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English
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Advanced level
4EN31E
15 credits
June 7, 2011

Translation of Technical Terms

a study of translation strategies when translating terminology in the field of hydropower generation.

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Abstract

This study analyses the translation of a technical guidebook in the subject field of hydropower generation. The aim is to identify and apply functional translation theories when translating general technical terms, industry terms and contract terms. The theoretical basis for the study consists of Eugene Nida's and Vinay & Darbelnet's models for translation as well as theories on terminology by Rune Ingo and Terésa Cabré. During the translation process, technical terms were identified and subsequently translated using one or more of the theories described. The result was then analysed and discussed. Although the study is not comprehensive enough to draw significant conclusions, the result indicates that in order to render the best possible translation of technical terms, a combination of theories and methods are best applied; direct translation regarding systematized terminology similar to general technical terms and oblique translation, or dynamic equivalence, regarding industry terms and contract terms. The results further suggest that structural analysis is of great value in order to determine the correct level or position of the term. In addition, the translator's experience and knowledge of the subject field as well as readiness to consult parallel texts seems to be vital to the outcome of the translation.

Keywords: technical terms, terminology, general technical terms, industry terms, contract terms, hydropower, translation theories, structural analysis,

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1. Introduction

Translating a text may seem like an easy task considering all the resources at hand, but when every aspect of the trade is taken into account, this view changes. Dictionaries and the Internet are helpful, but can only take you so far. Being able to present a translation that is true to the source text, accurate and precise, and that also brings the intended meaning over to the target text is not an easy feat. The context and level of specialisation for a technical text can vary greatly and last, but not least, the specific subject field can present a wide range of difficulties to be addressed by the translator.

In today's society, access to energy is essential and we are becoming increasingly aware of environmental problems caused by emission of carbon dioxide and other greenhouse gases. In this light, hydropower is gaining an important role as one of the most important sources of sustainable energy. Small hydropower projects are started all over the world by both private persons and small companies and associations. Following this development, demand for qualified translations in this specific field is growing, since texts written by experts in the field contain a wide range of technical terms that need to be translated correctly and unambiguously. The present paper will address the possible problems facing translators of texts on hydropower and the potential solutions to these problems.

1.1 Aim

The aim of this paper is to investigate what strategies may be used when translating a text on small-scale hydropower from English into Swedish. Focus will be on how to deal with difficulties that may arise when translating

(i) General technical terminology – units of measurement and formulas
(ii) Industry terms – terminology specific to the subject field of hydropower and
(iii) Contract terms – legal terms connected to contracting

1.2 Method

The methods used to obtain data for my analysis can be accounted for in two separate steps – the first one being to translate a text from English into Swedish and the second to identify and categorize translation strategies used when approaching the different aspects of terminology stated under Aim.

In preparation for the translation, I studied parallel texts in the form of guides and reports to examine the various levels of formality and the stylistic traits used in documents and guidelines regarding hydropower projects. During the translation process, the use of different dictionaries, thesauruses and parallel texts proved helpful – dictionaries to find the lexical meaning of words, thesauruses to offer a range of synonyms and parallel texts to establish that the terms were correct in their context. *Norstedts online dictionary* was consulted frequently during the entire process, both for translation and for grammatical and syntactical advice as well as *The Merriam-Webster online dictionary and thesaurus*. Further, the interactive *IATE term bank* proved invaluable when it came to identifying and comparing terms. Parallel texts used on the subject to confirm idiomatic terms and expressions included *Småskalig Vattenkraft* (Ranmarker 1990) and *Små Vattenkraftverk – En handbok* (ESHA 2011).

In order to identify strategies used when translating, I began by studying different translation models described by Jeremy Munday in *Introducing Translation Studies* (2001). Main focus was on Nida's equivalence and equivalent effect (2001, p. 38, 41–42) and Vinay and Darbelnet's model of direct and oblique translation (2001, p. 56–57). These translation models will be presented more thoroughly in section 1.4. Furthermore, an overview of theories regarding terminology and language for special purposes (LSP) was gathered from work by Teresa Cabré (1999) and Rune Ingo (2007) and will be described further in 1.5. With these theories as a reference, I examined the translation, focusing on strategies and methods used to solve the translation problems stated in 1.1. The analysis, including examples, will be presented in section 2.

1.3 Material

The source text (henceforth *ST*) consists of chapters 1–4 and 7–8 from *A Guide to UK Mini-Hydro Developments*, published by The British Hydropower Association in 2005. The guide is aimed at those who are interested in developing small hydropower projects in the UK and the purpose is to assist in planning and developing a project in this field. The linguistic traits of interest to the present study are the different aspects of terminology that appear throughout the text.

The translated text (henceforth *TT*) is primarily meant to serve as a guide when developing small hydropower projects in Sweden, but can readily be employed in other geographical areas as well, since the details are not area specific. The target readers (henceforth *TR*) are presumed to have previous knowledge of engineering in general and

hydropower development in specific, comparable to that of the readers of the ST (henceforth *SR*). However, the style and level of formality in the ST was perceived as quite formal compared to parallel texts in Swedish and thus the TT has been adapted in order to make it more accessible to the presumed readers, for example by changing the aspect of voice from the passive into the active.

1.4 Translation theory

Eugene Nida's equivalence and equivalent effect and Vinay and Darbelnet's direct and oblique translation, as described by Munday (2001, pp. 41-42, 56-57), form the theoretical basis of the present study and will be presented in some detail in this section. Rune Ingo's theories on systematic structuring of the relationships between terms (Ingo 2007) as well as Terésa Cabré's categorization of special language (Cabré 1999) will be explained in section 1.5 in connection with definitions of terminology.

1.4.1 Nida's equivalence and equivalent effect

According to Munday (2001, p.9), Eugene Nida attempted a more scientific approach to his translation work by systematizing the procedures involved. Munday further describes how Nida formed his theory about equivalence and equivalent effect by borrowing and applying already known concepts such as Noam Chomsky's models for sentence analysis. (2001, p. 39). The purpose of this was to alter the concept of *meaning* from a fixed lexical meaning, towards a more functional approach where meaning instead is determined by situational factors such as context and culture. Nida suggested different methods for structure and analysis in order to identify the proper correspondence in meaning. Strategies important to the present study are the hierarchical structure analysis and the componential analysis since they can be used to illustrate relationships between terms and facilitate comparison between languages (Munday 2001, p. 38):

- Hierarchical structuring – differentiates the terms depending on their position in a hierarchy as in: *water – ocean – lake*
- Componential analysis – positions the terms depending on their features in relation to time or place as in: *hen – egg – omelette* or *wash – dry – iron*

Nida's suggested methods resulted in the definition of two different kinds of equivalence: *formal equivalence*, focused on the form and content of the word and true to the structure of

the ST and *dynamic equivalence*, focused on how the message is received in the target language (henceforth *TL*) (Munday 2001, pp. 41-42).

1.4.2 Vinay and Darbelnet's direct and oblique translation

Munday also describes how Vinay and Darbelnet identified two main strategies, which they named *direct translation* and *oblique translation* (2001, p. 56). The two strategies are built around seven separate procedures of which the initial three constitute *direct translation*:

1. Borrowing – the word from the ST is borrowed directly into the TL, sometimes with adjusted spelling. For example, the Russian word *glasnost* or the Swedish word *smorgasbord* (Munday 2001, p. 56).
2. Calque – similar to borrowing but instead of the word itself, the whole structure is borrowed into the TL. For example, *flea market* into *loppmarknad* (Munday 2001, p. 56).
3. Literal translation – where corresponding words functioning in the same kind of structure render a literal translation. For example, *She lived in the house* into *Hon bodde i huset* (Munday 2001, p. 56).

When direct translation is impossible because the correct meaning cannot be conveyed, or when the structure of the TL does not permit it, the remaining four procedures resulting in *oblique translation* should be used (Munday 2001, p. 57):

4. Transposition – one part of speech is exchanged for another while the meaning is kept. For example, the adjective *happy* into the adverb *lyckligt* in the translation of *with a happy smile* into *lyckligt leende* (Munday 2001, p. 57).
5. Modulation – expressing the same thing from another point of view, without changing the meaning. For example, *She is not sitting in the sun* into *Hon sitter i skuggan,* where the point of view is changed from negative to positive (Munday 2001, p. 57).
6. Equivalence – when the same situation is described in a completely different way in order to achieve an equivalent response. This procedure is very common with idioms and proverbs exemplified by *dead as a doornail* into *stendöd* (Munday 2001, p. 57).
7. Adaptation – when a situation or concept in the SL does not exist in the TL, adaptation is necessary in order to create the proper response. The adaptation can be either voluntary, depending on the choice of the translator, or obligatory due to cultural differences (Munday 2001, p. 57). Translating *to assist anyone in the UK who is planning* into *till stöd för alla som*

planerar is an example of an adaptation where the reference to the UK is omitted in order to make the TT more general.

1.5 Terminology

Language for specific purposes (LSP) is described by Ingo (2007, p.83) as a result of more specialised knowledge in a wide range of subject fields such as law, trade and communication. Special language developed since there was a need for professionals to be able to communicate on different levels of specialisation and in different contexts. Ingo (2007, p.83) also points to the fact that LSP within technology is especially complex and further divided into various *technolects*, covering more specific areas like building and electronics. Ingo (2007, p.101) also emphasises that in special language, or terminology, the term in question describes a *concept,* usually a reference to something outside the language such as a product or a mechanical part.

In order to establish the correct term for the translation at hand, Ingo describes different systems that may be used (Ingo 2007, pp.101-103). *The logical system* is based on similarities between concepts such as *fluid – beverage – tea*, where all levels have qualities in common. *The ontological system* is instead based on relations in time or place such as *lamp – lightbulb* and thus describes parts of a whole. These structural systems can generate either hierarchical diagrams or systematic lists, which enable the translator to establish the correct corresponding term by comparing the levels on which the terms exist (Ingo 2007, pp. 103-105). This theoretical approach to terminology also corresponds well to the suggestions regarding componential analysis made by Nida (Munday 2001, p. 38).

Terminology can be divided into different levels of specialisation depending on situation and user. The highest level would be that at which communication takes place between experts, and the lowest level when information is aimed at a layman (Cabré 2009, p. 64-65). Focus in the present study is on three aspects of special language used in the subject field of hydropower: *general technical terms*, *industry terms* and *contract terms*.

1.5.1 General technical terms

Technical terms can be described as a set of words used when communicating information concerning technical subjects. For the purpose of the present study, a set of words shared by different subject fields such as physics or hydropower is considered as *general technical terms*. Terms like *capacity factor*, *technology* and *hydraulic*, as well as *quantity* and *rate*, can be regarded as general since they can be found within a wide range of subject fields.

In an attempt to facilitate communication and minimize misunderstandings, a great number of terms are standardized, both officially by organisations and unofficially by so-called end-users (Cabré 1999, p. 200). A system of importance to this study is *the International System of Units* (SI) – structured lists of units of measurement have been compiled with the aim to establish equivalent expressions in different languages.

1.5.2 Industry terms

When the terminology in use is no longer *general*, as previously described in 1.5.1, but is instead connected to a specific field, such as generation of hydropower, the vocabulary in this study will be referred to as *industry terms.* A definition of the expression *industry terms* or *industry terminology* is not available in dictionaries, but a Google search displays many references, mostly in connection to a subject area e.g. *Glossary of Electric Industry Terms* or *Movie Industry Terms*. This type of vocabulary is specialised, provides terms on different levels of specialisation and occurs in a specific field. It is also is described by Cabré as *"a necessary medium of expression and professional communication"* (1999: 11). Terms such as *head*, *flow*, *forebay*, *intake* and *trash gate* exemplify the suggested scope of *industry terms* in the area of hydropower.

1.5.3 Contract terms

The process of developing a hydropower scheme also involves contracting, which in turn creates the need for translation of some legal terminology. Terms like *commissioning*, *handover*, *civil works*, *management* and *fees*, are examples of terms that occurred in the ST in connection to contract writing.

2. Analysis

The theories and procedures described in sections 1.4 and 1.5 were applied in order to find the best solutions to the various translation problems that occurred in the translation process. In the following section, an analysis of some of the encountered problems will be presented.

2.1 General technical terms

The term *small-scale* translated into *småskaliga* as in (1) is an example of how to apply a direct translation:

(1)	*Small-scale* hydropower is one of the most cost-effective and reliable energy technologies to be considered for providing clean electricity generation.	*Småskalig* vattenkraft är en av de mest kostnadseffektiva och pålitliga energitekniker man kan välja för att tillhandahålla miljövänlig energiproduktion.

Norstedts online dictionary (ord.se) suggested *i liten skala,* which would be an equivalent expression, and *småskalig*, which, being an adjective, corresponded well to the structure of the sentence in the ST and was therefore considered the best option for this translation. The translation is a direct translation, but it can be discussed whether to categorize it as a literal translation or calque in reference to the models presented by Vinay and Darbelnet (Munday 2001, pp. 56-57). Regarding the term *småskalig* as one single word would suggest a literal translation, while focus on maintaining the structure of *small-scale* instead would indicate calque.

In example (2) with the term *energy technologies,* the choice of strategy was less obvious:

(2)	A high efficiency (70 – 90%), by far the best of all *energy technologies*.	Hög effektivitet på 70 – 90 %, vilket är den ojämförligt högsta bland alla *energitekniker.*

A first dictionary look-up on *energy technology* offered no corresponding terms. One option was to use an equivalent expression in accordance with Vinay and Darbelnet's oblique translation strategy (Munday 2001, p. 58), such as *teknik för energiproduktion* or *teknik för energiframställning.* However, a Google search gave at hand that the expression *energiteknik* is very common and therefore possible to use in this context. This would instead be an example of a direct translation by using the strategy for literal translation described by Vinay and Darbelnet (Munday 2001, p. 56).

The translation of *energy* into *energi* as shown in (3) was reached by applying the strategy of literal translation (Munday 2001, p. 56) and aided by the standardized vocabulary found in the SI system (section 1.5).

(3)	***Energy*** is an amount of work done, or a capacity to do work, measured in Joules.	***Energi*** är den mängd arbete som har utförts, eller den kapacitet att utföra ett potentiellt arbete som finns, mätt i joule.

The Oxford Dictionary of Physics defines *energy* as "*A measure of a system's ability to do work"* (167) and specifically states the unit of measurement to Joules. Comparing this entry to the Swedish definition of *energi* (Rikstermbanken) using the unit of measurement as a point of reference, indicated that the two terms correspond. This method is comparable to the model for literal translation, which is described by Vinay and Darbelnet (Munday 2001, p. 57). It can be argued that the SI system, which defines the unit of measurement as Joule, in itself serves a tool comparable to a structural or hierarchical list, which enables the translator to compare terms on different levels in order to find the correct translation.

Yet another example of the translation of a unit of measurement is shown in example (4), where the term *power* is translated into *effekt*.

(4)	***Power*** is the energy converted per second, i.e. the rate of work being done, measured in watts (where 1 watt = 1 Joule/sec. and 1 kilowatt = 1000 watts).	***Effekt*** är den mängd energi som omvandlas per sekund, eller den hastighet med vilken ett arbete utförs, mätt i watt (där 1 watt = 1 joule/sek och 1 kilowatt = 1000 watt).

The first step was to perform a search in *Norstedts ord*, which resulted in *kraft, effekt* and *energi*, in relation to electricity and physics. Furthermore, the definition of *power* in Oxford Dictionary of Physics reads *"Symbol P. The rate at which work is done or energy is transferred."*(418*)* and the unit of measurement is stated as *watt.* Comparing this to the definition of *Effekt* in Rikstermbanken, *"kvot av energi och tid"*, also measured in watts, indicated that *power* should be translated into *effekt* in this case.

The above-described strategy of comparing the terms and matching them based on the unit of measurement can be compared to Ingo's *ontological structure* (Ingo 2007, p. 102) where the relationship between terms can be decided as parts of a whole – in this case parts of a physical formula. The symbol P, standardized in the SI system and used in both the SL and the TL was used as a point of reference and comparing the definitions stated made it possible to match the corresponding terms.

The difficulty in example (5) lies in the fact that we deal with the same term as in example (4), namely *power*, but in this context, the term requires a different translation.

(5)	*Hydraulic power* can be captured wherever a flow of water falls from a higher level to a lower level.	*Hydraulisk energi* kan utvinnas överallt där ett vattenflöde faller från en högre nivå till en lägre nivå.

The initial approach was to find the corresponding terms to both *hydraulic* and *power*. *Hydraulic* posed no problem and was solved by a direct translation into *hydraulisk* by use of literal translation (Munday 2001, p. 57). *Power*, however, needed further consideration since as mentioned above, both *Norstedts ord* and a subsequent search in the *IATE term bank* suggested three different translations: *kraft, effekt* or *energi*, depending on context. Knowing from example (4) that *effekt* was connected to the unit of measurement watts, suggested that *effekt* could be excluded form the alternatives at this point, leaving *kraft* and *energi* as options. Focus was instead shifted to the verb *capture* in the phrase *capture energy*. Since the phrase *capture energy* had occurred frequently in parallel texts as an equivalent to *utvinna energy,* it was assumed that the translation closest in meaning to the ST was rather *energi* than *kraft*. Finally, the *IATE term bank* showed that power and energy are used as synonyms to describe the general concept of energy, thus the term *power* was translated into the less obvious *energi* in the TT, a direct translation through literal translation. (Munday 2001, p. 57). This example also shows that some of the difficulties connected to the translation of the ST regard synonyms and polysemic words i.e. words that carry multiple meanings.

The term *quantities* in example (6), also relates to formulas and *Norstedts ord* lists the term as *storhet* in connection to mathematics*:*

(6)	Hence two *quantities* are required: a Flow Rate of water **Q**, and a Head **H**.	Alltså krävs det två *storheter*: ett vattenflöde **Q** och en fallhöjd **H**.

Other possibilities listed in this post were *kvantitet, mått, mängd* and *tal*. In the ST however, the reference to *quantities* covered all of these units, indicating that the term *quantities* exists on a higher level than *kvantitet, mått, mängd* and *tal*, which in turn suggested that *storhet* would be the best choice since the concept in Swedish is similar. A hierarchical structure analysis (Munday 2001, p. 38) confirmed that *quantities* and *storheter* do exist on the same level and again the importance of carefully plotting the position of each term in relation to each other was emphasised. Furthermore, a final comparison with parallel texts was of use to confirm that the term *storhet* is used when referring to the units in a formula. (Små Vattenkraftverk 32).

2.2 Industry terms

When translating the type of terminology called *industry terms,* different models were applied starting with a dictionary look-up in order to identify synonyms and group them according to context. The next step was to create parallel hierarchical diagrams in the SL and TL to establish on what level the term exists. Finally, when needed, a similar diagram was created, describing the components of the process and comparing the suggested terms in reference to time or to the particular step in the process.

The first example concerns the concept *dam*. Considering the subject field, this concept is central. However, the multitude of synonyms and polysemic words in this area caused some problems when translating the ST. Example (7) shows the translation of *dam* into *dammar*, *barrage* into *fördämningar* and *weir* into *regleringsdammar:*

(7)	It is also environmentally benign. Small hydro is in most cases "run-of-river"; in other words, any *dam* or *barrage* is quite small, usually just a *weir*, and little or no water is stored.	Den är också skonsam för miljön. Småskalig vattenkraft består i de flesta fall av strömkraftverk vilket innebär att *dammar* eller *fördämningar* är ganska små. Vanligtvis handlar det bara om enkla *regleringsdammar* där lite, eller inget, vatten magasineras.

An initial search in *Norstedts Ord* rendered the same result for all three terms:

- *dam – damm*, *fördämning,*
- *barrage – fördämning i flod, damm.*
- *weir – damm(byggnad), fördämning,*

A further search in the *IATE termbank* offered more alternatives and some explanatory examples*: weir – överfallsdamm, grunddamm, regleringsdamm.* Thus, parallel lists of the words were formed in an attempt to match their meanings using Ingo's systematic approach to the different relationships between terms (Ingo 2007, p. 105). The terms were ranked in relation to size and function, or more specifically – capacity to store water. Using this method, the suggested translation for *dam* was *damm* for a larger construction, designed to form a reservoir, which has the capacity to store water. *Weir* was translated into *regleringsdamm* defining a smaller construction where water flows over the crest and no reservoir is formed. The last term, *barrage,* was considered a general term, not indicating the size of the

construction or whether it can hold water or not. This led to the corresponding term *fördämning* in the TL. Having arrived at this solution, parallel texts were consulted in order to confirm the choice of translation.

During the process described above, a reverse search from Swedish into English on the term *damm* suggested the meaning *pool, reservoir – vattensamling, större vid kraftverk,* which caused some trouble in example (8).

(8)	[...] or where a *reservoir* discharges water back into the main river.	[...] eller där ett *vattenmagasin* släpper tillbaka vatten till älvens huvudfåra

... where a reservoir discharges... would then be *... där en damm släpper tillbaka...* which, although being grammatically correct, did not seem idiomatic since the term *damm* had been used in another context earlier. The *IATE term bank* suggested *reservoar* or *magasin* and again parallel texts confirmed *magasin* or *vattenmagasin* to be the best term to use. This is an example of Nida's dynamic equivalence (Munday 2001, p. 42) where the lexical term *damm*, suggested in the dictionary gave way for the industry term *vattenmagasin,* making the message unambiguous and clear for the TR.

Nida's componential analysis (Munday 2001, p. 38) and the strategies described by Ingo (2007, pp. 101–105) were applied in examples (9), (10) and (11) as well, this time with the timeline of the process in the hydropower plant as a reference. The terms *intake, settling tank, forebay, trash rack, penstock* and *tailrace* all define technical details in the different steps of leading the water through the turbine, in chronological order. Listing the same terms in Swedish, using parallel texts as reference, made possible the matching of terms, starting with *intake – intag* as in example (9):

(9)	Water is taken from the river by diverting it through an *intake* at a weir.	Vatten tas från strömfåran och leds in genom ett *intag* vid en regleringsdamm.

In this particular part of the process, the intake of water is the first step and the similarity between the terms in SL and TL made the choice easier. Regarding strategies, the actual translation was achieved by literal translation making it a direct translation (Munday 2001,

p.56), while the componential and referential analysis of the power-generating process helped confirm that the term in both the SL and the TL exist in the same position on the timeline.

Example (10) shows the terms *settling tank/forebay – sedimenteringsbassäng/ galleri*

(10)	Before descending to the turbine, the water passes through a *settling tank or 'forebay'* in which the water is slowed down sufficiently for suspended particles to settle out.	Innan vattnet faller ner mot turbinen passerar det en *sedimenteringsbassäng, eller ett galleri*, där vattnets hastighet sänks tillräckligt mycket för att partiklar som följer med vattnet ska kunna sjunka till botten.

The phrase *"before descending to the turbine"* made it possible to plot the term *forebay* on the timeline and thus determine the corresponding term using both parallel texts and the *IATE termbank*. *Settling tank* is a more general description of the function of this technical device while *forebay* and *galleri* are examples of industry terms; a more specialised vocabulary used by professionals. The broader lexical meaning is aimed at laymen while the more specialised and functional meaning is intended for the end-users, the professionals, in order to communicate without misunderstandings.

In example (11), where *trash rack* is translated into *grind,* it is possible to pinpoint the step in the process and thus the position of the rack from the phrase *"the forebay is usually protected by".* This description suggests that the *trash rack* is placed before the *forebay* on the imagined timeline of the process.

(11)	The *forebay* is usually protected by *a rack of metal bars (a trash rack*) which filters out water-borne debris.	Bassängen skyddas vanligtvis av en *grind konstruerad av metallrör* som filtrerar bort vattenburet skräp.

Parallel texts suggest *grind* as the corresponding term in the TL and in this case, the function – to stop something from entering – could serve as an explanation for this translation. However, to a layman, the term *grind* has a completely different meaning, which again stresses the fact that knowledge of the subject field and the proper vocabulary is essential in order to render a correct translation.

Continuing in the process, the term *pressure pipe/ penstock* was translated into *tryckrör/ tilloppsrör* as shown in example (12):

(12)	A *pressure pipe, or 'penstock',* conveys the water from the forebay to the turbine,	Ett *tryckrör, kallat tilloppstub,* för vattnet från galleriet till turbinen,

The function of the *pressure pipe/ penstock* is described in detail and furthermore it is placed in between the forebay and the turbine in the process, which made finding the corresponding terms relatively easy. In the ST, two terms are listed to describe this connection between the forebay and the turbine: *pressure pipe* and *penstock*. The term *pressure pipe* can be considered more general, focusing on describing the actual function of the mechanical part and is likely to be found in a range of technical fields. The term *penstock,* on the other hand, is more specific to the field of generation of electrical power and specifically to turbines, found in glossaries and term banks related to the subject field and thus categorized as an industry term. This exemplifies two terms that exist on the same level in a hierarchical or structural diagram, but display different levels of specialisation.

As stated earlier, a risk when translating technical texts as a layman is that the proper term might sound unfamiliar or awkward and be wrongly discarded because of that. The relationship between terms considering degree of specialisation as described above must also be taken into consideration in each case, in order to render a consistent translation.

The final example of the translation of industry terms is *tailrace canal* translated into *utloppskanal* as shown in example (13).

(13)	After leaving the turbine, the water discharges down a *'tailrace' canal* back into the river.	När vattnet lämnar turbinen släpps det ut genom en *utloppskanal,* tillbaka till älven.

Again, a referral to time – *after leaving the turbine* – indicated the correct position in the process. The term in the SL being marked with citation marks gave an indication that it was in fact not a widely accepted term. However, when consulting the *IATE term bank* as well as parallel texts in both the SL and the TL, this seemed to be a personal emphasis from the author of the ST and therefore the citation marks were excluded in the TT. This serves as an example of Vinay and Darbelnet's oblique translation by voluntary adaptation as described by Munday (2001, p. 58).

2.3 Contract terms

This section of the analysis will cover legal terms connected to contracting when developing small-scale hydropower plants. As with technical terms and industry terms, there is no room for misunderstanding or mistakes when it comes to the aspect of contracting. Deborah Cao (2007, p. 59) states, *"*the law in one system is not always equal to the law in another system*"*, and points to the fact that the solution to the translation problem caused by legal terms, must be focused on the interpretation of the law in the TL. In this case, the TT reader must be able to refer to legal conditions in the country where the contract is to be interpreted. The selected terms *commission/ commissioning*, *tendering process* and *quote* are shown in the following examples.

According to Norstedts online dictionary, *commission* can describe either a verb meaning *uppdra åt, ge beställning på* or *beställa* and the corresponding noun is *beställning, uppdrag* or *order*. An additional noun of importance in this example is also listed: *överlämnande (av befogenhet).* In the following examples (13), (14) and (15), three different solutions to the translation of the term *commission* will be described:

In example (14) *commission* was translated into *beställa* and in this context this was a literal translation, comparable to Vinay and Darbelnet's direct translation (Munday 2001, p. 57).

(14)

It should be possible to *commission* a pre-feasibility study for less than £3000.	Kostnaden för att *beställa* en enklare förstudie bör kunna bli lägre än 30 000 kronor.

In the meaning *to order sth*, *commission* was translated literally into *beställa*. However, in example (15), where the previous example suggested that *commissioning* be translated into *beställandet,* further analysis was needed:

(15)

The installation and *commissioning* of the electro-mechanical equipment [...]	Installation och *idriftttagnade* av den elektromekaniska utrustningen [...]

When Nida's strategy of componential analysis (Munday 2001, p. 38) was applied along with Ingo's functional analysis (Ingo 2007, p. 104) and the two terms *installation* and *commissioning* were placed on a functional timeline, it showed that the natural order would be

that *commissioning* takes place *before* installation i.e. that the mechanical parts were *first* ordered and *then* installed. In the IATE term bank, the term *commissioning* is defined as *idrifttagande*, *idriftsättning* or *sätta I drift,* which would explain why *commissioning* is placed after *installation* in the phrase. The next consideration was which term to use in the TT and parallel texts suggested *idrifttagande*. Although this term sounds awkward to a layman, it is commonly used among professionals. Again, the absolute need for the translator to have an understanding of the process at hand and the terminology used, in addition to consulting parallel texts, was displayed.

In example (16), an additional aspect of the term commissioning was looked into:

(16)	Hence, although *formal commissioning and hand-over* may be completed in a few days, [...]t	Det innebär att även om det *formella idrifttagandet och överlämnandet* kan genomföras under några få dagar,[...]

In the initial dictionary search, one of the expressions suggested for the term *commissioning* was *överlämnande (av befogenhet)* and in example (16), the question was whether *commissioning* means *idrifttagandet* or *formella överlämnandet.* Nida's componential structure applied (Munday 2001, p. 38) indicates that there are two separate actions that occur: first the formal start of the system and following that a formal *hand-over* to the owner/ user where the responsibility for the scheme is handed over officially. Consulting parallel texts, the terms used in the TL for these occasions are *idrifttagande* and *överlämnande*. This indicates that the translation of *commissioning* can be *idrifttagande* both in the formal situation of hand-over and in the sense of testing and starting the system during installation.

Examples (17), (18) and (19) refer to the process preceding the actual building of the hydropower scheme. *Tendering process, tender, quote* and *enquiry* are terms frequently used when a financial plan is established. I will attempt to show how the relationship between the terms decided by the grade of formality can be of assistance when deciding on the correct corresponding term for the translation. The noun *tender* is explained as *anbud, entrepenadanbud* or *offert* in Norstedts online dictionary, while *tendering procedure* in reference to procurement in the EU is listed as *anbudsförfarande*. *Quote* is explained as *offerera* or *lämna*, examplified in to *quote a price* while *enquiry*, synonymously to *inquiry*, means *förfrågan*. This suggests that *tender*, *quote* and *enquiry* can all describe the initial part of a tendering process but not on different levels in a hierarchy, but as parallel expressions

with similar meaning. Ingo (2007, p. 91) emphasises that it is important for the translator to establish the correct level of the term, making the translation equally specific or equally general compared to the ST. Having established the level, the next step was to identify the formal condition that separates the different terms. A parallel text on public procurement in the EU explains that a *tender* is legally binding from both parties, a *quote* is binding from the point of view of the provider of the quote while the *enquiry*, or RFI (request for information), is not legally binding for any of the parties. Based on this information on whether or not the term is legally binding for any of the parties, a systematic list according to Ingo's suggestions was created (Ingo 2007, p.105). The suggested order would be *tender – quote – enquiry* where tender is the most binding and enquiry the least binding. Using this discussion as a reference, the corresponding expressions in the TL would be *anbud – offert – förfrågan*.

Example (17) shows the translation of *tendering process*:

(17)	[...] typically following a competitive *tendering process*.	Vanligtvis sker detta efter ett *anbudsförfarande*.

In example (17), *procedure* and *process* were assumed to have equal meaning in this context and thus the chosen translation was *anbudsförfarande*. In addition to the structural analysis, it can be argued that this is an example of direct translation according to Vinay and Darbelnet (Munday 2001, p. 56) and is achieved applying the strategy of calque. To ascertain that the term is actually used in this context, the *IATE term bank* was consulted as well.

In example (18), *quote* was found in the expression *"budget quote",* a quote used to establish a budget. The corresponding expression in the TL is *budgetoffert*, not found in any dictionaries but in parallel texts and in a Google search. The translation procedure is a literal translation, as described by Vinay and Darbelnet (Munday 2001, p. 57).

(18)	Suppliers are usually willing to provide a 'budget *quote*' for the equipment for your scheme [...]	Leverantörerna kan oftast erbjuda en budget*offert* för den utrustning som behövs i ett projekt, baserad på en begränsad mängd information..

Example (19) is again a literal translation, which was confirmed by the structural analysis that established the correct level in the hierarchy.

(19)	The minimum information they would need to respond to an *enquiry* [...]	För att kunna svara på en *förfrågan* från er behöver man information om [...]

3. Conclusion

In this study, the difficulties in translating terminology from the subject field of hydropower development were analysed. The specific aspects of terminology chosen were general technical terms, industry terms and contract terms. The material for the analysis was gathered from the translation of six selected chapters from *A Guide to UK Mini-Hydro Developments*, published by The British Hydropower Association. The theoretical background was provided by studying translation theories by Eugene Nida and Vinay and Darbelnet (Munday 2001) and the structure of terminology (Cabré 1999, Ingo 2007).

The analysis was divided into separate sections where examples of the encountered difficulties were presented, along with a description of the strategy used when translating. The terms used as examples in section 2.1, considered as *general technical terms*, could often be translated using Vinay and Darbelnet's strategies for direct translation (Munday 2001, pp. 56–57). The method was similar in all cases: consulting dictionaries, glossaries and terms banks to find suggested terms and synonyms and then creating a diagram or line, either hierarchical or componential (Munday 2001, p. 38), in order to establish the corresponding levels for the terms at hand. Finally, parallel texts were consulted to confirm that the correct term had been chosen.

In section 2.2, regarding *industry terms*, the analysis shows that the number of synonyms increased, thus making the choice of correct translation more difficult. The importance of componential analysis in the form of timelines, as well as dividing the process into parts, was evident. This method was applicable also in section 2.3 regarding contract terms, but here the structural analysis was more focused on the hierarchical relationship between the terms.

The present study is not comprehensive enough to draw significant conclusions, but the results of the analysis could indicate that formal equivalence according to Nida (Munday 2001, p. 38) or direct translation according to Vinay and Darbelnet (Munday 2001, p. 56) works well with systematized terminology such as the SI system, while *industry terms* and *contract terms* tend to be more ambiguous and therefore need to be approached in a different manner: with dynamic equivalence according to Nida (Munday 2001, p. 42) or oblique translation according to Vinay and Darbelnet (Munday 2001, p. 57). However, it is evident that the translator must always determine the level, or position, of the term in question and structure analysis with visual plotting as described by both Nida (Munday 2001, p. 38) and Ingo (2007, p. 105), is one way of doing this. In addition to this, comparing both ST and TT

to parallel texts on the subject is essential since some terms and expressions may sound unfamiliar to the translator, but be prevalent among professionals in the field.

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