DOI https://doi.org/10.5281/zenodo.11002255

SEMANTIC FEATURES OF OIL AND GAS TERMINOLOGY IN THE GERMAN LANGUAGE

Elena Dorofeeva[1], Ramziya Gubaydullina[2]
[1]Assoc. Prof. Dr., Kazan Federal University, Russian Federation, elena.dor@mail.ru
[2]Teacher, Kazan Federal University, Russian Federation, ramzia.gubaidi@gmail.com

Abstract

The process of globalization in the modern world undoubtedly leads to the dynamic development of many areas of society. This process of modernization has also affected the oil and gas industry which is one of the most advanced industries today. The essential role of the oil industry in social, economic and political stability of the world community makes this area of science and technology a priority for research. The emergence of oil and gas terminology is inextricably linked with the development of the oil industry, with the theory and practice of search, exploration and development of oil and gas fields. The level of development of this branch of industrial production at the present stage largely determines the economic stability not only of our country, but also all over the world. During its formation the terminology system of the oil and gas field has passed a complex way, which is evidenced by the heterogeneous terms by time, sources and principles of nomination. Progressive changes in this field undoubtedly lead to the necessity of information collaboration between representatives of the world scientific and technical communities in different languages, including German. In this connection there is a demand for a comprehensive and complex study of the composition of terms in the modern German language in the oil and gas sphere, which determines the relevance of the research issue, because terms in the field of oil and gas can cause certain difficulties when translating specific elements into other languages. The objective of this paper is to research and analyze the semantic features of oil and gas terminology in German.

Key words: oil and gas industry, oil and gas sphere, terms, terminology, oil, gas, the German language, semantic features of terms, synonymy, antonymy, polysemy, homonymy, paronymy, lexical semantics, lexis.

1 INTRODUCTION

The problems of semantic terminology, as a rule, refer to the issues of correspondence of terms with the correlated concept. The importance of studying the semantics of terminological units is conditioned by their main feature - to be used as a nomination of a special concept of a certain field of knowledge, a lexical unit is endowed with a terminological (conceptual) meaning, which is superimposed on its linguistic (lexical) meaning. Terms, as well as words of the common lexicon, are systematic linguistic units, and their systematic status is formed by the presence of lexical meaning. However, unlike the semantics of a word, the semantics of a term is a complex of lexical and conceptual meaning (immediate and further meaning) interacting with each other. In contemporary literature, it should be noted, lexical meaning is defined as the internal form or literal meaning of a term [3, p. 45].

One of the key components of the research of terminological vocabulary is *the semantic analysis*, in other words, the study of semantic processes in terms. The main distinguishing feature of term semantics is that it is a semantics of a closed type, encoded from the perception of ordinary consciousness.

In lexical semantics, as a rule, such semantic phenomena are distinguished as: **1)** synonymy; **2)** antonymy;

3) polysemy (multiple meaning); **4)** homonymy and **5)** paronymy. We will analyse these phenomena related to the semantic features of terms in our article on the example of oil and gas terms in German.

2 METHODS

In the framework of this research the following methods were used: 1. *Comparative method*, which allowed us to establish similarities and differences between objects and phenomena. 2. *Inductive and deductive methods* are the logical methods of summarizing of empirically obtained data. With the inductive method, we assumed the movement of thought from private judgements to a general conclusion, with the help of deductive - from a general judgement to a private conclusion. 3. *Theoretical analysis* means the highlighting and consideration of particular aspects, signs, features, characteristics, properties of phenomena. Analyzing individual facts, grouping, systematizing them, we identified the common and special in them, established a general principle or rule. The analysis accompanied by synthesis helped to penetrate into the essence of the studied phenomena. 4. *Theoretical methods* related to the study of literature, namely, such methods as, compiling a bibliography, it is a list of sources selected for the work in connection with the problem under study; abstracting, that means a concise transcription of the main content of one or more works on a common issue; outlining, it is the keeping of more detailed notes, the basis of which is the highlighting of the main ideas and provisions of the work; annotating, which means a brief record of the general content of the book or article; quoting, which is a verbatim record of expressions, factual or numerical data. 5. *Analysis and synthesis*. Analysis enabled us to find out what parts the object under study consists of, what its features are, and synthesis enabled us to connect the parts obtained during analysis into something whole. As a result of which there was a connection of knowledge obtained during the use of analysis into a unified system. 6. *Research and summarizing* (generalization) the experience of scientists aimed at analyzing the state of practice, identifying best practices.

3 RESULTS

The term of oil and gas industry, as emphasized in the literature, is a linguistic sign (a word or phrase combination) with a strict subject correlation, the core of which is the denotation. Doublets (alternatives), variants of the term oil and gas field geology differ in terms of expression, in terms of content serve as a sign of one professional concept and strive for unambiguity [6, p. 68].

And, since the term of oil and gas industry is, like the term in its general concept, a word or a combination of words in a special function of expressing a special concept, for this reason, the term undergoes the same lexical and semantic processes (synonymy, antonymy, polysemy, homonymy, as well as paronymy) as the word of the common language.

3.1. Synonymy of oil and gas terms in the German language

The problem of terminological synonymy is complicated and insufficiently researched by modern linguistic science. According to many scholars, up to now "there is no unified understanding" of this phenomenon [10, p. 50]. Traditionally, synonyms include "members of a thematic group that: a) belong to the same part of speech and b) are so close in meaning that their correct use in speech requires precise knowledge of semantic nuances and stylistic properties that distinguish them" [2, p. 407].

Synonymy is the coincidence of the basic meaning of lexical units, morphemes, word combinations, phraseological units. Synonyms express the same concept, differ in connotation or shades of meaning, and can be interchangeable in the text.

In the investigated German terminological lexis, the relations of synonymy among the terms of the oil industry, in our opinion, are sufficiently developed. We have identified 176 synonyms for 88 terminological units.

Synonymy, as it is stated in the literature, has a differential character in the common language and in the language for special purposes, for this reason, in the course of our research we have used the concept of absolute synonyms by S.V. Grinev's classification. Grinev, where synonyms are divided into certain variants depending on their form (*graphic variants of synonyms*), sound (*phonetic variants of synonyms*), word-formation (*word-formation variants of synonyms*), syntax (*syntactic variants of synonyms*), as well as *elliptical variants* (this also includes *composite and abbreviated variants*), *areal doublets*, quasi-synonyms (partial coincidence of meanings, conventionally used as equivalent), *textual synonyms*, *different conceptual synonyms* and situational synonyms [1, p.10].

Based on this classification, in our work we have analyzed the above mentioned types of synonymic relations among German oil industry terms.

Graphical variants are distinguished by their graphic, descriptive form. The differentiation of terms in writing may be due to both historical reasons (simultaneous coexistence of an obsolete and modern variant of the term), and territorial varieties, as well as the transition of the proper name into a nominative (in this case, the proper name loses its connection and is no longer an eponym).

On the material of the German language we have identified the following 7 (8%) terms belonging to *graphical variants*: Benzöl - Benzol (benzene), Benziner - Benzin (petrol), Brennstofföl - Heizungsöl (fuel oil), Paraffin - Parafin (paraffin), Schmieröl - Schmieröle (lubricating oil).

On the material of the analyzed language, one synonymic pair was recorded among the *phonetic and graphic variants*: Naphta - Naphthalin (naphtha, crude oil) (2%).

Word-formation variants. In synonyms of word-formation variants there is a difference in the morphemic structure of the term itself or one of its components.

On the material of the German language among the terms we have identified 7 synonymic pairs: Hydraulische Bremsflüssigkeit - Hydraulikbremsflüssigkeit (hydraulic brake fluid), Entflammbarkeit von Erdölprodukten - Entflammbarkeit von Erdölerzeugnissen (flammability of petroleum products), Schmierfett - Schmiermittel (lubrication), Verdampfung - Verdunstung (evaporation), Kühlleistung des Erdölerzeugnisses - Kühlleistung des Erdölprodukts (cooling capacity of petroleum products), Motorenöl - Maschinenöl (machine oil), Lösungsmittel - Zahlungsmittel (solvent).

Syntactic variants. The main difference here is the order of lexical units within a certain syntagma without violating the semantic component of the term.

The emergence of syntactic variants is usually conditioned either by lexicographical traditions or by the rules of language syntax. In addition, there may be cases of attributive component compression. For example, fuel for gas turbines - gas turbine fuel.

In German, as we have figured out, the following 3 (4%) terms belong to the *syntactic variants*: Flüssigbrennstoff - flüssiger Brennstoff (liquid fuel), Ölsammlung - Sammlung von Öl (oil gathering), Ölemulsion - Emulsion von Öl (oil emulsion).

Morphological and syntactic variants are variants in which one of the components acts as a complex term or a term-word combination obtained as a result of morphological and syntactic transformations.

Morphological and syntactic variants in the analysed language are divided into such subgroups as: *elliptical* (omission of one of the components of a multi-component term without breaking the semantic component of the term), *composite* (formed as a result of adding parts of words of a polylexemic terminological unit) and *abbreviated variants*.

On the material of the German language we identified *4 elliptical variants*: Rohmaterialbestände - Lagerbestand an Rohstoffen (raw material reserves), Dieselkraftstoff - Dieseltreibstoff (diesel fuel), Ölemulsion - Emulsion von Öl (oil emulsion), Rückstandsöl - Ölrückstände (residual oil).

In the course of the research we have identified 2 synonymy pairs belonging to composite variants in the German language terminological vocabulary: Schmieröl - Öl zum Schmieren (lubricating oil), Falllinie - Falllinie (throw-out line).

Abbreviatied synonymic variants in the German language terminology comprised 1 synonymic pair: FB - Flugzeugbenzin - Flugbenzin (aviation petrol).

In the German terminology under analysis, there are *areal doublets*, which are absolutely identical synonyms, but different in their form and territorial spread.

In the course of the study we discovered 4 *synonymic pairs of this type*: Volatilität von Erdölprodukten - Verdampfung (evaporability of oil products - evaporation), Flüssigkeitsaufnahme - Absorption (liquid absorption - absorption), Durchdringungsgrad - Penetrationsgrad (degree of penetration - degree of penetration), der Nexus der Grausamkeit - Verstrebung (knot of cruelty - stretching), Torsoformierung - Eishummen (torsoforming - ice-thrusting).

Textual synonyms are conventional synonyms that are used to replace a more extended terminological unit without disturbing the understanding.

In the German terminological system, *textual synonyms include* 1 synonymic pair: Ölemulsion - Öl-Emulsion (oil emulsion).

Different conceptual synonyms, as described in the literature, include aspect synonyms (consideration of a

certain denotation from the point of view of different theories of scientific schools, approaches and classifications, reflection of different aspects of the denotation) and *situational synonyms* (reflection of functional differences that are caused by different situations in which the denotation is involved).

On the material of the German language we recorded *2 aspect synonymic pairs*: Antifrostmittel - Kälteschutzmittel (antifreeze - antifreeze), Korrosionsschutzmittel - Antikorrosionsmittel (anti-corrosion - anti-corrosion).

S*ituational synonyms in the German terminological lexis* include 10 synonymic pairs: Klopfcharakteristik - Rückhaltecharakteristik (knock characteristic - retention characteristic), Erdölbitumen - Ölasphalt (petroleum bitumen - petroleum asphalt), Bitumen - Pechmineral (bitumen - mineral resin), Schmierfett - liniment - Salbung (grease - liniment - salbung), Kerosin - Brennöl (paraffin - fuel oil), Frostschutz - Kühlmittel kalt (antifreeze - refrigerant), Fotogen - Leuchtöl, Prozessöl - Kühlschmierstoffe, Destillationseigenschaften - fraktionierte Merkmal, Kühlgemisch – Schneidflüssigkeit (cooling mixture is a lubricant-cooling fluid).

Thus, in the course of our study, we found synonymy relations in 88 German terms from the total number of lexemes analyzed. For each terminological unit there are on average 2.6 synonyms.

We have come to the conclusion that a significant part of the German terminological lexicon is made up of different conceptual synonyms, which include aspectual synonyms (12 terms), areal doublets (11 terms), abbreviation (10 terms) and situational variants (10 terms). The least frequent among German terms are phonetic-graphic variants (1 term), quasi-synonyms (3 terms) and textual synonyms (3 terms). In the course of our study we also identified elliptical variants (9 terms) and composite variants (3 terms). We also recorded additional variants such as phonetic synonyms (7 terms) and graphic synonyms (7 terms).

3.2. Antonymy of oil and gas terms in the German language

In the terminological system, semantic relations are enriched by antonymy, which plays an important role in determining the place of concepts in the coordinate system of a particular field of knowledge.

Researchers note the wide spread of antonymy in terminology. V.P. Danilenko wrote that antonymy is peculiar to the lexicon of the language of science not less, but rather more than to the general literary lexicon. And there are reasons for this, which lie in the nature of scientific concepts [5, p. 79]. One of the conditions for the emergence of antonyms in term-systems A.A. Reformatsky called the presence of a qualitative feature in the meaning of the term: "Here the relation is purely semasiological, it is based on the opposition of concepts, this relation is not nominative. For the appearance of antonymy it is necessary to have a qualitative feature in the meaning of the word, which can gradiate and reach the opposite" [7, p. 101]. The reason for the functioning of antonyms in terminology lies in the binarity of the language of science, arising due to its extreme abstractness, the desire to reveal dialectical opposites of essential properties of phenomena, subjects [9, p. 165].

The study of the phenomenon of antonymy in the terminosystem of oil and gas sphere has shown that antonymy in a private terminosystem is a desirable rather than inevitable phenomenon, antonyms in the studied terminological system act as "one of the important factors of ordering the terminological system: classification of concepts, their systematisation - because they allow a specialist to reach the level of analysis of the concept essence, described phenomena and processes" [9, p. 170].

Antonymy - semantic opposition of lexical units. Antonyms are words with opposite meanings. From the point of view of structural characteristic, antonyms are usually formed with the help of such affixes as a-, anti-, without-, inter-, etc., for example, national - international, rational - irrational.

In the field of terminology antonyms fulfil the role of one of the regular principles of nomination of concepts with opposite meanings, for example, affixal - non-affixal, verse - prose, full - short.

In the German terminological system of the oil and gas industry, antonymy is based on the opposition of denotates with the purpose of their subsequent classification for the construction of a strict hierarchical system of a given field of knowledge and the terminological system serving it: "The binary principle is especially important in the language of technical disciplines, characterized by their concreteness, because it allows to present a logically structured system of concepts of a certain discipline" [9 p. 169].

In the German language oil and gas industry vocabulary system, antonyms are as widespread as synonyms. They are represented by the following types:

1. *According to the structure of the word root:*

a) *diverse-rooted* (lexical proper) antonyms, e.g., Rissöffnung - Risschließung (fracture opening - fracture closing), Brunnenerhaltung - Brunnenbetrieb (well maintenance - well operation), Druckabfall im Reservoir -

Druckanstieg im Reservoir, natürliche Risse - unnatürliche Risse. (natural cracking - not natural, artificial cracking).

б) *single*-root (lexico-grammatical, word-formation) antonyms; this word-forming type of antonymy is the basis for the formation of the most widespread structural antonyms in the German oil and gas industry terminosystem, formed by prefixal and/or prefixal-suffixal method with regular use of prefixes with opposite meanings, which is important in determining the semantic opposition of concepts and observing the principle of linguistic economy, e.g. homogene Verformung - inhomogene Verformung (homogeneous deformation - inhomogeneous deformation); unproduktiver Horizont - unproduktiver Horizont, unreines Gestein - reines Gestein (rock with impurities, contaminated - rock without impurities, uncontaminated),.

2. *According to the semantic structure*:

1. Gradual (contrast, opposite), e.g. vertikal Bohrloch - horizontal Bohrloch - abgelenktes Bohrloch (vertical - horizontal - inclined well), horizontale Filtrationsrichtung - vertikale Filtrationsrichtung (horizontal filtration direction - vertical filtration direction).

2. Non-gradial (contradictory, contradictory) antonyms, which are most often represented by terms with prefixes un-, in-, e.g. zementiertes Gestein - unzementiertes Gestein (cemented rock - uncemented rock), oberer Horizont - unterer Horizont (upper horizon - lower horizon), Korrosionseigenschaften - Unkorrosionseigenschaften (corrosion properties - anti-corrosion properties).

The most frequent lexico-grammatical antonyms are used in the studied terminological system, which due to the use of various prefixes and affixes create the necessary oppositions for expressing the opposite concept.

The conducted analysis of the functioning of antonymic terms in the oil and gas sector of the German language allows us to conclude that antonymy relations are developed in the oil and gas linguistic system. Basically, antonyms are represented by terms with prefixes un-, in-, as well as different word roots carrying opposite meanings.

Investigating antonyms in the field of oil and gas in German, we have not revealed antonyms-conversives that describe a subject, concept, action, property, etc. from the positions of two obligatory participants of the situation. It can be assumed that in technical terminology, where one term denotes one specific concept of the technical field of knowledge, two points of view on one phenomenon cannot exist at the same time.

3.3. Polysemy of oil and gas terms in the German language

Polysemy is linguistic polysemy, in other words, the presence of the same lexical unit of several related meanings, which arise as a result of the development and modification of the word original meaning [3, p.45].

Term polysemy is a special phenomenon that can significantly complicate the translation process. However, according to V.A. Tatarinov, the tendency of a term to semantic polysemy is dissipated by language practice: the rich system of polysemy of terminological units demonstrates a deep study of the branch concept, stable interrelations of general scientific terms and special terms [4, p.65].

The main sources of polysemy of terminological units, as described in the literature, are the following sources:

a) polysemousness of commonly used words (terms, which are derived from polysemous words of the common language, concretise their meaning within the context);

b) polysemousness based on metonymy (transfer of nomination of one subject to another, which is in associative relationship with the first, for example, the term drawing can mean both a forging operation - increasing the length of the workpiece by reducing the area of its cross-section, and the deformation index, which is equal to the ratio of the length of the workpiece after and before the operation).

On the basis of our research, we are inclined to believe that unlike the phenomenon of synonymy, polysemy in the studied terminosystem is insignificantly represented, but nevertheless lexical-semantic processes in the terminology of oil and gas in the German language are supplemented by polysemy. Polysemy is typical for both single-word and multi-component terms of the oil and gas industry.

For example,

- *Absorption*: 1) the absorption of a substance from a liquid or gas medium by the entire volume of another substance; 2) the transfer of one energy (kind) to another; 3) (geophysics) the transfer of seismic wave energy to thermal energy in the medium through which the wave passes; 4) (optics) the reduction in the intensity of light as it passes through an absorbing substance; 5) the ingress of surface water into the lithosphere;

- *Gletschervorstoß* (glacier] advances): 1) the advance (advancement) of a glacier; 2) a period of time during which the advance of a glacier occurs.

The analysis of the phenomenon of polysemy in the German oil and gas industry terminological system has allowed us to identify cases of *conceptual polysemy*, which is based on scientific interpretations of the same phenomenon in the language.

For example,

- *Naphthenöl* (naphthenic oil): 1) in Russia, classifications of oil with a predominant component of naphthenic hydrocarbons are accepted; 2) according to the US classification - oils with increased specific gravity values of both key fractions;

- *Arentilla* (arentilla): 1) fine sand (Spain); 2) black magnetic ironstone sand (Venezuela); 3) titanium-containing iron ore (Colombia); 4) matte mixed with slag, red ironstone (Chile); 5) tailings, wastes (Mexico).

The mentioned above examples reveal the presence of the phenomenon of *categorical polysemy* (polysemousness) in the studied terminological system, where the content of a concept is conditioned by the attributes of several logical categories, which include the terms: "process", "action", "property", "value" and others).

Categorical polysemousness, as we have learnt in the course of our research, developed on the basis of *metonymic transfer* of the name on the basis of contiguity (spatial, temporal, event, conceptual, etc.) between objects, processes, actions, phenomena and other categories.

In the term system of oil and gas in German the most characteristic are *metonymic transfers* based on the following relations:

- *a branch of knowledge - an academic discipline*: Erdöl- und Erdgasgeologie (oil and gas geology): 1) the branch of petroleum geology dealing with the detailed study of discovered and developed hydrocarbon deposits and fields in order to maximise the recovery of oil and gas from them; 2) an academic discipline;

- *the time of bedding - the depth of bedding*: Devon (Devonian): 1) Devon, Devonian period, the fourth geological period since the beginning of the Paleozoic Era lasting about 60 million years; 2) Devon, the Devonian system, the rock occurrence structure of the Devonian period;

- *a process - the result of this process*: Depression (depression): 1) sagging of the earth's crust, structural surfaces, and lowering of topography; 2) difference between formation pressure and bottom hole pressure in a working well;

- *genus - species*: seismische Zone (seismic area): 1) seismic area; 2) earthquake zone;

- *the whole - its part*: Öl- und Gasbecken (oil and gas [bearing] basin): 1) an area of permanent distribution of gas-condensate, gas or oil fields with large size or mineral reserves; 2) a depression composed of sedimentary rocks and expressed in the structure of the Earth's crust, the formation of which was accompanied by the formation of hydrocarbons, their accumulation in deposits and their preservation;

- *a primary process - secondary process*: Bohrlochmessung (log survey): 1) a diagram of a geophysical survey in a well, a log chart; 2) a log curve, a log;

- *a phenomenon having certain characteristics - a process resulting in the repetition of similar characteristics*: Aggregation (aggregation): 1) aggregate (a cluster of rocks); 2) cluster, accumulation; 3) sticking together;

- *a natural process – an artificial process* (based on the relatedness of the action): Desintegration (disintegration): 1) disintegration, destruction, disintegration; 2) fragmentation, separation into component parts;

- *a process of narrowing or broadening in meaning*: Wacke (vacca): 1) a dense, dark-coloured rock formed by the breakdown of basic calcareous rocks; 2) an unsorted sediment or contaminated sandstone containing a considerable amount of clay matter (*narrowing of meaning*);

Vulkanismus (volcanic activity): 1) a set of processes and phenomena associated with a volcano and accompanying its activity; 2) processes related to what happens to magma at depth or on the Earth's surface, as well as space phenomena (*extension of meaning*).

As a result of the analysis of the phenomenon of polysemy in the German terminological system of the oil and gas industry, we can conclude that terminological polysemy in the studied terminological system is the result of various metonymic transfers and is characteristic of terms of different component composition (one-word terms and terms-word combinations).

3.4. Homonymy of oil and gas terms in the German language

The phenomenon of homonymy is also peculiar to terminological systems, as well as to the general literary language.

Homonymy is a sound and / or graphic coincidence of lexical units, the meanings of which are not related to each other.

There are various classifications of homonyms, among which the most famous are the classifications of I.V. Arnold, T.I. Vendina, A.I. Smirnitsky, Walter Skeet and others.

According to the classification of Walter Skeet, who classified homonyms according to their spelling and form of sound, homonyms are divided into three groups:

- *absolute* (perfect) homonyms, these words are identical in sounds and spelling, e.g. das Gericht (court) - das Gericht (dish); die Schicht - 1) layer, 2) working shift; die Mutter - 1) mother, 2) nut; die Mine - 1) rod, slate, 2) mine, minefield, 3) mine (ammunition); der Boden - 1) soil, ground, 2) earth, 3) attic, 4) bottom, bottom; das Becken - 1) pelvis (anatomy), 2) basin (plumbing), 3) river basin, reservoir; das Instrument - 1) tool, implement, 2) instrument; der Kamm - 1) comb, comb, 2) mountain range, 3) cockerel comb; die Kette - 1) chain, 2) fetters, chains, 3) mountain range; die Grube - 1) pit, excavation, quarry, 2) mine, mine; die Kurve - 1) curve, 2) graph, 3) bend, break 4) curve; die Probe - 1) test, check, 2) sample, analysis, 3) experiment, experience; der Löffel - 1) spoon (cutlery), 2) scoop, 3) excavator bucket, 4) hare's ear; die Ebene - 1) plain, steppe, 2) level, 3) computer board;

- *homographs*, the words are similar in spelling but different in the pronunciation, e.g. Montage (Mondays) - Montage (installation);

- homophones, the words which are similar in the pronunciation but different in spelling, e.g., Wahl (choice) - Wal (whale).

A slightly different classification was proposed by A.I. Smirnitsky, he added another criterion to Walter Skeet's classification called grammatical meaning.

The group of perfect homonyms has been divided by linguists into two types:

- *perfect homonyms with coincidence in sound, in spelling and in grammatical form*, e.g. der Grund (cause) - der Grund (bottom);

- *homonyms* (morphological (grammatical) homonyms), i.e. words of different parts of speech, any forms of which coincide in sound and spelling: sting, burn (noun and vowel), as if (conjunction, particle, interjection).

The analysis of the relevant literature has shown that researchers agree that the phenomenon of terminological homonymy does not disrupt the process of professional communication, because in one terminosystem homonymic terms function very rarely: the presence of homonymic terms is possible only when they are elements of different areas of knowledge [8, p. 28], the problem of polysemy and homonymy outside of the branch terminology loses all meaning, since identical-sounding terms in one branch practically do not occur [11, p. 229].

The presence of homonyms is also characteristic for the German language oil and gas terminological system. In the examined vocabulary system, as well as in the vocabulary systems of other fields of knowledge, the processes of terminologicalisation of words of the general literary language often lead to the emergence of homonyms.

The processes of encoding professional information in terminological nomination occur as a result of metaphorical (less often metonymic) transfer, as a result of which the word of general literary language, having passed a complex path of transformation of everyday knowledge into scientific knowledge, acquires a terminological meaning and is included in the system of concepts of a particular field of knowledge [6, p. 98].

The metaphorical nature of human cognition of reality explains a significant number of such terms in the German oil and gas terminological system.

For example,

- *Alteration*: 1) (common-literary term.) Alteration, remodelling, change; 2) (Geological) The transformation of minerals in a rock into secondary minerals, if this transformation is not associated with weathering processes;

- *Anpassung* (Adjustment): 1) (general lit.) Adjustment; setting; adjustment; 2) (oil and gas field geology) Adjustment of the structural elements of an area to the rearrangement of the geometry of lithospheric plate

movement.

- *Horizont* (horizon): 1) (common-literary term.) The visible boundary between the sky and the earth or water surface; 2) (oil and gas field geology) A horizontal plane intersecting a mineral deposit at some level;

- *Abutment*: 1) (common-literary term.) A boundary; 2) (oil and gas field geology.) A target serving as a support for a roof.

In the field of terminology, as it turned out, interdisciplinary terminological homonymy dominates. According to A.A. Reformatsky, one and the same term can be included in different terminologies of a given language, which represents interscientific terminological homonymy. [7, c.10].

In this regard, oil and gas geology is no exception, which as a field of scientific knowledge is closely related to many disciplines of the oil and gas industry: geophysics, pipeline transport, oil and gas drilling, geology and many others. Due to the scientific closeness of interests, interbranch homonymy arises, where one term (its sound shell) is used in different sciences, but denotes different concepts.

For example,

- *Kompensation* (compensation): 1) (oil and gas field geology) The balancing of the result of tectonic movements by processes of denudation and accumulation; 2) (crystalopt., geomorph) The moment when the difference of ray travel in a crystal is balanced by the difference of travel in a compensator at inverse parallelism.

- *Ablation* (ablation): 1) (oil and gas field geology) Destruction, erosion, washing away, obliteration of rock as a result of erosion or weathering; 2) (physical) The process of removal of matter from the surface of a solid body under the influence of radiation and a stream of hot gas.

- *Marsch* (marsh): 1) (oil and gas field geology) A category of wetland periodically inundated by the waters of a nearby body of water; 2) (geogr.) Swampy fertile soil, coastal lowland (formed by sediments); 3) (mus.) Musical genre.

- Öle (oil): 1) (oil and gas field geology) The higher distillate fractions of petroleum; 2) (bituminology, chemistry, petroleum technol.) The fraction of bitumen or bitumoids that is soluble in petroleum ether and not adsorbed from this solution by silica gel and other adsorbents).

One of the features of interdisciplinary homonyms is their presence in different fields of scientific knowledge. Oil and gas geology is directly related to various scientific disciplines of oil and gas industry, such as bitumology, geomorphology, hydrogeology and others. In this regard, the terminological system of oil and gas includes terms of these geological disciplines. It follows that in the terminological system of oil and gas geology it is possible to distinguish within-branch homonymy.

For example,

- *Lakkolith* (laccolith): 1) (oil and gas field geology) A mushroom (bun-shaped) intrusion in which both bottom and roof agree with the layering of the host rocks; 2) (geomorphic oil and gas field geology) An upland formed on the site of a laccolith that has been dissected out.;

- *Lava* (lava): 1) (geological., oil and gas field geology) A red-hot liquid or very viscous mass flowing to the earth's surface during volcanic eruptions; 2) (oil and gas field geology) A continuous long-length (from 25-30 to 200 meters or more) clearance face, one of the types of clearance faces used in the development of reservoir mineral deposits;

- *Greisenalter*:1) (geological.) Senility stage, old age stage (in landform or river development); 2) (oil and gas field geology.) The stage of completion of the erosion cycle;

- *Einflußbereich* (область влияния): 1) (oil and gas field geology.) The area in the rock mass surrounding an excavation in which stresses are redistributed due to the excavation, 2) (oil and gas field geology., hydrogeol.) The area of influence of an intake on an aquifer.

The peculiarity of intra-branch homonyms is the simultaneous functioning of formally identical lexemes manifesting different concepts in the German oil and gas terminological system. However, their presence does not disrupt communication, as possible difficulties in understanding a special message are removed by different contexts.

In the German language vocabulary system of the oil and gas sphere no cases related to homonymy (homophones, homographs, homoforms) have been identified.

3.5. Paronymy of oil and gas terms in the German language

Paronymy is a phenomenon connected with the presence in a language of words with the same root, close in sound but different in meaning or shades of meaning, in other words, it is a mixture of lexical units similar in formal structure or partially coinciding in morphemic composition. We can say that paronymy is an intermediate phenomenon between homonymy (identity of sound form) and synonymy (similarity of meaning).

Paronyms are words that are partially similar in form but differ in meaning and usage.

When studying the phenomenon of paronymy, the question arises as to its relation to other lexical categories - synonyms, antonyms, homonyms. In literature, paronyms can be considered as one of the varieties of homonyms, being called "pseudonyms", indicating only formal similarity. However, the phenomenon of homonymy implies an absolute coincidence of the sound form of different lexical units, while the paronymic forms have differences in both sound form and spelling. When distinguishing the phenomena of synonymy and paronymy, it is necessary to keep in mind that the differences in the meaning of paronyms, as a rule, are quite significant and the replacement of one paronym by another is impossible.

Paronyms can be classified according to the following types:

1) *letter paronyms* - they are distinguished by several letters, so that they are at a small distance within the word, as a rule belong to the same part of speech, refer to the same grammatical meaning, for example, both words are participles, coincidence of gender in both singular and plural;

2) *sound paronyms* - they are located at a small distance in the space of the phonological record;

3) *morphemic paronyms* – they have the same base (root) belong to the same part of speech, differ only in prefixes and suffixes, e.g. (schwingen - to swing) Schwang - Schwung, (trinken - to drink) Trank - Trunk;

4) *Non-derivative paronyms* - those paronyms that lack affixes or other obvious signs of category change, e.g. anfangs - anfänglich (originally).

The following homonyms can be given as examples of homonyms in German:

1*) Bogen* (pipeline branch, arc, bend, arch) – *Boden* (soil, ground, bottom, floor);

2) *Schlamm* (1. sludge, tina, mud, 2. sediment, mud, 3. drill cuttings, pulp) – *Schleim* (1. mucus, phlegm, 2. broth) – *Schleimer* (flatterer, suck-up, slippery person);

3) *schlammig* (slimy, tinny, viscous) – *schleimig* (1. slimy, slimy, slimy, slippery, 2. flattering, slippery, unpleasant) – *schlampig* (sloppy, careless, shoddy);

4) *Faulheit* (laziness) – *Fäulnis* (putrefaction, rottenness, putrefaction, decay);

5) *Rost* (1. rust, 2. grate (for roasting)) – *Röste* (1. roasting grate 2. Roast/safety valve).

In the terminological system of oil and gas in German we have identified 1 case of affixal paronymy: *Benzin* –gasoline (colorless liquid used as fuel for engines and dissolving fats, oils, having a characteristic odor) – *Bensol* – benzene (colorless liquid formed during coking of coal, and during chemical processing to produce aniline, phenol, styrene, etc.).

4 CONCLUSIONS

As a lead-up to this study, when considering the issues related to the study and analysis of the semantic features of oil and gas terms in the German language, we have come to the following conclusions:

1. The same lexical and semantic processes (synonymy, antonymy, polysemy, homonymy and paronymy) occur with oil and gas industry terms in German as with words of the common language.

2. Terms in the field of oil and gas in the German language are formed according to the existing models of word formation on the basis of terminology of lexical units of the common language, their semantic transformation (narrowing or broadening of meanings), reinterpretation of the meaning of words, borrowing or calcification of terminological units of the language.

3. Based on the findings of the analysis of semantic features of terms in the German oil industry terminology, it was found that semantic relations within the studied terminological system are quite developed. The presence of phenomena of synonymy, antonymy, polysemy, homonymy and paronymy was revealed. However, the most developed semantic relations are synonymic and antonymic.

4. In the course of this study, various variants of synonyms, namely graphic, phonetic, word-formation,

syntactic, elliptical, abbreviation, areal doublets, quasi-synonyms, textual, difference-understanding, situational, were identified in the vocabulary system of oil and gas geology in German.

5. In the analyzed term system of oil and gas sphere in the German language the phenomenon of antonymy is widely developed, which is generally peculiar to the terminological lexicon. The antonyms in the German oil and gas terminological system were identified according to the following steps: 1) by root structure: a) diverse-rooted; b) single-rooted; 2) by semantic structure: a) gradational; b) non-gradational. The most frequently used are lexico-grammatical antonyms, which, through the use of various prefixes and affixes, create the opposition necessary to express the opposite concept. No antonyms-conversions in the field of oil and gas in German have been identified.

6. The German terminological lexis under study is characterized by cases of polysemy with complex motivation, areal polysemy, attributive component polysemy and multi-temporal polysemy. Polysemy in this area is the result of various metonymic transfers and is characteristic of terms of different component composition (one-word terms and terms-word combinations).

7. The German vocabulary of oil and gas terminology is also characterized by the presence of homonyms. Intra-branch homonymy in the studied terminological system is the result of terminologicalisation of words of the general literary language (by metaphorisation or metonymic transfer). Inter-branch homonymy is based on the scientific proximity of interests of many disciplines of the oil and gas industry and is characterized by the simultaneous functioning in the studied terminology system of formally identical lexemes manifesting different concepts. Intersectoral homonyms are used in different contexts, thanks to which their presence does not disrupt professional communication. In the German oil and gas terminology no cases of homonymy (homophones, homographs, homoforms) related to homonymy have been revealed.

8. In the terminological system of oil and gas in German, one case of affixal paronymy has been identified.

Thus, this research leads to the conclusion that the terminological system of the oil industry in the German language is a relatively young system and based on the system of general language word-formation and is open for further development and replenishment, as it possesses the necessary word-formation and semantic means.

REFERENCE LIST

1. Antonova M.V. Functional spheres of terms // Scientific and Technical Terminology, 1988. Vol.11, - P. 9-13.
2. Akhmanova O.S. Dictionary of linguistic terms. - Moscow: Soviet Encyclopaedia, 1966. - 608 p.
3. Vinogradov V.S. Translation: general and lexical issues / V.S. Vinogradov. - Moscow: Book House, 2004. - 223 p.
4. Gerd, A.S. Problems of formation and unification of scientific terminology // Issues of linguistics. - 1979. - P. 83-88.
5. Danilenko V.P. Russian terminology. Experience of linguistic description. - Moscow: Nauka, Academy of Sciences of the USSR, 1977. - 246 c.
6. Kukasova D.G. Structural and semantic analysis of terms of oil and gas field geology in the Russian and English languages. Dissertation for the degree of Candidate of Philological Sciences. - Ufa: BashSU, 2019. - 267 p.
7. Reformatsky A.A. Introduction to linguistics. - Moscow: Aspect-Press, 2008. - 536 p.
8. Slyusaryova N.A. About types of terms (on the example of grammar) // Problems of linguistics. - №3. - 1983. - P.21-29.
9. Suleimanova A.K. Terminosystem of oil business in the discourse of a specialist: monograph. - Ufa: BashSU, 2005. - 268 p.
10. Superanskaya A.V., Podolskaya N.V., Vasilieva N.V. General Terminology: Questions of theory. - MOSCOW: LIBROCOM, 2012. - 248 p.
11. Tatarinov V.A. History of Russian terminology: in 3 volumes. - T.1: Theory of the term: History and a current status. - Moscow: Moscow Lyceum, 1996. - 311 p.