European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2021.12.58

LATIP 2021
International Conference on Language and Technology in the Interdisciplinary Paradigm

STRUCTURAL TYPES OF TERMS IN THE SUBJECT AREA OF MARITIME ENGINEERING

Igor Olegovich Smirnov (a)*, Bozhena Borisovna Dokuto (b),
Tatyana Dmitrievna Kurshakova (c)
*Corresponding author

(a) Admiral Ushakov Maritime State University, 93 Lenin Avenue, Novorossiysk, 353918, Russia, Zeherd@yandex.ru
(b) Novorossiysk Branch of Pyatigorsk State University, 47 B Kunikova Street, Novorossiysk, 353922, Russia, bojena20009@rambler.ru
(c) Admiral Ushakov Maritime State University, 93 Lenin Avenue, Novorossiysk, 353918, Russia, kurshakova-83@mail.ru

Abstract

The requirements for the level of foreign language training of a marine specialist are defined by the International Convention on the Training and Certification of Seafarers and Watchkeeping of 1978 (STCW-78). This document emphasizes particular importance of seafarers' knowledge of maritime terms. The present research contributes to the resolution of professional communication linguistic support problems within the framework of the marine engineer's activities. Moreover, it ensures the safety of maritime transport by enabling the latter to develop the terminological component of the foreign-language competence. The purpose of the research presented in this article is to identify the features of the formal structure of the English maritime engineering term system in oral professional communication and technical documentation. To achieve this goal, we considered the concept of the maritime engineering term and the principles of its differentiation from the more general concept of "maritime term". Maritime engineering terms were classified thematically and structurally. Structural models obtained in this way were described accordingly. The theoretical and practical significance of the presented work is conditioned by the fact that the study represents itself an attempt to comprehensively study modern maritime engineering terminology in the context of its linguistic representation in dictionaries and glossaries as well as its functioning in oral professional communication.

Keywords: Maritime term, maritime engineering, professionalcommunication, structural models, terminology

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

Being specific in nature terms of the maritime area represents a special sector of vocabulary characterized by a high degree of conceptual accuracy. Considering maritime terminology in cognitive, structural-semantic and comparative contexts allows us to define the maritime sublanguage as the area of maximum concentration of maritime terms (Chernyshova, 2010), the systematization and standardization of which makes it possible to adequately understand and master the international maritime English language.

1.1. Topicality

This study interprets the maritime terminology sphere of functioning following Yarovaya's approach (Favorov, 2002) as the usage of maritime terms in technical documentation and oral professional communication. In these forms, the term does not appear in an ideal form, which makes this kind of research very relevant, i.e. achieving the goal of this research involves analyzing how terms of ship engineering recorded in specialized dictionaries are used in professional communication (its written and oral varieties).

The presence of a single term system is of particular importance in the professional maritime communication of mixed crews members, since even a minor misunderstanding caused by the lack of foreign language competence can lead to an accident. This demonstrates the important role that communication plays in the work of seafarers, especially in matters related to interaction with other vessels at sea. Communication between the crewmembers of each individual vessel is also of primary importance in ensuring the safety of navigation. Their communication skills often determine not only the safety of the ship and cargo, but also the preservation of the environment and human lives.

1.2. The research material

The research material of the present study involved texts of technical documentation accompanying the activities of the ship's engineer, as well as terminological units selected and recorded in the process of oral professional communication carried out in the course of the second engineer professional activity. Six hundred of such terminological units selected by the continuous sampling method were compared with the dictionary articles of the "The Modern English-Russian Maritime Technical Dictionary" by Lysenko (2005), "The Russian - English and English-Russian Technical and Business Dictionary of the Ship Engineer" by Voznitsky (2004), "The Russian-English Dictionary for Ship Engineers" by Voitenko (1997), "The Compound English-Russian Maritime & Naval Dictionary" by Favorov (2002) "The Dictionary of Terms of Mechanical Engineering" by Atkins (2013), reference books and phrasebooks for ship engineers and motormen. The presence of such units in lexicographic sources served as confirmation of their terminological status.

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

2. Problem Statement

Hypothetically, the system of maritime engineering terms can be characterized by structural word-forming specificity which forms the basis for their interpretation done by a maritime specialist in the process of communication. Moreover, the cognitive approach to maritime terms involves their studying not only in the sphere of fixation (in dictionaries), but also in the sphere of their functioning, where their word-forming specificity can be altered.

3. Research Questions

The study aims at solving the following tasks:

- Identifying the content structure of maritime engineering terminological system in the form of thematical groups;
- Systematizing of maritime engineering terminological system by means of the word-formation analysis;
- Characterizing the morphological and syntactical methods of word formation in the terminological system of marine engineering.

4. Purpose of the Study

The study aims at revealing the specificity of word formation mechanism typical of the maritime engineering terminology.

5. Research Methods

The paper uses methods of observation, description, word-formation and comparative analysis of language units, as well as methods of their generalization and systematization.

6. Findings

6.1. Thematic groups (TG) of the maritime engineering terminological system

The subjective area of ship engineering is as specific as the conditions of their professional communication and cognitive activity. As the analysis showed, these differences are reflected in the semantic organization of the term system of ship engineering. This fact has determined the possibility to distinguish two main thematic groups (TG) of the MET system. The thematic group in this study contains lexical units based on the relationship with denotations (objects and phenomena of real reality) and is defined as a subject-logical category that reflects the structure of the professional picture of the world and its fragments. Different types of connections can be observed within a thematic group, both paradigmatic and syntagmatic. In this study, thematic groups include words or word combinations connected by means of subordination. In their composition, you can find various lexical and semantic groups (LSG).

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

6.2. The syntactical method of word formation in the terminological system of maritime engineering

The selected terminological units were subjected to word-formation analysis in order to identify their structural specificity. At the first stage, they were divided into groups according to the number of components. As the statistical analysis showed, the multicomponent maritime engineering terms (MET) made up 78 % of the sample and only 22 % of the analyzed units consist of a single word.

This fact led to the conclusion that the most productive way of term formation within the framework of the studied term system turned out to be the syntactical method, which allows you to clarify the name of a technical term, referring it through peripheral components to a situation correlated with the professional activity of a ship engineer.

The ratio of multicomponent structures is shown in Figure 1.

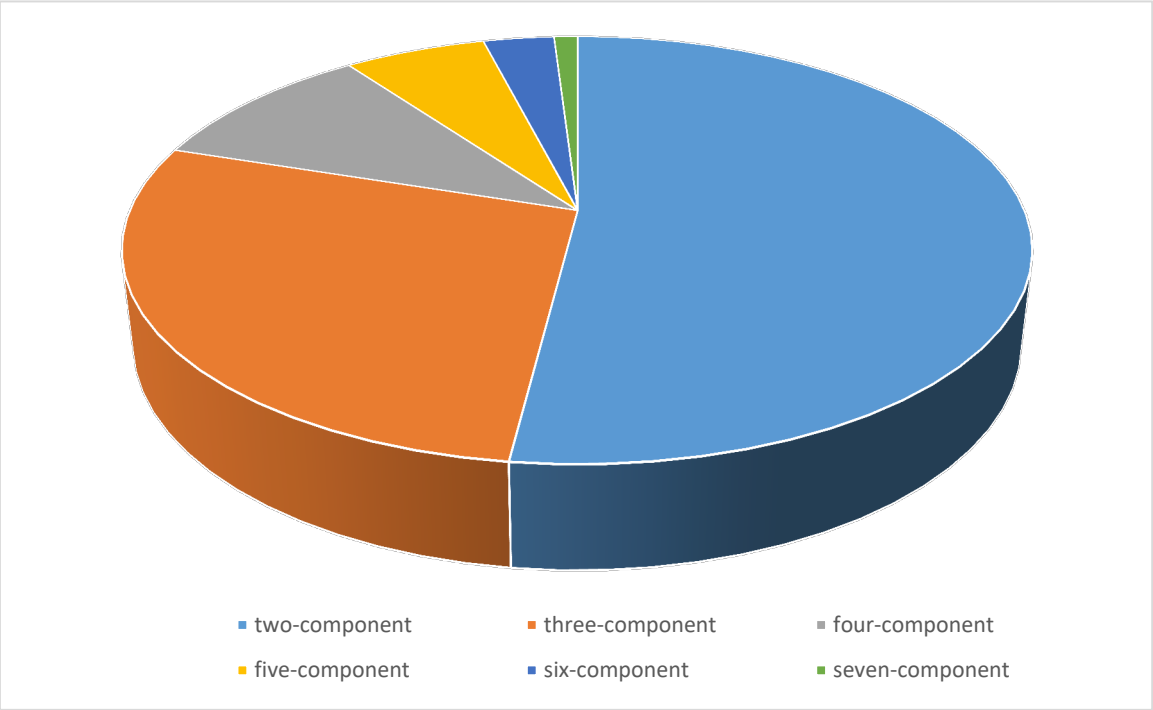

Figure 1. Structural types of marine engineering multicomponent terms

The diagram shows that among multi-component terms of marine engineering are represented mostly by two-component structures (52 %), for example, *piston rings, tank manhole, slide bearing, etc.* Among the two-component terms, we registered literal terms with the first component represented by means of a letter (*U-tube*, *F spanner, V-type)*.

28% of the multi-component marine engineering terms consist of three components, for example, *pneumatic impact wrench, deflection dial gauge, high temperature gasket.* In addition, one-fifth of multicomponent structures consists of four, five, six and even 7 words, for example:

Fuel tank usage (3)

Auxiliary boiler shut down (4)

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Auxiliary boiler emergency operation mode (5)
Forward stern tube lub oil pump (6)
Starboard vacuum condenser cooling sea water pump (7)

Term-phrases are created by adding to the main term element, denoting a generic concept, concretizing features in order to get hyponyms that have a direct connection with the original one. Such terms are actually brief definitions that bring this concept under a general meaning and at the same time indicate its specific feature. Thus, peculiar terminological nests are formed within the MET system (Yarovaya, 2005), covering numerous varieties of the designated phenomenon. For example, the English term "valve", defined in technical dictionaries as "a doorlike part of a pipe or tube which opens and shuts so as to control the flow of liquid, air, gas, etc.", is used as the basis for a number of terms that specify the nature and characteristics of the valve:

globe valve
relief valve –
butterfly valve –
straight valve –
suction valve -

The analysis of the parts of speech composition for multicomponent structures revealed the prevalence of nouns in all multicomponent terms with the exception of four-component terms. 72% of two-component, 38% of three-component, 25% of four-component and 25% of five-component terms consist exclusively of nouns, for example:

scale formation,
diesel oil tank
funnel emergency escape hatch
starboard boiler water circulation pump

The most productive syntactic models of MET are presented in the table below in the descending order from the most frequent to the least frequent (Table 1):

Table 1. Syntactic models of multicomponent MET

two-component structures	three-component structures	four-component structures	five-component structures	six-component structures	seven-component structures
N+N	N+N+N	Adj.+N+N+N	N+N+N+N+N	N+N+N+N+N+N	N+N+N+ Pr.Part.+N+N+N
Adj+N	ADJ+N+N	N+N+N+N	Adj.+N+N+ Conj.+N	Adj.+N+ Pr.Part. +N+N+N	
N+Gerund	PastPart+N+N	Pres.Part+N+N+N	Adj.+N+N+ Pr.Part.+N		
Pres.Part.+	N+Pres.Part.+	Pres.Part.+N+N+	Adj.+N+N+N+G		

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

N	N	N	
V+N	N+N+G	N+Conj.+N+N	Adj.+N+N+N+G
	Num.+N+N	N+Adj.+N+N	N+Adj.+N+N+N
			N+N+Pr.Part.+N+N
			Adj.+N+Adj.+N+N

The data presented in the table shows that the second element, most frequent in multicomponent terms, is the adjective; participles, gerunds and conjunctions are less frequent as the secondary components of multicomponent structures.

6.3. The morphological method of word formation in the terminological system of marine engineering

The single-compound terms that made up the minority of TSSM terms were analyzed according to the word-formation feature (Figure 2).

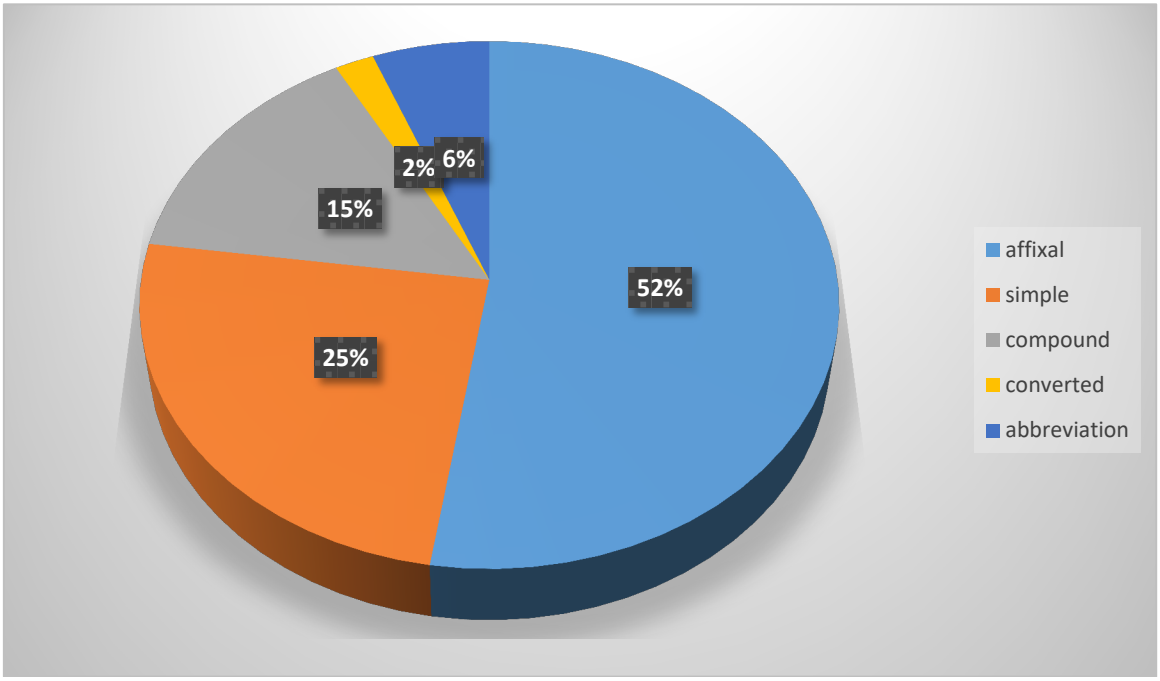

Figure 2. Word-forming types of single-component terms of MET

Most of them (53%) are formed by affixation (clearance, alternator, deflection, residual). The suffix models of MET include the following:

N + -ing,

N + -age,

N + -er/-or,

N + -ency,

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

N + -al,

N +-tion,

N + -ance,

N+ment,

V+ance, for example, surging, clearance, sounding

Prefix models within the system of MET do not appear to be frequent. They are formed mainly according to the models presented below.

re + Adj. (restart)

de + N (deflect)

over + N (overheat)

under + N (V) (undercut)

dis + V (disengage)

Mixed type models of the prefix-suffix kind are also represented in the MET sample affixation (*deflection, evaporator*).

In addition to morphological methods of term formation, in the field MET, conversion (the transition of one part of speech to another) should also be noted. Non-derivative terms (*wrench, diesel, sump, bilge*) are approximately twice less common (25%) among the single-component MET. 15 % of the single-part terms of ME are formed by combining word roots (*handwheel, breakdown, crankshaft, turbocharger, flywheel, crosshead, etc*.).

In addition, the sample contains terms formed from structural models created as a result of abbreviation (6%): *SWL (safe working load), MSBD (Main switchboard), PMS (Planned maintenance system), IGS (Inert gas system), IGG (Inert gas generator).*

6.4. MET structural differences in oral communication and written texts

It should be noted that MET in oral communication and technical documentation differ in their structure. The conditions of oral professional communication determine the tendency to compress the structural model of the term. As a result, in oral communication, one-component and two-component terms are used in approximately equal proportions. Structures consisting of three or more units are reduced by eliminating or contracting elements that carry peripheral semes clarifying or concretizing the nuclear seme. Thus, in oral communication, cross-hyponyms are more often used. They consist of either the nuclear element "*muffs*" instead of "*ear muffs*" (*defenders - protective headphones*), or nuclear with the nearest periphery – *"bob" (tape sinker*) instead of *"measuring tape bob" (measuring tape sinker*).

As the experience of practical work as a maritime engineer shows, the nuclear component of meaning is implied and recognized due not only to the linguistic, but also to the extralinguistic context. For example, *the torque wrench (torque wrench)* in oral communication is replaced with "*torque*", which is the concretizing element of the "*wrench*" core.

In the ship engineer's oral speech, the peripheral (concretizing) components of the terms are often omitted. Such omission of the nuclear components of the terms is made possible by the context. It allows you to restore the implied parts of the meaning to the participants of the communication and, in fact,

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

makes it possible in this way. The full use of the term at the beginning of the dialogue allows you to further omit the peripheral component, less often the nuclear ones.

Thus, the prevalence of multicomponent terms in the texts of technical documentation reflects the process of concretization of the concepts of ship engineering, and the tendency to reduce the number of MET components used in oral communication indicates the manifestation of the principle of language economy. At the same time, in written samples of oral professional communication, a multicomponent term is often replaced with a single-component unit that carries a peripheral seme.

7. Conclusion

Structurally, MET are mainly multicomponent. Two-component structures are most often registered among them. Terms-phrases are created by adding concretizing features to the main term denoting the generic concept. The analysis of multicomponent structures part-of-speech composition revealed the prevalence of nouns in all multicomponent terms with the exception of four-component ones. Single-compound terms, which made up the minority of ME terms, were analyzed according to their word-formation patterns. Most of them proved to be formed by means of affixation. In addition to morphological methods of term formation, in the field of MET, conversion, non-derivative (simple) terms, compound terms, as well as abbreviations should also be noted.

In oral communication, MET tend to be compressed. As a result, in oral communication, one-component and two-component terms are used in approximately equal proportions. Structures consisting of three or more units are reduced by omitting or contracting elements that carry peripheral semes that specify the nuclear seme. However, in oral communication, there is also a reverse trend, when a multicomponent term is replaced by a single-component unit that carries a peripheral seme.

A comprehensive linguistic analysis of the English term system of ship engineering as an integral system has revealed the specifics of its formal (structural) and functional organization. We have identified the differences in the functioning of the MET units in texts of technical documentation and oral professional communication.

The results of the study indicate that the development of maritime engineering as one of the applied technical spheres has led to the formation of an independent term system in accordance with the concept structure of this branch. The elements of this terminological system can be described in terms of paradigmatic hierarchical relationships. This system has close links with other maritime industry term systems and general engineering term system. The specificity of this term system is manifested in its structural organization. In its center, there are concepts that denote vessel devices and ship engineer and motormen's professional activities. Within each group, one can distinguish lexical and grammatical groupings of names united by a generic seme. These groups, in their turn, can be divided into subgroups based on smaller unifying features

The uniqueness of the MET system is determined by the specifics of units' semantic and word-forming organization of its constituent. Most of the MET are multicomponent structures consisting of a nuclear element and a number of peripherals.

https://doi.org/10.15405/epsbs.2021.12.58
Corresponding Author: Igor Olegovich Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

References

Atkins, T. (2013). *A Dictionary of Mechanical Engineering*. Oxford University Press.

Chernyshova, L. A. (2010). *Branch Terminology in the Area of Anthropocentric Paradigm*: Monograph. MSRU.

Favorov, V. P. (2002). *Compound English-Russian Maritime Dictionary*. Novalis.

Lysenko, V. A. (2005). *Modern English-Russian Maritime Technical Dictionary*. Ltd «IP LOGOS»

Voitenko, I. G. (1997). *Russian-English Dictionary for Ship's Engineers*. «Negotsiant» Publishing House.

Voznitsky, I. V. (2004). *Russian-English and English-Russian Technical and Business Dictionary for Ship's Engineer*. «Morkniga» Publishing House.

Yarovaya, L. (2005). *Russian Marine Terminology of Navigation*: Monograph. Odessa. Fenix.