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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 18494.1-2014

Replacing GB/T 18494.1-2001

**Convertor transformers -- Part 1: Transformers for industrial
applications**

(English Translation)

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Foreword

GB/T 18494 "Converter transformers" includes the following sections.

--- Part 1. Transformers for industrial use;

--- Part 2. HVDC converter transformer;

--- Part 3. Application guide.

This section GB/T Part of 118,494.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 18494.1-2001 "Converter transformers - Part 1. Transformers for industrial use", and GB/T 18494.1-2001 compared to the main technical changes are as follows.

--- The GB/T 18494.1-2001 only relates to a device with a white body and transformers Converter transformers This section applies to One or more of the body of a transformer in the same tank; the GB/T 18494.1-2001 involves only for star (Y junction), and Angle junction (D junction) to the transformer This section applies to Y junction, D knots and other

phase-shifting transformer coupling (such as Z junction, Yanbian three Coupling angle, polygon links, etc.);

--- Increasing the converter transformer classification. Standardize the classification and application of the converter, the normal conditions of use and non-normal conditions of use;

--- Clear the converter transformer phase shift and terminal identification;

--- Increased the converter transformer nameplate requirements;

--- Increased the unit with filtering and compensating third winding of the provisions;

--- Increasing the on-load tap provisions;

--- Increasing the internal high-current windings current distribution, consumption and described hotspots;

--- Increased inter-column with a core and transformer windings with three or more geometric arrangement and winding magnetically coupled harmonic eddy current loss Impact;

--- Increase the saturation of transformer and reactor voltage drop;

--- Increased insulation test;

With specific emphasis on the load losses when --- Test and saturable reactors total box rectifier transformers and high-current external valve winding busbar A short-circuit structure;

--- Table 1 has been updated to remove part of the link, listed in the table is a common link;

--- Add eight appendices, headings as "variable phase shifting transformer coupling and the terminal ID", "Design Review Guidelines" "GB/T 18494.1 and GB/T 3859.1 relevance rating "" duty cycle Example "" large current valve side winding current distribution measuring "," measured by the turns ratio to determine the amount of voltage transformer ratio and phase shift "," saturated with embedded reactor rectifier transformer load test "," change in the magnetic field Three-dimensional simulation and conduction losses to determine the loss of housing and housing hot press review Housings caused in the calculation. " this section uses redrafted law revision using IEC 61378-1:2011 "Converter transformers - Part 1. Transformers for industrial use." this part of IEC 61378-1:2011 technical differences and their reasons are as follows.

--- In order to meet China's national conditions, in Chapter 1, the highest voltage winding valve device does not exceed 36kV to 40.5kV original text;

--- In order to meet China's national conditions, terminal ID that meets our habits instead of the original terminal identification;

--- On normative references, this part has been adjusted technical differences, in order to

adapt our technical conditions, the adjusted situation Focus is reflected in the status of Chapter 2, "Normative references", the specific adjustments are as follows.

- Modify with international standards of GB 1094.1, GB 1094.2, GB 1094.3, GB/T 1094.6, GB 1094.11, GB/T 3859.1-2013 and GB/T 3859.2-2013, respectively, instead of the IEC 60076-1:2011, IEC 60076-2:2011, IEC 60076-3:2000, IEC 60076-6:2007, IEC 60076-11:2004, IEC 60146-1-1:2009 and IEC 60146-1-2:2011;
- non-equivalent to international standards of GB/T 2900.15-1997 instead of IEC 60050 (421).1990;
- Removed IEC 60076 (all parts), IEC 60146 (all parts) and IEC/T R60616. 1978 references.

This section also made the following editorial changes.

- Note the first chapter of "5.1" to "6.2";
- Removed in 5.8 "(see description of IEC 60076-1)";
- The last line of 6.1 "See 5.1 and 7.6" was changed to see "see 6.2 and 7.6";
- 6.2 adds "n --- calculate the maximum harmonic number";
- Contents 7.6.3.2 Note 1 by coupling "Every two secondary valve winding phase of close to 100%, see A.2 and A.3. Because this eddy current losses in all windings see A.2 in Description 6-pulse and 12-pulse of A.3. "To" two per phase Winding secondary valve close coupled to 100%. Therefore, the eddy current loss of all windings see E.3 and E.4 sixth pulse 12 pulse Description wave. ";
- The original text in Appendix A, Appendix B, Appendix C, Appendix E, Appendix F, Appendix G, Appendix H, amend Appendices I and J-oriented Section Appendix E, Appendix I, Appendix F, Appendix B, Appendix J, Appendix H, Appendix G, Appendix A and Appendix C;
- The original Appendix A (This section Appendix E) in the four "See 6.5" are changed to "see 6.4";
- The original A.4 (This section E.4) "secondary 2a-2b-2c. $I_2R = 3 \times 23412 \times 0.678 \times 10^{-6} \times 10^{-3} = 11.15\text{kW}$ "in" 11.15kW "changed to" $11.15 \times 10^{-3}\text{kW}$ ", the" second 3a-3b-3c. $I_2R = 3 \times 40542 \times 0.228 \times 10^{-6} \times 10^{-3} = 11.24\text{kW}$ "in" 11.24kW "changed to" $11.24 \times 10^{-3}\text{kW}$ ", and later used by the these two values were unified corrections;
- Delete the contents of the original tables A.7 below "third rated voltage" and the following six lines;
- The original I.3 (This section A.3) in the first two paragraphs of text adjust to this section A.1 foremost, delete the original I.3 Third paragraph of the text;