# IEEE Guide for bus design in air insulated substations

## Proposed tutorial plan - version 1

### September 26, 2012

## Objectives

* Familiarize the substation engineer with the design process of flexible and rigid bus design
* Familiarize the substation engineer with the different calculation methods available for bus design: from hand on calculations to finite element calculations; provide an overview of the advantages and limitations of these.

## Details

* Duration : 8 hours
* Instructors: Hanna Abdallah (HA) and Jean-Bernard Dastous (JBD)

## Content and schedule

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| item# | Subject | Instructor | Duration  (minutes) |
| 1 | Overview, Scope and purpose of 605. | HA | 15 |
| 2 | Main changes/improvements from IEEE-605-1998 | HA | 15 |
| 3 | Differences between 605 and ASCE 113 Substation Structure Design Guide | JBD | 15 |
| 4 | Overview of the design procedure:   * General design flowchart * Bus arrangements available: advantages and limitations * Construction types available : advantages and limitations * Design considerations * Conductors | HA | 60 |
| 5 | Bus ampacity calculations and annexes B and C of the guide | HA | 30 |
| 6 | Corona and annex D of the guide | HA | 20 |
| 7 | Mechanical Design:   * General design procedure * Load evaluations : gravity, wind, ice, short-circuit, thermal * Calculation methods : hand on and finite-element calculation * Comparison between hands on and finite element calculations for short-circuit loading * Acceptance criteria: maximum allowable span, strength of porcelain, vibration attenuation | JBD | 75 |
| 8 | Design example #1: Rigid bus design | HA/JBD | 90 |
| 9 | Design example #2: Strain bus design | HA/JBD | 90 |