

Task Force C57.12.00 IEEE Guide for DGA in Mineral Oil

TASK FORCE

5.11.1.4 Rises of metallic parts other than windings

Toby Johnson – TF Chair

Tuesday, October 20th, 2020

8 AM – 9:15 AM Central Daylight Time

1. Introduction
2. Call for Patents
3. Review of Copyright Policy
4. Background
5. Discussion – Changes to wording of 5.11.1.4 heading, rewording/changing content of second paragraph of clause 5.11.1.4 to bring uniformity with the title/heading.
6. Adjourn

Meeting Minutes

Welcome

Call for patents and review of copyright policy – showed the fall2020 slide deck covering potential essential patent claims, ways to inform, copyright policy and the other guidelines of SA committee. No claims were made.

Background covering the scope of the task force – which was to eliminate confusion in the guide surrounding the 130 deg C core hot spot temperature (not rise) stated in 5.11.1.4. The desire was to make it clear that the core hot spot maximum temperature should not go above 130 deg C or gassing would result.

Options discussed were to reword the title to remove the word ‘rise’, reword the text in the body of the section to state that 130 deg C was a maximum temperature. Another option was to make the temperature a rise to match with all the other parts of the guide that refer to rises. It didn’t make sense to have one section referring to a maximum temperature when all the other sections refer to temperature rise limits instead. Concern expressed with how to do this properly considering some maximum average daily temperatures were above the standard 30 deg C.

Motion to refer to section 4.1.2.1 as the standard for ambient to use in the rise calculation and if the maximum daily average exceed that temperature the core hot spot rise should be adjusted accordingly.

Motion by Norman Field, seconded by Juan Castellanos: *“The core hot spot temperature **rise** shall be limited to **100° C** for the condition of highest core over-excitation, rated load and the maximum average daily ambient temperature for transformers filled with mineral oil. **If maximum average daily ambient temperatures exceed those stated in 4.1.2.1 of this document, the core hot-spot temperature rise shall be adjusted by the same amount.**”*

There were other concerns with this section brought up by the task force:

1. The section refers to the temperature limit with respect to mineral oil only. Does that mean it does not apply to other insulating fluids? Should other insulating fluids be addressed at all? Should the specificity of mineral oil be removed and made more general? It was mentioned that the gassing at 130 deg C was only specifically known for mineral oil and that is why it is worded the way it is. C57.154 is working on specific temperatures of other insulating liquids and it might be good to wait for that to make any changes to this part of the section. But the task force felt like it should be addressed.
2. The last paragraph of the section should be reviewed and discussed. There are a few concerns with this section. There was a task force previously created that tried to address this portion of the section but was not ultimately able to resolve.
3. Discussions around whether the using the maximum average daily temperature was sufficient and if we should reduce the rise to 90 deg C instead of 100 deg C. or use the maximum daily temperature. It was determined that this was not the correct way to specify the rise and the motion as worded was confirmed.

Selected Chat Conversations

October 20, 2020 9:17 AM from Rod Sauls to everyone: You could say "...limited to 130C for the condition of a temperature rise of 100C, highest core over-excitation..."

October 20, 2020 9:23 AM from Norman Field to everyone: Ambient temps are clearly defined in 4.1.2. State "The core hot spot temperature rise shall be limited to 100C. If ambient temperatures exceed those stated in 4.1.2, the rise must be reduced by the same amount."

October 20, 2020 9:25 AM from Jeremiah Bradshaw to everyone: Yes and this correlates to all other ambient normal conditions (30C).

October 20, 2020 9:32 AM from Sanjib to everyone: we should refer to other IEEE documents on high temperature

October 20, 2020 9:33 AM from rich742 to everyone: Should we refer to C57.154 and C57.1276?

October 20, 2020 9:33 AM from Bruce Webb to everyone: I concur... reference the other documents

October 20, 2020 9:40 AM from Bruce Webb to everyone: I have always presumed that mineral oil is the standard with other dielectrics (i.e. silicone, wecosol, R-Temp, etc.) were outside the scope of C57.12.00

October 20, 2020 9:43 AM from Bruce Webb to everyone: Exactly... C57.154 addresses the other dielectric performance characteristics beyond mineral oil

October 20, 2020 9:47 AM from rich742 to everyone: 30 is average, 40 is maximum

October 20, 2020 9:47 AM from Bruce Webb to everyone: See C57.12.00 4.1.2.1

October 20, 2020 9:48 AM from Norman Field to everyone: 4.1.2.1: "the temperature of the cooling air shall not exceed 40C and the average temperature for any 24 hour period shall not exceed 30C."

October 20, 2020 9:49 AM from Bruce Webb to everyone: 110% at no-load

October 20, 2020 9:51 AM from Jeremiah Bradshaw to everyone: 4.1.2.1 states "when air-cooled". The 'water cooled' section 4.1.2.3 has an average of 25C

October 20, 2020 9:51 AM from Norman Field to everyone: Correct. So water cooled will not be an issue.

October 20, 2020 9:55 AM from Jeremiah Bradshaw to everyone: Good discussions. Thank you TF!