

PCS Working Group on General Requirements C57.12.00

WG Item 82

C57.12.00 - 2000 Section 7.1.4.4 Stabilizing windings

Change Requested by : V. Sankar 5/07/2005 & 10/23/2006

Requested Change : Request to form a task force to discuss the following on buried tertiary and to modify the clause of 7.1.4.4 of C57.12.00 based upon the recommendations of the task force :

- 1) Guidelines to determine MVA rating of buried tertiary.
- 2) To define the conditions under which this MVA is applicable ;
 - (i) is it when the HV or LV is delivering top MVA,
 - (ii) should transformer MVA be vectorial sum or arithmetic sum of buried TV MVA with HV or LV MVA,
 - (iii) is the above applicable for step-down operation or for step-up operation or for both.
- 3) Tests to prove buried TV MVA rating :
 - (i) what should be losses to determine mean oil and top oil rise,
 - (ii) is shut-down needed to determine TV winding gradient.

Section 7.1.4.4 Stabilizing Windings

Stabilizing windings in three-phase transformers (delta-connected windings with no external terminals) shall be capable of withstanding the current resulting from any of the system faults specified in 7.1.1, recognizing the system grounding conditions. An appropriate stabilizing winding kVA, voltage, and impedance shall be provided.

WG Proposal :

Chair Comment - This request would be a better fit in the section on “**Rating Data**”, possibly clause “**5.4.2.x Preferred Continuous Kilovolt ampere Ratings**”.

A Task force has been working on this issue since the Spring 2008 meeting, and this topic will be discussed within the Working Group at the Spring 2010 meeting.

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WG Item 87

C57.12.00 -2002 Table 18 Short-circuit apparent power of the system to be used unless otherwise specified.

Change Requested by : Pierre Riffon – 2006 Ballot Comment

Requested Change : Most of the values given are not realistic and are leading to unnecessary over designs. Except for very rare cases, the short-circuit current never exceeds 63 kA r.m.s. and this should be the ultimate standardized value. Specifying values which are higher than that lead to uneconomical designs.

Section 7.1.5.3 System characteristics

For Categories III and IV, the characteristics of the system on each set of terminals of the transformer (system fault capacity and the ratio of X_0/X_1) should be specified. For terminals connected to rotating machines, the impedance of the connected equipment should be specified. In lieu of specified system fault capacities and rotating machine impedances, values shall be selected for each source from Table 18 and Table 19. In lieu of a specified X_0/X_1 ratio, a value of 2.0* shall be used. **(Changed to 1.0 in 2008 Rev.)*

Table 18 - Short-circuit apparent power of the system to be used unless otherwise specified.

Maximum system Voltage (kV)	System fault capacity	
	(kA rms)	(MVA)
Below 48.3	---	4300
48.3	54	4300
72.5	82	9800
121.0	126	25100
145.0	160	38200
169.0	100	27900
242.0	126	50200
362.0	84	50200
550.0	80	69300
800.0	80	97000

WG Discussion :

See attached feedback from various utilities and manufacturers.

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C57.12.00 D/2C -2008 Section 4.1.8 Step-down Operation

Change Requested by : David Harris – 2008 Ballot Comment

Requested Change : Change wording to “Transformers shall be designed for step-down or step-up operation or both, as specified by the user.”

4.1.8 Step-down operation

Unless otherwise specified, transformers shall be designed for step-down operation.

WG Proposal :