RoHS and REACH Workshop: Special Focus on the Wire & Cable and Medical Devices Industries
Wire & Cable Breakout Session

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TURI
UMASS LOWELL

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Agenda

Quick Introduction to SE

Compliance Seascape

Processes that support compliance

Conclusions

Questions

Schneider Electric – the global specialist in energy management

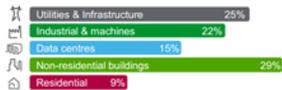**24**
billion € sales in 2012

41%
of sales in new economies

140 000
people in 100+ countries

4–5%
of sales devoted to R&D

Balanced geographies – FY 2012 sales

North America 25%
Western Europe 30%
Rest of World 18%
Asia Pacific 27%

Diversified end markets – FY 2012 sales

Utilities & Infrastructure	25%
Industrial & machines	22%
Data centres	15%
Non-residential buildings	29%
Residential	9%

Focusing on energy

Energy is key to our business – from generation to use….

→ **72%** of energy consumption

- Energy and infrastructure
- Industry
- Data centers and networks
- Buildings
- Residential

Integrated solutions where energy is used…
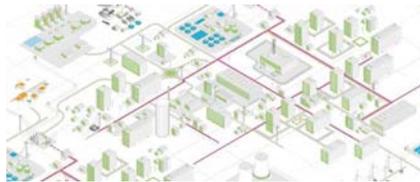
- *Electric utilities*
- *Water & waste water*
- *Oil & Gas*
- *Marine*
- *Mining, Mineral, Metals*
- *Machine builders*
- *Data centers / IT*
- *Hospitals*
- *Hotels*
- *Buildings, Retail*
- *Residential*

Our Story

Our Vision
We see a world where we can all achieve more while using less of our common planet

Our Mission
We help people make the most of their energy

Brand Promise
Schneider Electric's broad portfolio of activities in efficiency management Makes our products, solutions, and services

safe   green   reliable
productive   efficient
compliant

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Responsible commitment
- Access to energy
- Clean products and sites
- People well-being
- Commitment to communities
- Ethics & responsibility

Green business
- Energy efficiency
- Renewables
- Electric Vehicles
- Smart cities and grids

Compliance Seascape (2000 - 2010)

- Regulatory emphasis on product focused environmental compliance
  - End of Life vehicles
  - RoHS – WEEE
  - REACH
  - Battery

- Time enough to develop the processes & infrastructure to comply
  - Collect data,
  - Modify products
  - Make mistakes

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Compliance Seascape (2010 - 2020)

- More rules with this focus are coming fast and furious
  - RoHS 2
  - REACH SVHC
  - Conflict Minerals
  - REACH Annex 17
  - Expiration of RoHS Exemptions
  - Medical/Monitoring Equipment
  - RoHS Category 11
  - And more!!!

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Compliance Seascape

- Company processes and infrastructure
  - Manage the products' recipe (BOMs, materials, parts, requirements)
  - Collect & manage compliance data
  - Communicate compliance status
  - Evolve the product portfolio
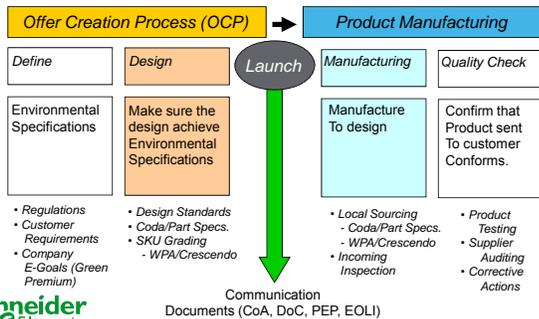 - Identify & respond to portfolio threats

- Today's expectation:
  Flawless execution

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Delivering Environmental Products

- Joint effort of Design Engineers and Manufacturing:

Offer Creation Process (OCP)		Product Manufacturing	
Define	Design	Manufacturing	Quality Check
Environmental Specifications	Make sure the design achieve Environmental Specifications	Manufacture To design	Confirm that Product sent To customer Conforms.

• Regulations
• Customer Requirements
• Company E-Goals (Green Premium)
	• Design Standards
	• Coda/Part Specs.
	• SKU Grading
	  - WPA/Crescendo
		• Local Sourcing
		  - Coda/Part Specs.
		  - WPA/Crescendo
		• Incoming Inspection
			• Product Testing
			• Supplier Auditing
			• Corrective Actions

Launch

Communication
Documents (CoA, DoC, PEP, EOLI)

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Definition

- Product Environmental requirements are defined during product design.
- All materials and components on the Bill of Materials (BOMs) must meet the same level of environmental compliance as has been defined for the Product.
  - Risk assessment performed to establish the risk associated with each kind of material and component to be used.
    - Data elements to be collected (RoHS, REACH, other)
    - Level of data necessary to support compliance (Supplier disclosure, material declaration, self declaration, analyses, none needed)
    - Method for declaring compliance (self declaration, CE mark, third party verification)

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Notes on Definition (1)

- Establish the regulations that apply and the way each regulation applies to the subject product.
- For example – RoHS 2:

Product	Market	Marking	Internal Doc	External Doc
EEE Finished Good	Global/EU	YES - CE	Technical File	CE DoC
EEE Finished Good	ROW	NO	Supporting Doc	Self declaration
Part / Material	Global	NO	Supporting Doc	Self declaration
Not EEE Finished Good	Global	NO	Supporting Doc	Self declaration

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Data Collection

- Based on the risk assessment, design team initiates the collection of data.
  - Purchase data from a third party
  - Internal collection (SuperUsers, Purchasing, Engineering)
  - Self declaration based on engineering analysis, material compliance or internal or supplier analyses
  - No data necessary (intangible)

- Data is collected & imported into compliance .
  1. SuperUsers do most uploading (90% -- Philippines, Hungary, India).
  2. SuperUsers perform administrative review and return to third party or internal collector to "fix" submittal
  3. Once uploaded, Environmental Reviewers authorize the data entering database. If rejected, returns through SuperUsers for correction.

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Notes about Data Collection(1)

- Environmental Data Collection defined task in the PPEP process.

X	X	X		20. Schneider Incoming Inspection Plan		3		SuQ
		X		21. 3rd Party Requirements (UL, NEMA, IEC…)		0		Eng
X	X	X		22. Certificate of Conformance (including ROHS & REACH compliance)		0, 1 4	1, 4	SuQ
X	X	X		23. Defective parts return management (requiments and implementation)		0	3	Pur

* Final version

Schneider Electric — *C10 - Part Product Evaluation Plan version 9*
December 2012
Number — *Revision*

22. Certificate of Conformance (incl. REACH/ROHS)
The purpose of this requirement is to have the supplier provide a document indicating conformance to customer requirements. This document could include requested test data, first article results, and/or a statement of conformance to customer and environmental requirements.

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Notes about Data Collection (2)

- Form of the Data Request
  - Material Disclosure: Tell me quantified details of your product's recipe.
  - Conformance: Tell me details on the compliance status of your product that covers all regulated materials

- EEE Producers are tending to ask for Material Disclosures.
  - This form of data request may be viewed as a request for your company's intellectual property.

- Work with requestor
  - NDA and provide Full MD
  - negotiate to Partial MD with Conformance Disclosure to cover materials addressing IP

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Notes about Data Collection (3)

- Two kinds of Data Collection
  - Project: Large data collection projects (20K supplier PN and more)
  - Sustaining: Routine data collection to support individual business projects (new sourcing, product development, etc.)

- Projects: Performed by SuperUser teams. Typically hired out to third parties. Data returned by third parties via FTP and automatically uploaded. Environmental Review is performed directly with third party prior to FTP and not using the WPA interface.

- Sustaining: Utilizes internal teams to collect data. Data uploads are performed by SuperUsers. Environmental Reviewers review parts as the system informs them of the need.

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Notes about Environmental Reviewers

- Environmental Reviewers .
  - In SE IT, the process is automated – Notes database routes reviews to individuals trained to perform task.

	Level 1	Level 2	Level 3
Reviewers	15	3	1
FTE on task	0.75	0.15	0.1

  - Environmental Review is approximately 1 FTE for about 50,000 reviews annually.

  - The SE IT process defines reviews as Level 1, 2, 3 and the review will escalate to the reviewer who can perform the necessary task.
  - Other SE BUs rely on SuperUsers to perform reviews, as needed.

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Data Storage and Data Access

- WPA is the repository of all Compliance Data
- Only parts with the appropriate level of compliance data are authorized for use in a BOM and purchase by the ERP. Processes exist to communicate the Compliance data to other systems to ensure that compliant business decisions are made.

- Data is made available to:
  - ERP (Oracle & SAP)
  - Engineering PDM/PLM (Notes, Windchill)
  - Part Libraries (Notes, Coda)

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Data Validation

- A percentage of incoming parts undergo analyses to validate conformance.
- The determination of the parts to undergo analyses is based on the risk assessment. Also, a selection of parts is randomly picked by the ERP are also tested.
- Parts are tested via XRF, ICP, GC, and Hexavalent Chromium Spot testing.
- Parts that exceed parameters are marked as "inconclusive" and quarantined.
- Supplier is given the opportunity to respond to test results.
  - Explain results (application of exemptions)
  - Perform third party testing
- Materials and components that fail this testing are withdrawn from use and referred to the Quality Management System as defective parts.
  - Supplier Corrective Action Process
- All test results are stored in WPA associated with the part.

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Notes on Data Validation

- SEIT Experience with Supplier Errors

	2005/2006	2007/2008	2009	2010	2011
# Declarations	155,256	89,592	56,921	52,002	48,621
Declaration Defects	3,215	1,491	934	1,980	2,980
Critical Defects	25	12	4	9	13
# of Requirements	2	4	5	5	6
Declaration Defects (PPM)	20,708	16,642	16,409	38,075	61,290
Critical Defects	161	134	70	173	267
Cost to Address Critical Defects	$	$$$	$$	$$	$$$

Declaration Defect = bad data on declaration
Critical Defect = supplier mis-declares/misrepresents
their part

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Examples of Critical Defects

- Bezel Clip – 840-0010
- Ink on Plastic Bag – 872-0026A
- PCBA Tabs – 701-0190-Z, 701-0171-Z
  701-0233-Z, 701-0169-Z
- Fuse Holder – 870-7432A
- D-sub 9pin Connector –
  723-0001-Z, 723-0002-Z
- Screw – 650-0115A-001
- Ink on label 885-3635B,
  885-1736 etc.

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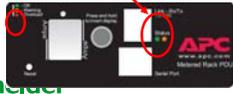
Product Grading

- Prior to manufacturing of any product subject to environmental requirements, the BOM is reviewed to verify that the product conforms to all requirements.
- Only products that have passed this grading are authorized to be manufactured.
- This grade defines the level of compliance that SE IT will claim for the product.

- WPA Reports are used to support the Grading process
  - BOM is extracted (Windchill or Oracle)
  - Loaded into WPA
  - Appropriate report run (RoHS, REACH, custom)
  - Results of report are interpreted by Environmental Expert who declares that the product conforms to all requirements.

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Note on Product Grading (1)

- Report run to validate grading is the basis of CE Technical File
- Summary Table

- If needed, provide download of each declaration, analysis, and back-up document upon which the CE DoC is based.

Product Information		Report Type	
APC Part Number	PF8VNT3-FR	Qualification Status	RELEASED
Organization	BRL	Compliance Specification	ROHS 2
Description	APC Performance SurgeArrest	Specification Section	CONSUMER
Revision	00		
BOM Revision Date	11/12/2009		
Source	LIVE		

Product Compliance Summary	
ROHS(C)	PASS
ROHS(I)	PASS
JIG A	PASS
REACH SVHC	PASS
REACH SUSPECT SVHC	PASS

Commodity Code	Type of Declaration	Number of Parts	ROHS(C)	% of Parts RoHS Compliant
ELECTROMAGNETIC	SUPPLIER	2	PASS	100%
ELECTROMECHANICAL	SUPPLIER	2	PASS	100%
ELECTROMECHANICAL-CONNECTOR	SUPPLIER	3	PASS	100%
ELECTROMECHANICAL-SWITCHES	SUPPLIER	1	PASS	100%
ELECTRONICS	SUPPLIER	17	PASS	100%

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Manufacturing and Change Management

- Manufacturing builds products according to the BOM and only uses the approved sources of parts.
  - Quality selects 4-5 products annually to undergo testing to verify that the factory is building product to the requirements.
- When new sources of parts are needed, the addition of these sources is defined as a product evolution project and proceeds through the process.
- The Product Grade is not changed when the addition of the new source does not materially change the conformance of the product.
  - When regulations change, then all products are re-graded to confirm their compliance status.
  - If the product is redesign/refreshed, then the product is re-graded.

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Notes on product level testing

Test Report CETR-APC01.1
Date: May 24, 2013
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Claigan

RoHS Test Report

Prepared for: APC - Schneider Electric
Part Name: AP9568
Samples Received Date: May 7, 2013
Testing Period: May 8, 2013
Test(s) Requested: With reference to RoHS Directive 2011/65/EU and its amendment directives.

Test Method(s): With reference to IEC 62321, Ed. 1: Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products
A. Screening by XRF Spectroscopy
B. Screening by ChromateCheck® test strips
C. Screening by Gas Chromatography Mass Spectroscopy
D. Inductively Coupled Plasma Mass Spectroscopy

Conclusions:

Sample Description	Test Method	Target	Results
AP9568 – 34 Samples	X-Ray Fluorescence Spectroscopy	Pb	Pass
		Cd	Inconclusive*
		Hg	Pass
		Br	Inconclusive**
	ChromateCheck® Test Strips	Cr6+	Pass
AP9568 – 1 Sample	GC-MS	PBB's, PBDE's	Pass**
AP9568 – 1 Sample	ICP-MS	Cd	Inconclusive*

* Cd levels vary under testing and compliance could not be conclusively determined.
** XRF testing is inconclusive for Br in plastic parts; further work was required to determine that Br was not in the form of PBB's or PBDE's.

APC - Schneider Electric AP9568 is compliant with RoHS Directive 2011/65/EU for Pb, Hg, Cr, and Br; further work is required to confirm compliance for Cd.

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Comments/Questions

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