

## The Characteristics, Etymology and Translation of Petroleum Engineering Terms

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**Keywords:** Translation; Etymology; Term; Petroleum Engineering

**Abstract:** Translation of terms in petroleum engineering requires high accuracy. Different from other scientific terms, the petroleum engineering ones are mostly generated in daily life. To achieve accurate translation, it is necessary to understand the etymology. This paper explores the methods of the translation of petroleum engineering terms by studying their etymology, aiming at guiding translation practice.

### Introduction

Nowadays, the status of the oil industry in world economy cannot be underestimated, and the ups and downs of oil prices have a significant impact on the world's political and economic landscape. On one hand, with the deepening of economic globalization, the cooperation between the countries in the oil field is getting closer and closer and the demand for professional translators is increasing. On the other hand, the rapid development of petroleum technology has led to the emergence of new words in petroleum engineering English. Thus it has brought a lot of difficulties to mastery of terms. However, the study of etymology can undoubtedly guide the translation of petroleum engineering terms and a large number of translation practices have shown that mastery of etymology can greatly reduce mistranslation.

“Etymology”, derived from “etumologia” in Greek, originally means "the study of, a speaking of true sense, original meaning", that is, "study or narrative real situation". It can be seen that etymology is the study of the origins and historical development of words. As the says going, “the methods used may vary, but the principle is the same”, only by mastering the etymology of words can we better cope with the translation of new words.

Zhang and Wang (2007) studies the influence of the naming methods and principles of scientific term with regard to the standardization and internationalization of scientific term, and proposed to adjust the traditional translation strategies of technical term by transliteration and direct use of original English words. And making full use of formation and expression habits of English. Only in this way can our country's local scientific and technical terms become the international vocabulary. This article, from a national perspective, points out the impact of the naming of scientific terms.

Li and Mu (2012) studies the application of language transfer theory in the translation of scientific term from English to Chinese. This article combines the theory of language transfer with the translation of scientific term to provide a great guiding role for translation practice.

Wei (2014) starts from the characteristics and sources of English scientific term, and analyzed the translation methods of scientific term.

In general, there are few studies related to the characteristics and etymology of English petroleum engineering terms in China. This paper focuses on the etymology of English petroleum engineering term, and summarizes the corresponding translation methods according to the different kinds of etymology and the characteristics of petroleum engineering term. The purpose is to help English learners understand the composition and translation characteristics of English petroleum

terms, and provide reference for professional petroleum translators.

### Characteristics of petroleum engineering terms

Different terms have different lexical features. Petroleum engineering term belongs to scientific English vocabulary, and its characteristics are mainly monosemy, systematicness and conciseness.

Monosemy means “one word with only one meaning”, which means that in the field of petroleum engineering, one term can only express one concept. It is bidirectional. That is to say, one concept can only be expressed by one term.

Ambiguity and polysemy is forbidden. For example, to explain the grade of oil can only use “grade of oil”, “rate of oil” is incorrect.

Systematicness means that petroleum engineering term is not isolated within the petroleum engineering discipline, but is closely related to other parts and is in a clear hierarchy. For example:

helical	luó xuán xíng dé; luó xiàn
helical coil	luó xuán pán guǎn
helical curve	luó xuán xiàn
helical gear	luó xuán chǐ lún

Conciseness means that petroleum engineering terms should be easy to understand after translation. The translation of acronym should also be concise, and try to avoid interpreting the full name in an explanatory manner. For example:

BOP: Blow-out preventer    jǐng pēn fáng zhǐ qì    vs . fáng pēn qì

### Etymology of petroleum engineering terms

According to He and Zhao (2006), American Edwin L. Drake (1819-1880) drilled the first oil well with a salt well drilling rig in Titusville, Pennsylvania, USA on August 27, 1859. That is Drake Well, the first commercially available oil well. Since then, the oil industry has emerged in the world, and a large number of professional vocabulary has followed. In these terms, in addition to the petroleum engineering term used independently, there is a class of terms derived from life. At that time, the oil workers were not well educated. Therefore, their work language was mostly generated from daily life and labor. With the development of the petroleum industry, these customary usages in language were gradually accepted by the public and became professional terms. There are three types of such term, the petroleum engineering term derived from medical vocabulary, the petroleum engineering term derived from living appliances and the petroleum engineering term derived from body vocabulary.

**Specialized petroleum engineering term.** Specialized petroleum engineering term refers to term used only in the field of petroleum engineering. These terms generally appear only in literature related to petroleum engineering and are unambiguous. Such words are usually nouns, such as gasoline, petroleum, etc. These terms are less in petroleum engineering term.

**Petroleum engineering term derived from medical vocabulary.** Diseases and treatments, which have always been associated with humans, began since the dawn of mankind. Therefore, the large-scale emergence of medical vocabulary is earlier than petroleum engineering term. In the practical operation, the oil workers will use some simple medical words to describe the situation encountered in the oil recovery process. Over time, these words have become a term in the petroleum engineering industry.

For example, the original meaning of “blowout” refers to the bursting of blood vessels, and the meaning is “a sudden escape of oil or gas from an oil well” in the field of petroleum engineering. The like is “doctor” which means “thickening” or “overhaul” in petroleum engineering.

In addition, the word “frame” has many related phrases in petroleum engineering. Such as “frame set”, “frame spacing”, “built-up frame and so on. Similarly, lung also refers to the device that assists breathing in medical vocabulary, while one-lung engine refers to “single-cylinder engine” in spoken language.

**Petroleum engineering term derived from living appliances.** These vocabulary are more

common in petroleum engineering term because the related tools are common in life. These words are also high-frequency words, so they are used by oil workers in their work and be given new meaning.

For example, “biscuit cutter” means a short coring machine used in rope-type drilling, which is named for its action mode similar to the biscuit cutting in baking. “Apron” is a kind of cooking clothing and it means “baffle”, “rotary bed”, “protective cover” in petroleum engineering. “Armor” is extended to “dressing”, that is “covered by the metal layer”. “Bailing” means “drill sand”, and “bailing drum” means “sanding roller”. So “bailing rope” is “rope that used to drill sand”.

Another example is “banjo”. “Banjo” is an instrument with an upper part like a guitar, a lower part like a tambourine, a four-string or five strings, and played by finger or dial. In petroleum engineering, it refers to “banjo type casing or joint”, and the “banjo case” refers to the wellhead jet deceleration device in the geothermal well, which is named for its resemblance to the banjo. “Bath” means “plating tank” in petroleum engineering. The main function of the plating tank is the device solution, just like the role of the bathroom. And “bloom” is extended to “the fluorescence of oil, The color displayed by the oil reflected light”.

Under these circumstances, words often lose their meaning and are given new meanings with petroleum characteristics. Therefore, it is imperative to make a sense of meaning in translation. It is necessary to read literature and dictionaries, consult with professionals, and search for parallel texts as much as possible in order to guide translation practice.

**Petroleum engineering term derived from body vocabulary.** Such vocabulary is also common in petroleum engineering term. Oil fields are generally in the wilderness. Therefore, oil workers often come into contact with various animals and plants, and naturally they will compare some work scenes to animals or a part of the human body.

Images of many animals are used in petroleum engineering terms. For example, “bird's eye” is used to describe something that like bird's eye or spotted things. Thus “bird's eye porosity” is “lenticular or spherical porosity; bird-eye porosity”. Bird-foot delta means “delta that like bird-foot”, such areas are often areas with abundant resources such as oil and natural gas. Similarly, “horsehead hoe”, “butterfly valve”, “wildcat” and “blue elephant” are all petroleum engineering terms.

Many words that used to describe human body are also used in petroleum engineering. For example, “arm mixer” refers to a paddle mixer like a human arm swinging. There are also many examples, like “baby check valve” means “small check valve”, “baby compressor” means “small compressor”, “foot piece” means “tail rod”, and “leg member” means “pillar”.

## **Translation methods and techniques for petroleum engineering terms**

In terms of term translation, many scholars have done a lot of research. Generally speaking, term can be divided into standardized term and non-standardized term. For the standardized term, translators need to translate it according to the conventions. The translation of term is determined by consulting standardized documents and collecting parallel texts, which need not be elaborated. For non-standardized term, Zheng (2012) proposes four similar types of conventions: non-translation method, trial translation method, definition method and conjunction method. While Shen (2018) puts forward “seeking translation” and “creating translation” to achieve the translation of non-standardized terms.

In general, these methods all contain metaphor to a certain extent. Therefore, for non-standardized terms, translation can be done according to its etymology by using techniques of metaphor.

Metaphor is an imaginative way of describing something by referring to something else which is the same in a particular way. Lakoff and Johnsen (2003) proposes that “The most important claim we have made so far is that metaphor is not just a matter of language, that is, of mere words. We shall argue that, on the contrary, human thought processes are largely metaphorical.” Fu and Tang (2011) proposes that human cognitive ability is limited by time, space and their own perception ability. On one hand, they must use metaphor as a cognitive means to project known concepts and conceptual systems into unknown areas in order to acquire new knowledge and understanding of

new things. On the other hand, by giving new meanings to existing vocabulary through metaphor, emergence of a large number of new words is avoided and people's daily use and learning are facilitated. Since the 1960s, the field of petroleum engineering has gradually come into public view. Therefore, the significance of metaphor in petroleum engineering term translation is self-evident. For example, we can judge from etymology that “belt brake” means “brake that uses belt”, so we can translate it into “dài chà chē” or “pí dài zhì dòng qì”. Other examples are as follows:

belt adjustment	pí dài tiáo zhěng
belt clamps	pí dài kòu
belt creep	pí dài dǎ huá
belt drive	pí dài chuán dòng
belt housing	pí dài zhào
belt joint	pí dài jiē hé
belt of transition	guò dù dài
belt tension	pí dài zhāng lì

In the same way, “blind” in medical means “not able to see”, which is extended to “no exit, not exposed to the ground”, so “blind drilling” means “drilling with lost circulation of mud”. That is, drilling fluid (mud) does not return to the ground during drilling. So we can translate “blind drilling” into “máng jǐng”. Similarly, “blind hole” means “leaking well that does not return mud” and can be translated into “xiā jǐng”, “máng kǒng” or “mèn yǎn”..

## Conclusion

The general characteristics and translation methods of scientific and technical terms are generally applicable to petroleum engineering term. However, due to the particularity of the petroleum engineering term, some commonly used translations have been retained to date and are fixed as standardized translations. In addition, the translator also needs to master the translation method for non-standardized term, so that it can be accurately translated when encountering new vocabulary, and translators can provide effective reference for later translation practice and other translators in this way.

## Acknowledgments

This research has been funded by the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (YCS18213120).

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