

## IEEE 1159 and IEC 61000 Standards: A brief comparison



For IEEE T&D meeting, 23 April 2008, Chicago

Similarity: Both IEEE 1159 and  
the IEC 61000 series of standards  
cover power quality.

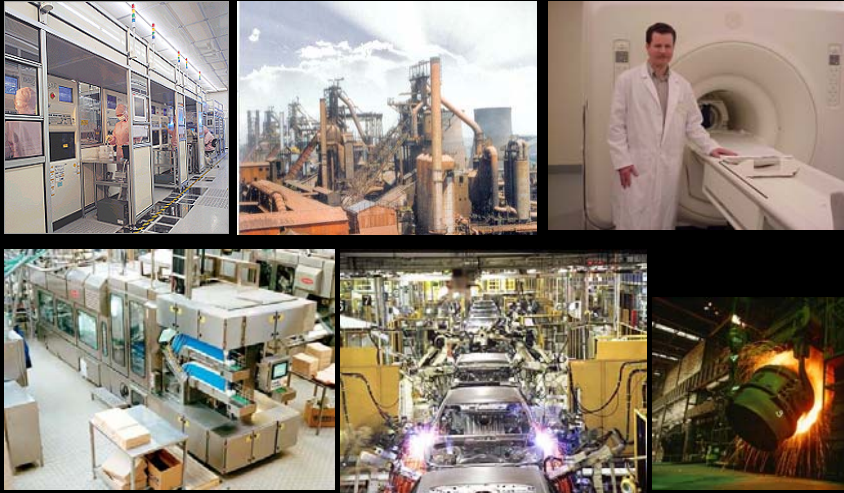


Source: Bob Detore

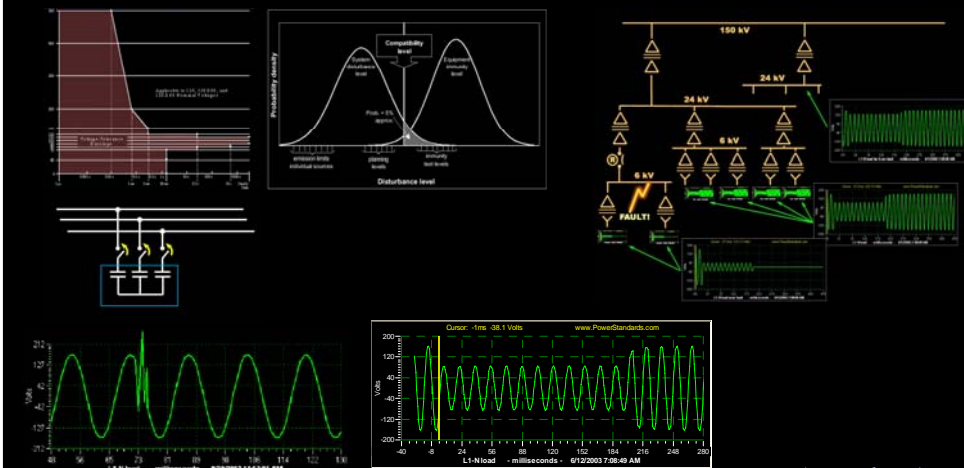


Source: Mhd Fuad Faisal

Similarity: Both IEEE 1159 and IEC 61000 series of standards are used by engineers with sensitive loads.



Similarity: Both IEEE 1159 and IEC 61000 series of standards agree on the basic concepts and terminology.



(mostly...)

# What, exactly, are the IEC 61000 series of standards?

IEC 61000-2 standards

IEC 61000-3 standards

IEC 61000-4 standards

What it is

What the limits are – Emissions and susceptibility

How to measure

The image displays three IEC 61000 series standard covers. The leftmost cover is a draft technical report for IEC 61000-2-14, titled 'Electromagnetic compatibility (EMC) - Part 2-14: Over an public electricity distribution networks'. The middle cover is for IEC 61000-3-3, titled 'NORME INTERNATIONALE INTERNATIONALE STANDARD 61000-3-3', with the French title 'Compatibilité électromagnétique (CEM) - Partie 3-3: Limites - Limitation des variations de tension, des fluctuations de tension et du ragèlement dans les réseaux publics d'alimentation basse tension, pour les matériels ayant un courant assigné <math>I\_{16}</math> A par phase et non soumis à un raccordement conditionnel'. The rightmost cover is for IEC 61000-4-30, titled 'NORME INTERNATIONALE INTERNATIONALE STANDARD 61000-4-30', with the French title 'Compatibilité électromagnétique (CEM) - Partie 4-30: Techniques d'essai et de mesure - Méthodes de mesure de la qualité de l'alimentation'. Below the covers are three text labels: 'What it is' under the first, 'What the limits are – Emissions and susceptibility' under the second, and 'How to measure' under the third.

## Differences between IEEE 1159 and IEC standards

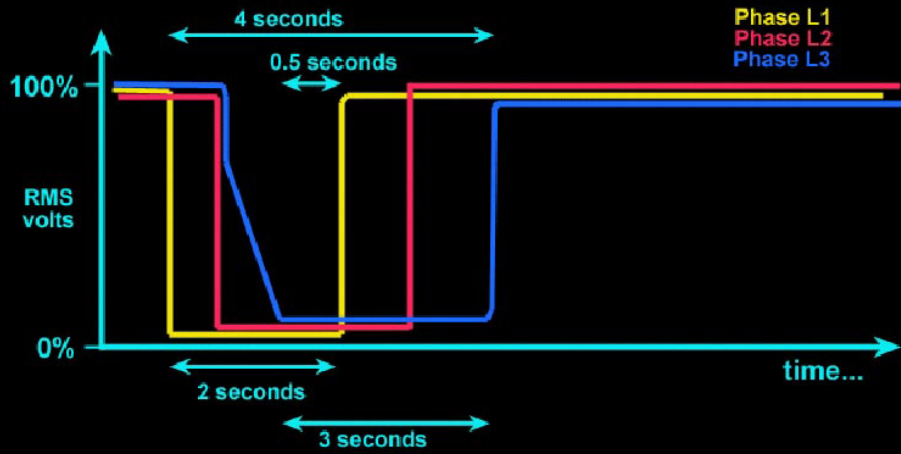
### #1

IEEE 1159 – informative, tutorial, instructive

IEC 61000 series – “Thou shalt...”

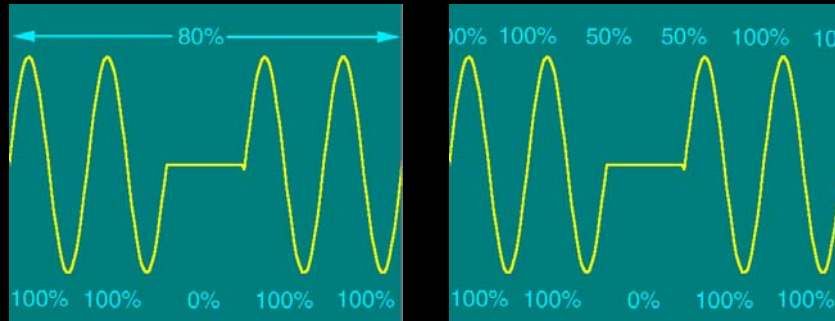
This slide contains text comparing IEEE 1159 and IEC standards. It lists 'IEEE 1159 – informative, tutorial, instructive' and 'IEC 61000 series – “Thou shalt...”'.

## Differences between IEEE 1159 and IEC standards #1



Example from 61000-4-30 "Power quality measurement methods"

## Differences between IEEE 1159 and IEC standards #1



Example from 61000-4-30 "Power quality measurement methods"

Differences between IEEE 1159 and IEC standards  
#2

IEEE 1159 – Developed by volunteers.

IEC 61000 series – Developed by  
assigned national “experts”

Differences between IEEE 1159 and IEC standards  
#3

IEEE 1159 – Approved by consensus.

IEC 61000 series – Approved by nation voting.

## Differences between IEEE 1159 and IEC standards #4

IEEE 1159 – Not enforced – just informative.

IEC 61000 series – Adopted and enforced  
as national standards –  
force of law. Very careful  
drafting!

## Summary – IEEE 1159 and IEC 61000 series

### Similarities

- Cover power quality
- Agree on compatibility
- Agree on basic concepts
- Agree on terminology



### Differences

- Tutorial vs “thou shalt”
- Volunteer vs appointed experts
- Consensus vs national voting
- Informative vs enforced



Thanks

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