCI2 material on this subject is considered for submission to IEC TCI2 as an enhancement to IEC 950.

K. B. Barrett
Havant Product Safety Engineer
Quality Assurance Services
IBM United Kingdom Ltd.

• • •

Marking/Instructions

950 - 1.7.1. Finland, Norway and Sweden

If an item of equipment is provided with a replaceable lithium battery, the following applies:

I) If placed in an operator access area, there shall be a message either close to the battery, or in both the operating and service instructions.

2) If placed elsewhere in the equipment, there shall be a message close to the battery or in the service instructions.

This message shall include the following or similar text:

Caution:
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

950 - 1.7.2 Finland and Norway

Add to the third paragraph on page 47:

If the separation between the mains and the telephone network or communication system relies upon connection to the safety earth, the equipment shall have a marking stating that it must be connected to an earthed mains socket outlet.

The Label text follows: "This equipment must be connected to an earthed mains socket outlet" NOTE: The label does not require a yellow background.

Marking of Earthing Protective Conductor

950 - 1.7.7 Japan

Marking of earthing terminals for office products, using symbols or letters, is required on both earthing terminals and earthing wires. Earthing wires must be marked even if they are green and yellow striped.

Marking of Safety Switches

950 - 1.7.8 Japan

All power controls on copiers, typewriters and dictation equipment must be marked with the text On/Off in English or Kanji. This text may be accompanied by the "I" and "&circ." symbols.

Translation

950 - 1.7.14
Instructions and equipment marking, relative to Product Safety, must be translated in accordance with Table N, except as indicated for Japan in paragraph 1.7.8.

For those countries not listed in Table N, the information must be provided in English.

Continued

Table N
Translation Requirements

Country	Product Safety Labels in Operator Access Area	Product Safety Labels in Service Area	Product Safety Instructions in Customer Set-up and User Documention	Product Safety Instructions in Service Documentation
Austria	German	German	German	German Note 8
Belgium	Dutch/French	Dutch/French	Dutch/French	Dutch/French Note 1
Brazil	Portuguese	Portuguese	Portuguese	Portuguese
Canada	English/Canadian-French	English/Canadian-French	English/Canadian- French	English
Denmark	Danish	Danish Note 2	Danish	Danish Note 2
Finland	Finnish Note 10	Finnish Note 1	Finnish	Finnish Note 1
France	French	French	French	French
Germany	German	German	German	German Note 8
Israel	Hebrew Note 3	Hebrew Note 3	Hebrew Note 3	Hebrew Note 3
Italy	Italian	Italian	Italian	Italian Note 1
Japan	Japanese	Japanese	Japanese	Japanese Note 1
Latin America	Spanish Note 11	Spanish Note 11	Spanish Note 11	Spanish Note 11
Luxembourg	French or German	French or German	French or German	French or German Note 1
Netherlands	Dutch Note 1	Dutch Note 1	Dutch Note 1	Dutch Note 1
Norway	Norwegian	Norwegian Note 1	Norwegian	Norwegian Note 1
Portugal	Portuguese	Portuguese Note 1	Portuguese	Portuguese Note 1
Spain	Spanish Note 4	Spanish Note 5	Spanish Note 6	Spanish Note 7
Sweden	Swedish	Swedish Note 1	Swedish	Swedish Note 1
Switzerland	French/German/ Italian-Note 9	French/German/ Italian Note 8	French/German/ Italian Note 9	French/German/ Italian Note 8

Notes for Table N

1) English language accepted as an alternative.

2) English language accepted. Exception. lithium bauery and laser safety information must be in Danish.

3) English language accepted. Exception, retail and Automatic Teller Machines (ATM) must have product safety instructions in Hebrew.

4) Visual Display Units (VDUs) using Cathode Ray Tubes (CRTs) must have a label with the lEC "lightning" symbol (lEC 417, Symbol 5036a) with the maximum CRT voltage given. In addition, the label shall both warn the user in Spanish to "Disconnect the mains supply before removing any cover," and include the voltage. frequency, and power consumption in watts.

5) English labels accepted. Exception: VDUs using CRTs, serial matrix printers, Magnetic Ink Character Recognition (MICR) and/or Optical Character Recognition (OCR) equipment, Private Branch Exchange (PBX), electronic typewriters, modems (excluding chip modems) and telephone terminals (telephone sets, multi-line systems, automatic answer phones and automatic dialing units) must have warning labels in Spanish.

6) Products mentioned in note 5 above must have all customer documentation (not only safety instructions) in Spanish.

7) English language accepted with the following exceptions:
   a) For modems and telephone terminals as stated in note 5 above, ALL service documentation (not only safety instructions) must be in Spanish.
   b) For the other products deemed in note 5 above, ALL service information intended to be read by customers or third party service organizations must be in Spanish.

8) English language accepted. Exception, safety service information for dealers must be in German for Austria and Germany, and in French, German and Italian for Switzerland. (See also note 9.)

9) Three languages are official. The correct language for each language zone is required. If the language zone is not known, French, German, and Italian languages become mandatory.

10) Laser safety information must be in Finnish and Swedish.

11) Other than Brazil.

Letters to the Editor

November 20, 1989

Mr. Roger Volgstadt
The *Product Safety Newsletter*
c/o Tandem Computers
Incorporated
10300 N. Tantau Avenue, Loc. 55
Cupenino, California 95014-0708

Dear Roger:
In the past six months or so, the Canadian Standards Association has asked its clients to change to a newly edited Service Agreement. This event gave me cause to study both the old and the new Agreements.

Both editions of the Agreement contain two distressing requirements.

The first of these, Section 4.1 in the new Agreement, requires the submittor to notify CSA in the event that CSA -cenified equipment was the cause of personal injury or propeny damage.

The second, Section 4.2, requires the submittor to recall CSA-certified equipment in the event that the equipment does not comply with the requirements of CSA applicable to the equipment (which means noncompliance to the standard).

I must admit that I had not pre viously studied the CSA Service Agreement. Nevenheless, I was shocked to discover these two requirements. My signature on the Agreement would commit my employer to these two requirements.

The CSA Service Agreement is, in essence, a contract. A contract is a set of mutual promises. Usually, a contract is for services or goods in exchange for money. One party promises the services or goods, and the other party promises to pay a certain amount of money.

The CSA Service Agreement promises us the right to represent equipment as certified and the right to apply the certification mark. In exchange, we promise to pay money, comply with the requirements, provide CSA free access to our factory premises, etc., notify CSA of any injury or property damage, and recall noncomplying products.

While I have the authority to sign this Agreement, I must do so in the interests of management. I use several tests to evaluate my decisions. The first is: If I was the owner of this business, would I be concerned with this event? That is, among all the events top management must deal with, is this event one I would choose to deal with?

The second is: If I was owner of this business, would I indeed agree with the proposal before me? That is, does the proposal successfully answer all my questions and arguments, and would I therefore agree, and whole heartedly support the proposal? And, does it make sound business sense?

If our product should be the cause of injury or property damage, management in this organization would indeed be concerned. With the CSA Service Agreement, if such event should occur, I would need to mention to management that we are obligated to report the injury or property damage to CSA. In turn, management would ask, “For what purpose? What are they going to do with that information?”

The Agreement does not spell this out. I’m sure I could get a verbal answer to this question. But, if not spelled out in the contract, verbal answers are subject to being overruled.

So, with regard to reporting injury or property damage to CSA, I cannot provide the answers to the questions raised by the Service Agreement which. would be asked of me by management. So, I don’t dare either to sign the Agreement, or to take the Agreement to higher levels of management.

Similarly, if we should discover that the certified product did not comply with the standard, then we are obligated under the Service Agreement to recall noncomplying products. A recall is serious

Continued

Letters to the Editor

Continued

business, and immediately concerns the highest levels of management. I don't have the authority to initiate a product recall. If I should go to management with a proposal to recall a product, management will want to know the nature of the situation with regard to the potential for injury or property damage. If, instead, the proposal is based on noncompliance with CSA requirements, management will not be happy.

Such a proposal will be denied. So, I don't dare either to sign the Agreement or to take the Agreement to higher levels of management.

So, here are two sections of the CSA Service Agreement that seem unwarranted as written. Is the price of not signing loss of CSA Certification? Without a doubt, that is the ultimate answer.

But, CSA is not intransigent. CSA is not heedless of its customers as witnessed by the founding of this Technical Committee. You will recall that the PSTC rose from the original CSA "user's society."

I urge PSTC members to study the CSA Service Agreement and reconsider whether they wish to be contractually bound to notify CSA of injury or property damage and to recall products when they don't meet CSA requirements.

Contracts are negotiable.

With best regards,
Richard Nute

I see my name mentioned in the Northeast Section news in your *Product Safety Newsletter* all the time regarding circuit breaker problems. The enclosed article is a full explanation of the problem and its easy, simple solution. I thought you might like to run it in your newsletter, perhaps in two or three parts.

On a different subject, in your October 1989 edition, the article by Rich Nute on grounding impedance was good, except that he assumed that all circuit breakers trip in less than one cycle at 200 amperes. The actual tripping time for seven brands of American circuit breakers is listed at the top of Page 3 of my article. You may see that the tripping times are as long as 0.65 seconds. A copy of a letter I published on this subject in the *IEEE Spectrum* in 1984 is also enclosed on the subject of electrocutions, etc. You would be welcome to republish it.

Sincerely,

Frederick F. Franklin
President
Professional Analytical and
Consulting Engineers, Inc.

[The above mentioned article and letter Mr. Franklin wrote may appear in one or more upcoming editions of the *Product Safety Newsletter.*--Ed.]

Area Activity Reports

Orange County/Southern California Chapter

The December 5 meeting of the Orange County/Southern California chapter centered on a presentation by Grant Schmidbauer of CSA. Grant spoke on the CSA standard 950, and included a highlight of the differences between IEC 380, IEC 950, CSA 950 and UL 1950. The group then discussed the postponement of the UL file review for UL 1950 (see News and Notes for more information on the postponement), as well as the length of time for UL investigations. Finally the group discussed the recent concern with very low frequency (VLF) emissions from VDTs as well as concern for harmonic distortion and power factor correction associated with switching power supplies. The April meeting will have more information on this subject (see below).

The next meeting as of this writing will be a dinner meeting with a discussion of various certification agency activities. It will occur on Tuesday, January 9, 1990 at 6:00 p.m. at The Revere House, 900 W. First St., Tustin. The February meeting will occur February 15 and be in conjunction with the Power Electronics Conference in Long Beach, Calif. The time and location of this meeting will be announced in the local newsletter. The March meeting will include a discussion of the events at the CBEMA meeting to be held in Orlando on February 27 and 28. The April meeting will feature a presentation on switching power supplies, harmonic distortion and power factor correction.

For further information about the Orange County/Southern California chapter activities, please contact Paul Herrick in Irvine, Calif., phone (714) 770-1223, or fax (714) 768-6939.

Portland/Seattle Chapters

On Wednesday, November 15, the Seattle Chapter met in Redmond, Wash., to hear Pete Perkins of Tektronix give a very graphic and in-depth presentation on EC 1992 (see an article on EC 1992 by Pete elsewhere in this newsletter). The chapter also reviewed the results of a recent questionnaire on the chapter's activities and decided to return to monthly meetings. It was further decided that the Portland area meetings would be held every Tuesday of the month and that the Seattle area meetings would be held the following Wednesday. General Electric Co. will host the Portland chapter; Data I/O in Redmond will host the Seattle chapter. There was no Portland meeting in November.

The December meetings were held on December 19 and 20 (Portland/Seattle, respectively), with Walt Ran speaking on Electric Shock. The January meetings will be held on January 16 and 17, with a speaker from one of the TUV offices speaking on International Regulatory Requirements. Al Van Houdt, secretary of the group, has asked that members of the chapters notify him if they are new IEEE members so that he can update his records.

The Portland and Seattle chapters will be trying to accomplish much this next year, including the establishment of a permanent or semipermanent meeting location, formally elect chapter officers, increase membership, increase IEEE membership among its members, prepare meetings sooner and align meeting topics with questionnaire results.

The Portland and Seattle chapters would like the Product Safety Technical Committee members to know of an upcoming seminar. For those interested in broadening their knowledge of product safety, Pete Perkins will be teaching a daylong seminar through Portland State University on March 23, 1990. For more information about the seminar, please call (503) 725-4660.

Continued

Area Activity Reports

Continued

Those interested in the activities of the Portland or Seattle chapters should contact Al Van Houdt at (206) 882-4006.

Santa Clara Valley Chapter

The last meeting of the Santa Clara Valley chapter occurred in November and was highlighted by a presentation by Joseph Wujek. Joseph spoke on "Some Practical Principles of Engineering Ethics." The presentation included some common ethics issues such as conflicts of interest, nepotism, fudging data, etc., a definition of ethics (the discipline governing ideal human behavior) and some principles to govern ethical behavior (perform in the public interest, employing the engineer's "common sense").

For more information about the activities of the Santa Clara Valley chapter, please call David McChesney at (408) 987-1365 or John Reynolds at (408) 942-4020.

Northeastern Chapter

Forty members attended the October meeting of the Northeastern chapter. Committee and Liaison reports were given and then Joe Green of CSA gave a presentation on CSA's international programs. Included in CSA's programs are Certification programs to international standards, cooperative agreements with foreign approval authorities and attestation services.

The November meeting consisted of committee reports from the Constitutional Bylaws, Technical Presentation, and Legislative Committees and Liaison reports from the UL, EIA, NEMA/NFPA, IEC/CENELEC, PSMA, EC, and OSHA liaison groups. Mr. Manfred Popp of TUV America gave a presentation on ergonomic requirements in Europe. Manfred reviewed the standards development process, reviewed the current IEC and CENELEC standards for office equipment and electromedical equipment and then focused on the Low Voltage Directive which has been adopted in the West German Equipment Safety Law (GSG). He then discussed the recent EC Council Directives related to product safety, *891391/EEC,* dealing with the minimum safety and health of workers at workplaces, specifically requiring employers to provide workstations that reduce any adverse effects on the health of workers.

Similarly, *891392/EEC,* dealing with machine safety, provides a long list of safety and health requirements for machinery including ergonomic requirements. Manfred pointed to the specific wording in these two Directives as an indication of the EC's attempt to introduce more stringent ergonomic requirements for workplace safety. According to Manfred, the intention is clear: employers must take into account the ergonomic effect on workers of equipment. The efforts to implement standardized ergonomic requirements in Europe will, no doubt, have an impact on American manufacturers attempting to market their products there.

Those interested in more information about the activities of the Northeast chapter are encouraged to contact Bill Von Achen at (508) 263-2662.

Chicago Chapter

John Allen indicates that the next meeting of the Chicago chapter will occur on January 16, 1990. Mr. Sol Rosenbaum of Leviton Manufacturing Co. will speak on GFCI and IDCI protection. The meeting will occur at 6:30 p.m. at Mitsubishi Electric Sales.

Details of the March meeting are being arranged and will be announced in a local newsletter.

Those interested in the activities of the Chicago Chapter should contact John Allen at (708) 827 - 7520 or Richard Hagedorn at (708) 505-5722.

Continued

Editorial

Roger Volgstadt

Roger Volgstadt

Happy New Year!

The new year brings new opportunities for this newsletter to improve and grow. The first growth will occur with the addition of an Abstracts Editor. We would like to welcome Mr. David Lorusso of Franklin, Mass., who was the first to volunteer. In this position, Dave will prepare and collect abstracts of various product safety related articles. Of course Dave is not doing this full time, which means that he needs articles and abstracts from you, our readers.

The next edition of the newsletter will have our first Abstracts column. Would you help Dave get off to a good start by sending us copies of the product safety related articles you've collected and, if possible, an abstract of the article(s). Please be sure to include references and how we can get in touch with you for follow-up information. Contributions can be sent to Dave through the editor at the return address shown on this newsletter.

Dave Edmunds of Xerox was the first to send us a collection of product safety articles and an abstract on "Evaluating Product Safety Certification Programs." We have printed the abstract here as a guide for you in preparing an abstract

"Evaluating Product Safety Certification Programs" was published in the February 1988 *edition of* Professional Safety. *The author, Gerald E. Lingenfelter, provides information necessary to establish criteria used to evaluate certification programs either by a third party or by the manufacturer. The article discusses such topics as organizational structure, human and material resources and quality systems necessary to assure that a product conforms to a standard or specification.*

We look forward to making 1990 the greatest year for growth and improvement in this publication. With your help, we can make that happen.

Roger Volgstadt
Editor

Area Activity Reports

Continued

Austin Chapter

Bob Hunter continues to look for those interested in holding product safety meetings in the Austin area. Currently, regulatory engineers are meeting as part of the EMC chapter of the IEEE. Product safety professionals interested in a product safety meeting should contact either Bob Hunter at (512) 250-6878 or George Jurasich at (512) 343-6231

Los Angeles Chapter

Details of the next product safety meeting in the Los Angeles were not available as of this writing. Those interested in the activities of the Los Angeles chapter should contact Rolf Burckhardt at (818) 368-2768.

Institutional Listings

The Product Safety Techincal Committee of the IEEE EMC Society is grateful for me assistance given by the firms listed below and invites applications for Institutional Listings from other firms interested in the product safety field.

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Calendar

The Product Safety Technical Committee of the IEEE EMC Society

Austin Chapter Activities

No meetings are planned through February 1990. For further information about Austin's activities, please call George Jurasich at (512) 343-6231.

Chicago Chapter Activities

***Tuesday, January* 16**
Subject: GFCI/IDCI
Speaker: Sol Rosenbaum/ Leviton Mfg.
Time: 6:30 p.m.
Location: Mitsubishi Electric Sales Co.
Contact: John Allen (708) 827-7520

Tuesday, February 20
No Meeting

Los Angeles Chapter Activities

The next meeting is scheduled after the first of the year. For further information about the chapter's activities, please call Rolf Burckhardt at (818) 368-2786.

Northeast Chapter Activities

***Wednesday, January* 24**
Subject: TBD
Speaker: TBD
Time: 7:00p.m.
Location: Sheraton Boxborough, Mass. Routes 111 and 495
Contact: Bill Yon Achen (508) 263-2662

***Wednesday, February* 28**
Subject: TBD
Speaker: TBD
Time: 7:00 p.m.
Location: Sheraton Boxborough, Mass. Routes 111 and 495
Contact: Bill Von Achen (508) 263-2662

Orange County/Southern California Chapter Activities

***Tuesday, January* 9**
Subject: No presentation. Dinner meeting/open discussion on agency activities
Speaker: None
Time: 6:00 p.m.
Location: The Revere House 900 W. First St. Austin, CA
Contact: Paul Herrick (714) 770-1223

***Thursday, February* 15**
Subject: Meeting in conjunction with the Power Electronics Conference
Speaker: None
Time: TBD
Location: TBD
Contact: Paul Herrick (714) 770-1223

***Tuesday, March* 6**
Subject: Discussion about recent CBEMA meeting
Speaker: None
Time: 6:00 p.m.
Location: MAl Basic Four 14101 Myford Rd. Tustin, CA
Contact: Paul Herrick (714) 770-1223

***Tuesday, April* 3**
Subject: Switching Power Supplies, Harmonic Distortion and Power Factor Correction
Speaker: Martin Quezada, LH Research
Time: 6:00 p.m.
Location: MAl Basic Four 14101 Myford Rd. Tustin, CA
Contact: Paul Herrick (714) 770-1223

Portland Chapter Activities

***Tuesday, January* 16**
Subject: International Regulatory Requirements
Speaker: TUV
Time: 7:30 p.m.
Location: General Electric Co. 14655 SW Old Scholls Ferry Rd. Beaverton, OR 97005
Contact: Rich Nute (206) 896-2691

Calendar

Continued

Tuesday, February 20
Subject: TBD
Speaker: TBD
Time: 7:30p.m.
Location: General Electric Co.
14655 SW Old Scholls Ferry Rd.
Beaverton, OR 97005
Contact: Rich Nute
(206) 896-2691

Santa Clara Valley Chapter Activities

***Tuesday, January* 23**
Subject: TBD
Speaker: TBD
Time: 7:00 p.m.
Location: Apple Computer
20705 Valley Green Drive
Cupertino, CA
Contact: John Reynolds
(408) 942-4020

Tuesday, February 27
Subject: TBD
Speaker: TBD
Time: 7:00 p.m.
Location: Apple Computer
20705 Valley Green Drive
Cupertino, CA
Contact: John Reynolds
(408) 942-4020

Seattle Chapter Activities

***Wednesday, January* 17**
Subject: International Regulatory Requirements
Speaker: TUV
Time: 7:00 p.m.
Location: Advanced Technology Labs
Bothell, W A
Contact: Walt Hart
(206) 820-8444

***Wednesday, February* 21**
Subject: TBD
Speaker: TBD
Time: 7:00p.m.
Location: Data I/O
Redmond, WA
Contact: Walt Hart
(206) 820-8444

The Product Safety Newsletter

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(See inside for expanded calendar!)