Innovation meets Standardization

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Domestic Use of Energy
conference, March 30 – April 1, 2015 Cape Town South Africa
Me, Johan van Velthoven

- MSc degree in electronics
- University of Eindhoven, the Netherlands
- Working experience
  - Royal Philips Electronics:
    > Innovative developments (CD)
    > Lighting production equipment
  - NEN (Dutch standardization institute)
    > Standardization teams on electrical installations
The definition of a standard

• A **standard** is a document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

• ISO/IEC definition
The making of standards

“Experts” & “Stakeholders”

All parties concerned

Consensus in “drafting”

Acceptance by large (>2/3) majority
The use of standards

- Usage of general accepted “facts”
- Interconnection
- Legislation
  - Safety
  - Environmental issues
  - (no) Barriers for trade
Risk management

• Projects
• Legislation
• Insurance
• Interconnection
• Entrance to markets

> RISC MANAGEMENT

• Proven, “state of the art”, general accepted solutions
> STANDARDS
What about innovations??

Build upon available expertise
>> Reduce time to market

Interconnectivity

Entrance to markets

Focus on core-business/
leading edge

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Example: electrical power

- Huge network
  - Interconnections

- Risk on injury and fire
  - Legislation
  - Insurance

- Ecological footprint
  - Use of fossil sources
  - Use of materials
War on currents

• Tesla (AC) vs. Edison (DC)

• AC due to transport of energy & available equipment

• DC due to:
  – Electronics in equipment
  – Local generation
  – Storage

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The power entry of almost every piece of equipment

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Opportunities for DC

– Small low-cost (local) grid’s
– Low energy consumption, low energy losses
– Less material usage

– Typical DC-applications
  > Data-centers
  > Lighting
  > Powergrid’s on ships
  > E-mobility

– And more … also at home

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Position of standards
(Electrical Power supply)

• By history: “AC-minded”
• Large, strong supply-networks
  – Ease of switching/disconnecting
    > at 0 Volt or 0 Amp,
    > 50 or 60 times / sec.
  – Power for fast fault-reaction
  – Alternating polarity (50 or 60 times / sec)
• Behaviour of semi-conductor electronics
  – unknown / unfamiliar ?
### Example: Switching and isolation

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- **High power,** **High current,** **High energy to operate switch**
- **“Low” power,** **Smart detection, fast switching**
  **“Controlled” current**

Frequently combined in 1 device!
Example: earthing & bonding

**Purpose:** Reduction of fault-voltages to safe values within given time-limits

- **Classical approach:** earthing & bonding of metal objects through direct contact, aiming at a voltage-difference of 0 V

>> DC: possible corrosion issues

- **Possible solution:** cathodic-protection

>> Earthing and bonding through diode-networks providing threshold voltage for cathodic protection
Standards >> “unblock” your mind

- Clarifications and amendments (if required) to “unblock” formal application of standards (used in legislation, contracts)
- New standards to enable and to “guide” the new application area’s
Triggered/interested?

• Become a member of the global standardization society
• Get informed by your national standardization body

www.sabs.co.za  
www.iso.org  
www.iec.ch
Don’t forget

The value of standards …
14 different incompatible plugs & sockets
Questions?

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