# Russian books on reactors, special transformers and related to transformer engineering - Part 3


## ABSTRACT

In this column, we bring you a comprehensive list of Russian books related to reactors, special transformers as well as transformer engineering in general, from 1924 to 1978.



## KEYWORDS

books, Russian literature, review, reactors, special transformers


### 1955

B. P. Buryanov, *The transformer oil* (Трансформаторное масло), Ed. 3.0, Gostekhizdat, Moscow-Leningrad, 191 pages, 1955
https://www.twirpx.com/file/2226869/

The book describes the properties of transformer oils, their change during operation, norms and care for oil. The book is designed for operating personnel of power plants and networks.

### 1959

P. M. Tikhomirov, *The calculation of arc-furnace transformers* (Расчет трансформаторов для электродуговых печей), Gosenergoizd, Moscow-Leningrad, 208 pages, 1959

P. G. Burman, A. G. Krajz, *The production of transformer magnetic cores (Transformer Series, Vol. 3)* (Производство магнитопроводов трансформаторов (Трансформаторы, вып. 2)), Gosenergoizdat, Moscow-Leningrad, 154 pages, 1959
https://www.twirpx.com/file/1652262/

The devices and designs of magnetic circuits of transformers of small, medium and high power are described, the main materials used for their manufacture are considered. The technology of manufacturing transformer magnetic circuits is described.

V. V. Ivashev, *Transformer repair* (Ремонт трансформаторов), Ed. 3.0, Gosenergoiz-

**After the Second World War, the transformer technology reached its mature phase, which can be seen from the book titles and covered topics**

dat, Moscow-Leningrad, 358 pages, 1959
https://knigirossii.ru/?menu=showbook&book=5141828

E. A. Kaganovich, *The testing of small and medium power transformers (Transformer Series, Vol. 2)* (Испытание трансформаторов малой и средней мощности (Трансформаторы, вып. 2)), Gosenergoizdat, Moscow-Leningrad, 240 pages, 1959
https://www.studmed.ru/kaganovich-ea-ispytanie-transformatorov-maloy-i-sredney-moschnosti_14ca147f8bb.html

For the second edition, see 1969.

## 1960

B. Heller, A. Veverka, *The surge phenomena in the electrical machines* (Волновые процессы в электрических машинах), Gosenergoizdat, Moscow, 631 pages, 1960
https://www.twirpx.com/file/646869/

Theory of transient voltage distribution in various types of coils and windings of transformers is considered, theory of surge phenomena in electrical machines. Various circuits for impulse generators and voltage dividers; Impulse testing and measurement techniques and modeling for surge distribution study in transformers.

L. M. Piotrovsky, S. B. Vasyutinsky, E. D. Nesgovorova, *The testing of electrical machines - Part 2: Transformers and asynchronous machines* (Испытание электрических машин. Ч. 2: Трансформаторы и асинхронные машины), Gosenergoizdat, 290 pages, 1960
http://lib.polytechnic.am/cgi-bin/koha/opac-detail.pl?biblionumber=43673

## 1961

R. K. Balian, *The small power transformers* (Трансформаторы малой мощности), Sudpromgiz, Leningrad, 370 pages, 1961
https://www.twirpx.com/file/283738/

**G. Gotter - The heating and cooling of electrical machines, translated from German to Russian, is a fundamental monograph on thermal processes in electrical machines, summarizing the works of many scientists**

The book covers the issues of theory, calculation, design and manufacturing technology of power transformers of normal and high frequencies, output transformers of special generators of increased and ultrasonic frequencies and transformers for powering the charge circuits of capacitive drives used in various fields of instrumentation, radio engineering, automation, ultrasound equipment.

G. Gotter, *The heating and cooling of electrical machines*, transl. from German (Нагревание и охлаждение электрических машин, пер.с немецкого), Gosenergoizdat, Moscow-Leningrad, 480 pages, 1961
https://www.studmed.ru/gotter-g-nagrev-i-ohlazhdenie-elektricheskih-mashin_5e912fac0e0.html

The book is a fundamental monograph on thermal processes in electrical machines, summarizing the works of many scientists, including the works of the author himself, who has been working in the field of thermal studies of electrical machines for a long time. There is a section "Calculation of heating transformers".

L. L. Tir, *The transformers for high frequency induction heating* (Трансформаторы для установок индукционного нагрева повышенной частоты), Gosenergoizdat, Moscow-Leningrad, 239 pages, 1961
https://www.twirpx.com/file/2942800/

The book sets out the theory, calculation and design, manufacturing technology of transformers of increased frequency (up to 10,000 Hz) for induction heating installations.

## 1962

G. V. Aleksenko, A. K. Ashryatov, E. S. Fried, *The testing of high-voltage and powerful transformers and autotransformers - Part 1 (Transformer Series, Vol. 8)* (Испытания высоковольтных и мощных трансформаторов и автотрансформаторов. Часть 1 (Трансформаторы, вып. 8)), Gosenergoizdat, Moscow-Leningrad, 671 pages, 1962
https://ug1lib.org/book/641645/8a608b?id=641645&secret=8a608b

The book consists of two parts. It addresses the issues of testing as of 1961. The first part describes measurement of the transformation ratio, checking the vector group of windings, measuring the resistance of the windings to direct current, no-load characteristics, short circuit characteristics, determining the efficiency of the transformer.


G. V. Aleksenko, A. K. Ashryatov, E. S. Fried, *The testing of high-voltage and powerful transformers and autotransformers - Part 2 (Transformer Series, Vol. 9)* (Испытания высоковольтных и мощных трансформаторов и автотрансформаторов. Часть 2 (Трансформаторы, вып. 9)), Gosenergoizdat, Moscow-Leningrad, 832 pages, 1962
https://www.libex.ru/detail/book618374.html

The second part of the book describes the determination of the insulation characteristics of transformers, tests for the electrical strength of insulation by power frequency, impulse and switching surges, temperature rise tests, test features of transformers with voltage regulation under load, commissioning tests.

K. M. Poyarkov, *Regulated transformers and their operation* (Регулируемые трансформаторы и их эксплуатация), Gosenergoizdat, Moscow-Leningrad, 176 pages, 1962
https://www.centrmag.ru/catalog/product/reguliruemye-transformatory-i-ih-ekspluataciya/

Design features and circuits of load-controlled (on-load tap-changing) transformers, switching devices and automatic control circuits, tests, operation, operation features and protection for transformers with tap-changers.


## 1963

Y. I. Gerasimov, G. B. Friedman, *The explosion-proof transformers for mines (Transformer Series, Vol. 11)* (Шахтные взрывобезопасные трансформаторные подстанции (Трансформаторы, вып. 11)), Gosenergoizdat, Moscow-Leningrad, 192 pages, 1963
https://www.twirpx.com/file/2067039/

The book discusses the technical requirements for dry type mine transformers, describing their designs and production technology. The properties of the insulating materials of these transformers, their behavior during heating, moistening and thermal aging are examined in detail. The features of the calculation of mine transformers are indicated and the methods of thermal calculation of these transformers and transformers with quartz filling are considered in detail.

## 1964

A. M. Golunov, *The cooling Accessories for the oil-immersed transformers (Transformer Series, Vol. 13)*

**It is impressive how complex topics were treated in the 1950s, 60s and 1970s without modern-day computers, CAD software and numerical calculations that are today's standard**

(Охлаждающие устройства масляных трансформаторов (Трансформаторы, вып. 13)), Energy, Moscow-Leningrad, 152 pages, 1964
https://www.twirpx.com/file/90797/

The second edition of the book is more informative, see 1976.

## 1965

V. G. Sternin, A. K. Karpensky, *Dry-type current-limiting reactors* (Сухие токоограничивающие реакторы), Energy, Moscow-Leningrad, 256 pages, 1965
https://ug1lib.org/book/583762/a6fbaa?id=583762&secret=a6fbaa

V. V. Vologdin, *The transformers for high-frequency heating* (Трансформаторы для высокочастотного нагрева), Machinostroenie, Moscow-Leningrad, 101 pages, 1965
https://www.studmed.ru/vologdin-vvtransformatory-dlya-vysokochastotnogo-nagreva_98827bd9662.html

The book briefly describes main types of water-cooled transformers for induction heating of metals. An approximate calculation of transformers is given and rational conditions for their operation are given.

I. V. Pavlov, *The loco transformers in traction AC networks* (Отсасывающие трансформаторы в тяговых сетях переменного тока), Transport, Moscow, 204 pages, 1965
https://rusneb.ru/catalog/000199_000009_006469362/

## 1966

L. V. Leites, *The toroidal reactors* (Тороидальные реакторы), VNIIEM, Moscow, 84 pages, 1966
http://books.zntu.edu.ua/book_info.pl?id=147093

G. P. Teresa, E. V. Veremey, *The electrical equipment of the transformer testing stations* (Электрооборудование станций для испытания трансформаторов), Energy, Moscow-Leningrad, 256 pages, 1966
https://www.twirpx.com/file/1461342/

## 1968

A. M. Bamdas, I. V. Blinov, N. V. Zakharov, S. V. Shapiro, *The ferromagnetic frequency* multipliers *(Transformer Series, Vol. 18)* (Ферромагнитные умножители частоты (Трансформаторы, вып. 18)), Energy, Moscow-Leningrad, 176 pages, 1968
https://www.twirpx.com/file/2066981/


## 1969

N. P. Ermolin, *The calculation of the small power transformers* (Расчет трансформаторов малой мощности), Ed. 2.0, Energy, Leningrad, 192 pages, 1969
https://www.elec.ru/library/nauchnaya-i-tehnicheskaya-literatura/raschet-transformatorov-ermolin/

E. A. Kaganovich, *The testing of small and medium power transformers up to 35 kV (Transformer Series, Vol. 20)* (Испытание трансформаторов малой и средней мощности на напряжение до 35 кВ включительно (Трансформаторы, вып. 20)), Energy, Moscow, 296 pages, 1969
https://ug1lib.org/book/2956040/492bbc

The third edition is more informative, see 1980.

## 1970

I. I. Zajtsev, A. I. Kubrak, A. I. Pletnev, V. V. Shilov, *The quartz-filled explosion-proof mine transformers and substations (Transformer Series, Vol. 21)* (Кварценаполненные взрывобезопасные шахтные трансформаторы и подстанции (Трансформаторы, вып. 21)), Energy, Moscow, 176 pages, 1970
https://www.studmed.ru/zaycev-i-i-i-dr-kvarcenapolnennye-vzryvobezopasnye-shahtnye-transformatory-i-podstancii_16508c52719.html

## 1971

R. K. Balyan, **The transformers for the radio electronics** (Трансформаторы для радиоэлектроники), Soviet radio, Moscow, 720 pages, 1971
https://ug1lib.org/book/2387936/99a4dd

The issues of theory, calculation, design and manufacturing technology of power transformers of normal and high frequency, output transformers of special radio engineering generators of increased and ultrasonic frequency, transformers for powering the charge circuits of capacitive energy storage devices used in instrumentation, automation and telemechanics, communications, ultrasound equipment are covered.

M. S. Libkind, A. K. Chernovets, *The controlled reactor with a rotating magnetic field* (Управляемый реактор с вращающимся магнитным полем), Energy, Moscow, 80 pages, 1971
https://rusneb.ru/catalog/002293_000049_RU%20VLADIMIR%7C%7C%7C-BIBL%7C%7C%7C0001547159/

S. D. Lizunov, *The drying and degassing of insulation of high Voltage transformers (Transformer Series, Vol. 22)* (Сушка и дегазация изоляции трансформаторов высокого напряжения (Трансформаторы, вып. 22), Energy, Moscow, 96 pages, 1971

Literature review on drying and vacuum processing of transformer insulation (requirements for insulation drying, its methods, insulation status in operation, protection against moisture) as of 1970.

https://ug1lib.org/book/2956061/8879b4

## 1972

L. S. Gerasimova, *The technology and equipment for transformer production* (Технология и оборудование производства трансформаторов), Energy, Moskow, 264 pages 1972

M. P. Kostenko, L. M. Piotrovsky, *Electrical machines, Part 1, DC machines, Transformers* (Электрические машины Часть 1. Машины постоянного тока. Трансформаторы), Energy, Leningrad, 544 pages, 1972
https://www.livelib.ru/book/1001229030-elektricheskie-mashiny-chast-1-mashiny-postoyannogo-toka-transformatory-mihail-kostenko

The book is a general course on electrical DC machines and transformers and is intended for students at electrical power and electrical universities. It can also be useful for electrical engineers working in the production and operation of electrical machines.

E. P. Mikhailenko, A. I. Pletnev, *The load capacity of the explosion-proof transformers for mines (Transformer Series, Vol. 23)* (Нагрузочная способность шахтных взрывобезопасных трансформаторов (Трансформаторы, вып. 23), Energy, Moscow, 59 pages, 1972
https://ug1lib.org/book/2956070/f69735

I. V. Bry, *The transformer oil regeneration* (Регенерация трансформаторных масел), Ed. 2, Chemia, 168 pages, 1972
https://www.twirpx.com/file/730019/


## 1973

D. F. Lazaroiu, N. Bikir, *The noise of electrical machines and transformers, a translation from Romanian* (Шум электрических машин и трансформаторов), Energy, Moscow, 271 pages, 1973

A. I. Majorets, G. I. Pshenishnij, I. I. Chechelyuk et al. *The magnetic cores of power transformers (Transformer Series, Vol. 24)* (Магнитопроводы силовых трансформаторов (Трансформаторы, вып. 24)), Energy, Moscow, 275 pages, 1973
https://ug1lib.org/book/3709188/9c71b2

## 1974

J. L. Fishler, R. N. Urmanov, *The converter transformers (Transformer Series, Vol. 26)* (Преобразовательные трансформаторы (Трансформаторы, вып. 26)), Energy, Moscow-Leningrad, 225 pages, 1974

http://lib.polytechnic.am/cgi-bin/koha/opac-detail.pl?biblionumber=44367&shelfbrowse_itemnumber=293717

The 1989 book has more information on this topic.

V. V. Porudominskij, *The on-load tap-changers for the transformers (Transformers, Vol. 25)* (Устройство переключения трансформатора под нагрузкой (Трансформаторы, вып. 25)), Ed. 2.0, Energy, Moscow, 288 pages, 1974
https://elib.pstu.ru/vufind/Record/RUPSTUbooks14930

Y. Turovsky, *The technical electrodynamics* (Техническая электродинамика), Energy, Moscow, 488 pages, 1974
https://www.twirpx.com/file/810935/

The book discusses the application of the theory and methods in electrodynamics for electromagnetic calculations of structural elements of electrical machines, transformers, electrical apparatuses and other electrical power devices. Particular attention is paid to standard methods leading to a simplification of the problem.

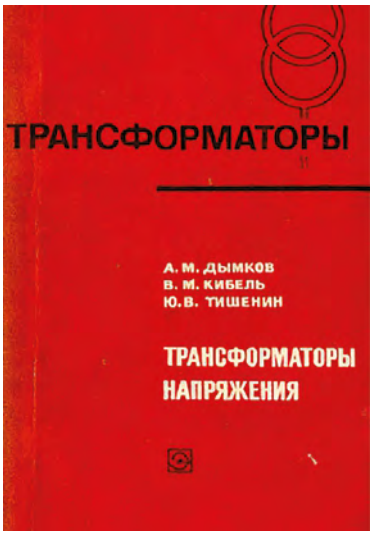
## 1975

R. G. Gemke, *The faults in electrical machines* (Неисправности электрических машин), Ed. 8.0, Energy, Leningrad, 296 pages, 1975
https://ug1lib.org/book/2075404/fce0c2

The book describes typical malfunctions and faultsof electrical machines and transformers used in factory substations with voltages up to 11 kV. Instructions are given for troubleshooting


G. A. Sipailov, E. V. Kononenko, K. A. Ferrets, *The electrical machines (special course),* Электрические машины (специальный курс), Ed. 2.0, Higher School, Moscow, 279 pages, 1975
https://www.twirpx.com/file/2105304/

Differential equations and methods for solving them are presented for DC machines, transformers, synchronous and asynchronous machines under various operating conditions. The second edition is revised and supplemented by numerical methods for solving differential equations.




## 1975

A. M. Dymkov, V. M. Kibel, Y. V. Tishenin, *The voltage transformers (Transformer Series, Vol. 27)* (Трансформаторы напряжения (Трансформаторы, вып. 27)), Energy, Moscow, 204 pages, 1975
https://www.twirpx.com/file/2066265/

G. E. Tarle, *The repair and modernization of the cooling systems fur oil-immersed transformers (Transformer Series, Vol. 28)* (Ремонт и модернизация систем охлаждения силовых масляных трансформаторов (Трансформаторы, вып. 28)), Energy, Moscow, 192 pages, 1975
https://ug1lib.org/book/2956041/e1c18e

## 1976

A. M. Golunov, N. S. Seshchenko, *The cooling accessories for the oil-immersed transformers, (Transformer Series, Vol. 30),* (Охлаждающие устройства масляных трансформаторов (Трансформаторы, вып. 30)), Energy, Moscow, 210 pages, 1976
https://ug1lib.org/book/2396282/73c612

The book discusses cooling methods for oil filled transformers, as well as some issues of heating and cooling transformers. Descriptions of devices for cooling systems and coolers are given.

## 1977

L. I. Dorozhko, M. S. Libkind, *The transverse submagnetization reactors* (Реакторы с поперечным подмагничиванием), Energy, Moscow, 177 pages, 1977
https://search.rsl.ru/ru/record/01007670696

## 1978

A. M. Golunov, A. L. Mazur, *The transformer accessories (Transformer Series, Vol. 33),* (Вспомогательное оборудование трансформаторов (Трансформаторы, вып. 33)), Energy, Moscow, 144 pages, 1978
https://ug1lib.org/book/2396219/9cf788

G. V. Aleksenko, A. K. Ashryatov, E. A. Veremej, E. S. Frid, *Testing of the power transformers and reactors (Transformer Series, Vol. 32)* (Испытание мощных трансформаторов и реакторов), (Трансформаторы, вып. 32)), Ed. 2.0, Energy, Moscow, 520 pages, 1978
https://ug1lib.org/book/641645/8a608b

The second edition considers the purpose, methods and processes of qualification, acceptance and periodic tests of large transformers of 10 MVA and more, voltage classes 35-750 kV and shunt reactors 500 and 750 kV as of 1977.

A. I. Voldek, *Electrical Machines (Электрические машины)*, Ed. 3, Energy, Moscow, 832 pages, 1978
https://www.twirpx.com/file/420673/

The book discusses the principles of the construction of electrical machines, including transformers, sets out the main issues of their theory, analyzes their operating modes and highlights their operational properties. See also 2008 book.

## Bibliography

[1] *Books on power transformers in Russian - A bibliography 1924 – 2017* (Transformers Magazine issues: July 2021, October 2021)

**Topics from the 1950s to 1980s shaped the modern engineering of the transformers we know today**

## Authors

Vitaly Gurin graduated from Kharkov Polytechnic Institute (1962) and graduate school at the Leningrad Polytechnic Institute. Candidate of technical sciences in the Soviet scientific system (1970). For 30 years he tested transformers up to 1.150 kV at ZTZ, including the largest one of that time in Europe, and statistically analysed the test results. For over 25 years he was the Executive Director of Trafoservis Joint-Stock Company in Sofia (the diagnosis, repair and modernisation in the operating conditions of transformers 20 – 750 kV). He has authored about 150 publications in Russian and Bulgarian, and is the main co-author of GOST 21023.

P. Ramachandran started his career in transformer industry in 1966 at TELK, Kerala, a Hitachi Joint venture, in India. He worked with ABB India during 1999-2020. He has more than 50 years of experience in the design and engineering of power products including power transformers, bushings, and tap-changers. He received Bachelor of Science Degree in Electrical Engineering from the University of Kerala, India, and Master of Business Administration Degree from Cochin University, India. He is a Fellow of Institution of Engineers (India), and he represented India in CIGRE Study Committee A2 for transformers during 2002 – 2010.