



# ESD Workshop - Today's Challenges!

July 27, 28 & 29, 2010

## *ESD Basics - S20.20 & Auditing for CDM, Class 0*

Keynote Speech:

*"Class 0 Qualification!" by Steve Fowler, ESD Journal*



ESD Dream Team	
<p>ESD Dream Team <i>Dangelmayer Associates</i></p> <p><b>Ted Dangelmayer</b> President &amp; CEO</p> <p>Terry Welsher Vice President Former AT&amp;T Bell Labs Director</p> <p>Ginger Hansel Director</p>	<p>Please join us for this highly interactive workshop and hands on class exercises with six of our expert team members. We are pleased to include a keynote presentation:</p> <p style="text-align: center;"><b><u>Keynote: Class 0 Qualification</u></b></p> <p><b><u>Steve Fowler</u>, Owner ESD Journal and Fowler Associates, will describe Class 0 qualification of individual products and ESD Programs. Each Class 0 Program is unique and requires application- appropriate customization. You will learn how products are qualified and S20.20 programs are customized for the Class 0 ESD Journal Seal of Approval.</b></p>

Former Motorola Global  
ESD Program Manager

Larry Fromm  
Director

Former HP & Finisar  
Global ESD Program  
Manager

Carl Newberg  
Director

- ESDA S20.20  
Instructor  
- Certified ESD Program  
Manager  
- ESD Book Author

Arnie Steinman  
ESD Program Manger  
Foremost Ionization  
Authority

Min-Chung Jon  
\* ESD Materials Expert  
\* Resolved Industry  
Wide Tape & Reel Issues

Lou DeChiaro  
Foremost Authority:  
\* Device FMA &  
EOS/ESD  
Differentiation  
\* Optoelectronic - Lasers  
\* CDM/HBM Device  
Design  
\* Circuit Board Design  
\* System Design  
Hardening  
\* ESD Modeling

Vicki Dangelmayer  
Vice President Sales

## **Hands-on Workshop with the Dream Team:**

### **ESD Basics - S20.20 & Auditing for CDM & Class 0**

#### **Intended For Professionals Who:**

- Need Better Understanding of ESD Basics
- Desire Road-map For S20.20 ESD Programs
- Desire iNARTE Certification
- Need Better Understanding of CDM and S20.20, Class 0, and CBE

#### **What You Will Learn:**

- Charged Device Model & Class 0 Basics
- Auditing Skills
- 99% of ESD Failures are CDM Not HBM/MM
- CDM, CBE, & Class 0 Countermeasures
- Most Experts Misdiagnose CBE as EOS
- Hands-On CDM & Class 0 Test Methods
- How to Implement Sound ESD S20.20 Programs

Note: CBE is Charged Board Event

## **Workshop Agenda**

### **Day 1: Tuesday, July 27, 2010**

**8:00 AM** Introductions - Beyond S20.20

**8:30** Customizing S20.20, for CDM and Class 0

- *Larry Fromm*

- Implementing S20.20
- Strengths and Limitations
- Customizing for CDM and Class 0

**9:30** ESD Basics - *Terry Welsher*

- With Emphasis on CDM & Class 0
- Why CDM & Class 0 are Not Well Understood

**10:00** Break

- CDM vs. HBM

- Discharge Characteristics
- Limitations of Designed-in-Protection
- Why MM Unnecessary
- Demonstrations and Videos
- FMA: Differentiation Among the 3 Models

12:00 Lunch

1:30 ESD Basics (Continued)

3:00 Break

3:30 ESD Basics (Continued)

5:00 Adjourn

5:30 Evening: Complimentary Seaside Dinner

## Workshop Agenda

### Day 2: Wednesday, July 28, 2010

**Keynote Speech: Class 0 Qualification**

8:00 AM **Steve Fowler, Owner, ESD Journal**

- ESD Product Qualification Criteria
  - Test Results for Qualified Products
- ESD Program Class 0 Qualification
  - Customization of S20.20
  - Program and Personnel Criteria

9:00 Auditing Measurements, Strategies and Pitfalls  
*Ted Dangelmayer, Carl Newberg & Ginger Hansel*

- Introduction
- Common Measurement Pitfalls
  - Fieldmeters
  - Resistance Meters
  - Ionizers

10:00 Break

10:30 Hands-on Measurement Techniques

Class Exercises

- Induction
- Resistances
- Event Detection
- Ionizers

**12:00 Lunch**

**2:00 Hands-on Measurement Techniques (con't)**

**3:00 Break**

**3:30 ESDA TR53 Test Methods & Troubleshooting**

- o Grounding/Bonding Systems
- o Worksurfaces
- o Wrist Straps
- o Constant Monitors
- o Footwear
- o Flooring
- o Personnel Grounding with Garment
- o Garments
- o Air Ionizers
- o Seating
- o Mobile Equipment (Carts)
- o Packaging

**5:00 Adjourn**

## **Workshop Agenda**

### **Day 3: Thursday, July 29, 2010**

**8:00 CDM Compliance Verification**

- o Common Findings
- o Personnel Compliance

**9:00 Auditing Administration - 3 Examples**

- o Sampling Plans
- o Data Analysis
- o Using the Data to Manage the Program

**10:00 Break**

**10:30 Advanced Process Assessments & Auditing**

- o ESD Event Detection Principles

- o **Process Analysis Strategy**
- o **Advanced Measurement Techniques**
- o **Advanced Auditing Case Study**

**12:00 Lunch**

**1:30 Ionization for Class 0 - *Arnie Steinman***

- o **Class 0 Considerations**
- o **Ionizer Choices vs. Applications**

**3:00 Break**

**3:30 Class 00 (Sub 125V Controls)-*Carl Newberg***

- o **Ultra-sensitive Device/Board Controls**
- o **Avoiding High Failure Rates (up to 100%)**

**5:00 Adjourn**

## **Location:**

**Dangelmayer Associates  
14 Butternut Lane  
Cape Ann, Gloucester, MA**

**America's 1st Fishing Port & Movie Venue  
("The Perfect Storm" and "The Proposal")**



Local Sightseeing and Accommodations:  
[www.cape-ann.com](http://www.cape-ann.com)

Major hotels w/i 30 minutes of Gloucester:  
Peabody Marriott 978-977-9700  
Comfort Inn, Peabody 978-777-1700  
Courtyard Marriott, Danvers 978-777-8630

Transportation  
45 minute drive from Boston's Logan airport  
55 minute train ride from Boston  
1.25 hr. drive from Manchester, NH airport

## *ESD Basics, S20.20 & Auditing*

*(CDM = Charged Device Model; Class 0= Ultra-Sensitive Components)*

14 Butternut Lane, Gloucester, MA 01930

## **REGISTRATION FORM**

Three day Workshop includes three lunches, three continental breakfasts, one dinner. Fee: \$1785.00 per person. Register by June 30, 2010 and deduct \$150.

### Registration Information

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Company: \_\_\_\_\_  
Mail Stop: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_  
Phone: work \_\_\_\_\_  
home \_\_\_\_\_  
E-mail: \_\_\_\_\_

Fax: \_\_\_\_\_  
Preferred method of contact: Phone \_\_\_\_\_  
E-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

Credit Card \_\_ Visa \_\_ Master Card \_\_ Amex  
Card # \_\_\_\_\_ Expiration \_\_\_\_\_  
Security Code \_\_\_\_\_  
Billing Address \_\_\_\_\_  
\_\_\_\_\_  
Name on Card \_\_\_\_\_

Please make check payable to:

Dangelmayer Associates

Mail to:

14 Butternut Lane  
Gloucester, MA 01930

Danvers Marriott Courtyard 978-777-8630  
Peabody Marriott 978-977-9700  
Comfort Inn 978-777-1700

For more local accommodations, go to [cape-ann.com](http://cape-ann.com)

Thank you! Seating is limited!  
Vicki Dangelmayer Complete your registration!  
Vice President of Sales  
[vicki@dangelmayer.com](mailto:vicki@dangelmayer.com)  
978-283-5156  
[www.dangelmayer.com](http://www.dangelmayer.com)

---

Contact: Vicki Dangelmayer; [vicki@dangelmayer.com](mailto:vicki@dangelmayer.com);  
978-283-5156

Detach and retain for your records

2010 ESD Dream Team Workshop \$1785.00  
(\$1635.00 by June 30, 2010):

Date paid: \_\_\_\_\_ Check #: \_\_\_\_\_ Amount: \_\_\_\_\_

Received from: \_\_\_\_\_  
Company name: \_\_\_\_\_

Vicki Dangelmayer

[vicki@dangelmayer.com](mailto:vicki@dangelmayer.com)

Dangelmayer Associates  
14 Butternut Lane  
Gloucester, MA 01930