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A MULTILINGUAL MARINE ENGINEERING DICTIONARY[1]

Nowadays marine engineering dictionaries either do not exist or do not fully meet the purpose. On the other hand, it takes a long time to compile them whereas more and more end users daily need them in their work. The authors of the present English-Croatian dictionary, whose one entry has been thoroughly described, have jointly decided to offer the completely elaborated English side of the Dictionary to other nations, interested to take part in the project. Presently the dictionary is yet incomplete and stored in a computer data base. The proposed project involves three phases: 1. translation of the English side of the dictionary into mother tongue, 2. regular updating of the dictionary, 3. enriching its contents with sketches, photographs, illustrations and diagrams. The Dictionary contents would be available either in a hard copy form, a CD or accessed through Internet in a bilingual or multilingual version.

Key words: Marine Engineering Dictionary, lexicography, entry, data base, Softlex

THE NECESSITY OF HAVING A SPECIALISED DICTIONARY

One of the most traditional multinational trades is by far seafaring. Mixed crews have become more a rule than an exception and all on-board, ship-to-shore and shore-ship communication is carried out in English. This language not only has largely substituted national languages but has also become one the most prominent languages in instruction books, manuals, standing orders world-wide. The language is daily enriched by new terms since engine builders, in their permanent competition, keep offering to the market new engine types, enhanced systems and sophisticated equipment. Environmental protection and safety standards are being improved, bringing along new terminology and new language requirements. To bridge the gap between the engine producers' requirements and the engine us-

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ers' necessities, to increase on-the-job efficiency and to timely prepare the engineers for their duties, a specialised dictionary is a must.

The work of a lexicographer requires high professional skills, a profound experience and an immense patience. Compiling dictionaries may be further aggravated by the fact that some of them are highly specialised. This leads to the necessity of involving extensive team of experts and consultants, not always available in one place or a country. However, it is an undeniable fact that there is a need for specialised dictionaries, in this very case a bilingual or a multilingual marine engineering dictionary. At this point three questions emerge out of the above statement. Firstly, how to compile a dictionary that will fully serve the purpose of the trade? In the second place, how to share globally the results of ten or twenty years of hard work? Eventually, how to meet the professional demands of ever growing new terminology and efficiently update the dictionary contents?

An attempt to meet such requirements is being made by two lecturers and lexicographers at the Rijeka Faculty of Maritime Studies, Croatia. Both the lexicographers have made several bilingual dictionaries and dedicated all their careers to teaching and training students in Marine Engineering English. They are assisted by a team of 14 experts, mostly their colleagues and prominent Marine Engineers occupying the most responsible posts in the Croatian Shipping Industry.

Eleven years of yet incomplete work on a dictionary intended for a maximum of 5,000 potential users sounds a discouraging job and a mere waste of time. Therefore, the authors have considered an idea of offering the world maritime community their completely elaborated English side of the dictionary, preferably for electronic use through the Internet.

THE PURPOSE OF THE DICTIONARY

The selection of sources employed for the Dictionary as well as the Dictionary microstructure outlook have been governed by the three major objectives. Firstly, it is intended for use by marine engineers, marine engine manufacturers, various maritime experts, mechanical engineers, specialised government officials and agency experts, scientists, lecturers and interpreters. In the second place, its purpose is didactic, i.e. for students of marine engineering colleges and technical faculties. However, if in the latter form, it might be substantially abridged. The third purpose of the Dictionary, that should not be underestimated, is that it offers great possibilities for further lexicographic research on an amazing data base stored in computer.

CURRENT SITUATION ON THE MARKET

A hypothetical question might be put as to whether it is necessary at all to have a Marine Engineering Dictionary on its own. To answer it thoroughly it is necessary to precisely define what marine engineering is and in what relation it is with other technical sciences and marine technology. According to a definition (1) "Marine engineering is the branch of mechanical engineering concerned with the design and the production of propelling machinery and auxiliary equipment for use in ships". This definition is, however, slightly incorrect and incomplete and should be complemented with some other substantial elements. The marine engineers neither

take part in the design nor in production. Their main concern, however, are four basic activities i.e. operation, maintenance, monitoring of the engine and reporting. Is there any dictionary of the kind that meets such requirements?

According to authors' knowledge (2) and available information, there are a few minor marine engineering bilingual dictionaries available on the market of some countries (e.g. Japan, Russia, Bulgaria, Croatia). Although each of them took years of hard work they remained only for local use, while most of them are also quite outdated. On the other hand, there is a number of excellent technical dictionaries, dictionaries of science and technology and some glossaries. A technical dictionary, however, covers a far greater field of sciences and technologies, very often completely marginal or unimportant to marine engineering. For instance, it will normally include terms of astronomy, aerodynamics, motor cars and vehicles, carpentry, lithography, foundry, medicine, pharmacy, horology, mineralogy etc. (3). If a dictionary holds the title of Science and Technology, its thesaurus will usually embrace more basic science terms of mathematics, physics, chemistry, biology, but also of some technologies such as brewing, metallurgy, space, off-shore, textiles, weaving etc. (1). The closest glossaries to Marine engineering needs are those of Maritime Technology (4). Again, they do not fully meet the purpose for at least two reasons. Although such glossaries incorporate a number of useful marine engineering terms and definitions, sometimes accompanied by excellent sketches and diagrams, they are also "burdened" with irrelevant or peripheral terminology of off-shore activities, shipbuilding, navigational equipment, cargo handling gear, stability, international and national shipping organisations etc. On top of all, glossaries do not contain other grammatical categories but nouns and nominal compounds which is definitely a drawback and as such they cannot substitute a dictionary.

As it can be seen from the above brief survey, there is a strong need to compile a marine engineering dictionary, solely meant to meet the requirements of both the makers and the users, as well as of an ever growing number of mixed crews and an expanding industry of marine propelling engines and equipment.

THE WORD LIST AND TOOLS

The dictionary word list is to be representative, i.e. to incorporate all the aspects provided by the complemented definition with reference to quantity, quality, formal and empirical criteria. As to the first two criteria, the word list is based upon an appropriate selection of modern technical literature on diesel engines, auxiliaries, steam turbines, boilers, gas turbines, electrical engineering, electronics, shipboard automation (39 issues), relevant running, operation and maintenance manuals (8) and various shipboard and technical office documentation, logs, forms etc. The total quantity of pages processed amount to about 8.000 pages which will eventually result with approximately 35.000 entries or a hard copy volume of some 1.200 pages. The entries are further controlled and complemented through various bilingual general purpose and technical dictionaries (18) glossaries (6) and translators (2).

The formal criteria, on the other hand, follows lexicographic rules and frequency research results. As it concerns empirical criteria, it is met by an assistance of 14 informants and advisors being outstanding marine engineers, colleague professors and prominent experts occupying the most responsible posts in the Cro-

atian Shipping Industry. Last but not the least, the two authors have compiled a few bilingual dictionaries and glossaries, and dedicated all their careers to teaching and training students in Marine Engineering English.

The software used for the purpose of the source text analysis is TEXPACK (5), whereas the one for preparing the dictionary is called SOFTLEX 2000 (6).

Eventually, although of minor importance to this paper, the major problem encountered by the authors was unstandardised mother tongue terminology which demanded for additional control of terminology in amazing 108 issues.

THE LEXICAL ENTRY STRUCTURE

The structure of a lexical entry may take up various forms, but in its ideal form it embraces the following categories:

- one or more headwords (L1)
- pronunciation (PR)
- grammatical category (GC)
- sense (L2)
- reference (RE)
- synonym (SI)
- example in English (E1)
- translation of the example (E2)
- compound in (C1)
- compound in mother tongue (C2)
- phrases in English (PE1)
- translation of phrases in mother tongue (PE2)
- example containing the phrases in English (EV1)
- translation of the phrases in mother tongue (EV2)
- ready made communication phrase in English (P1)
- translation of the phrase in mother tongue (P2)

A brief survey of the entries will reveal that a headword may be a single word (**file, journal**) or a compound made up of two to a maximum of four words (**piston crown, white metal layer, deck machinery control arrangements**). Pronunciation follows the rules set out in the Pronunciation Dictionary of (7). Although, grammatical category is often dropped out of technical dictionaries, the authors have kept it adopting standard abbreviations (*n, vt, vi, vt/i, vi/t, adj, adv*). The meanings cover a range of word usage, primarily but not exclusively of technical nature. If they are of the same grammatical category, they are delimited by roman numbers within the entry itself (**flash** *n* **1.** short-lived outburst of light, **2.** momentary evaporation **3.** thin layer of). Words of the same form, but of a different grammatical category will be marked by superscripts, always following the order of: noun, verb, adjective, adverb, preposition (**flash**[1] *n*, **flash**[2] *vt*). References are sources in which a particular word has been recorded in the mother tongue. They are not usually present in technical dictionaries, but in this very case they are meant to be the basis for a further standardisation of the particular marine engineering terminology. So far contextualisation and exemplification have not been

present in bilingual engineering dictionaries. However, in this Dictionary they are its distinctive features (e.g. **gage**[2] : *If new piston rings are fitted, they* **must be gauged** *for butt clearance in the unworn part of the cylinder*). Although the example is clear enough, it may tackle a couple of additional questions as to the less familiar terminology included (e.g. *butt clearance, unworn*). In order to avoid any possibility of ambiguous interpretation or misunderstanding, the authors have also included the translation of the examples.

Compounds may be found either as headwords or within the lexical entry. For example: the term **water gauge** will be found both as an individual entry and as a subentry of **gauge** (e.g. **water ~**). As far as practicable, verbal collocations are accompanied by examples (e.g. **deposits: drive off ~**: *Boiler cleaning is done by soothblowers which* **drive off** *any* **deposits** *from the heating surfaces)*. Eventually, the current practice and on-the-job requirements demanded for introduction of a non-lexicographic category, i.e. to use of a restricted number of ready made phrases needed for immediate communication purposes (e.g. **bearing**: *The bearing beds itself; The bearing fails; The bearing dissipates heat; The bearing runs hot; The bearing runs itself in; The bearing has run out; The bearing seizes*). To conclude, the examples contextualising the various meanings of headwords, verbal collocations and phrases and their translations considerably help users in their thorough comprehension of individual semantic values.

GLOBAL SHARING OF THE RESULTS

Although the dictionary compiling techniques are well known, they may considerably differ among themselves. Their concept is governed by the needs of a particular profession, as well as by lexicographers' personal views and experience. Choosing the appropriate concept that will fully meet the users' objectives may turn up to be the most difficult part of the whole job because the dictionary should be both formally consistent and user friendly. In order to avoid hard work of establishing the most appropriate lexicographic concept, as well as to save years of troublesome selection and processing of the thesaurus, the authors have decided to offer the world maritime community a completely elaborated source language side of the dictionary (English side), thus turning the dictionary compilation into the dictionary translation. As the marine engineering dictionary is text based, supported by abundant exemplification, collocation and phrases, it enables a skilful technical translator, assisted by a field expert to produce a dictionary. The idea has been tested and the results of two abridged entries translated into Polish (8), Italian (9) and Danish (10) by the author's fellow colleagues can be seen overleaf (Fig.1). The initial experiment proved that the translation of the dictionary is absolutely viable. Minor troubles could be experienced with unexemplified terms whose number is very limited (16%).

Fig. 1 Translation instead of compilation

ENGLISH – CROATIAN	ENGLISH – POLISH	ENGLISH-ITALIAN	ENGLISH-DANISH
daily tank *n* dnevni tank <Mart2>, dnevni potrošni tank <PE>, dnevni tank goriva <RB>, tank goriva za dnevnu upotrebu = DAILY SERVICE TANK, DAY TANK, DAY USE TANK, FUEL OIL DAILY TANK, SERVICE TANK • *After the settling tank the fuel is then passed through the purification system and discharged to the* **daily tank** nakon taložnog tanka, gorivo prolazi kroz sustav pročišćavanja odakle se tlači u dnevni tank |	**daily tank** - zbiornik rozchodowy <AA>, zbiornik paliwa na potrzeby codzienne <BB> = DAILY SERVICE TANK, DAY TANK, DAY USE TANK, SERVICE TANK. • *After the settling tank the fuel is then passed through the purification system and discharged to the* **daily tank**.ze zbiornika osadowego paliwo przechodzi przez system oczyszczania i jest odprowadzane do zbiornika rozchodowego |	**daily tank** *n* cassa di servizio <AA>, cisterna di servizio <BB>, cassa per uso giornaliero<CC>, = DAILY SERVICE TANK, DAY TANK, DAY USE TANK, FUEL OIL DAILY TANK, SERVICE TANK • *After the settling tank the fuel is then passed through the purification system and discharged to the* **daily tank** dalla cassa di decantazione il carburante passa attraverso il sistema di purificazione e viene scaricato nella cassa di servizio |	**daily tank** *n* Dagtank < >forbrugstan < >, servicetank < >, daglig tank = DAILY SERVICE TANK, DAY TANK, DAY USE TANK, FUEL OIL DAILY TANK, SERVICE TANK • *After the settling tank the fuel is then passed through the purification system and discharged to the* **daily tank** Efter settlingstanken føres/ledes brændstoffet gennem brændstofcentrifugen/ purifikatoren og derfra til dagtanken
damage ['daemIdž] *n* oštećenje <EMEC>, šteta <Fil> • *Damage can occur if care is not taken* šteta se može dogoditi ako se ne pazi	**damage** ['daemidž] - uszkodzenie <AA> szkoda <BB> awaria <CC> • **Damage** *can occur if care is not taken* uszkodzenie może wystąpić, gdy brak odpowiedniej dbałości /staranności/ |	**damage** ['daemidž] *n* danno <AA>, • *Damage can occur if care is not taken* se non si presta attenzione si può verificare un danno |	**damage** ['daemIdž] Skade(r) < >, • **Damage** *can occur if care is not taken* Der kan opstå skader hvis man ikke er omhyggelig
□ **abrasion** ~ oštećenje zbog struganja, abrazivno oštećenje; **bearing** ~ oštećenje ležajeva; **contact** ~ oštećenje zbog dodira	□ **abrasion** ~ starcie <AA>, przetarcie <BB>, zużycie <CC> uszkodzenie na skutek tarcia <DD> **bearing** ~ uszkodzenie łożyska **contact** ~ uszkodzenie mechaniczne	□ **abrasion** ~ danno per abrasione **bearing** ~ il cuscinetto danneggiato **contact** ~ danno per contatto	□ **abrasion** ~ Slid, skader < > **bearing** ~ lejeslitage; **contact** ~ berørings-/ kontaktslitage ~;
Δ **associate with** ~ dovoditi u vezu sa štetom/ oštećenjem • *Cavitation is usually associiated with damage, but at low pressure condition no damage occurs* kavitacija se obično dovodi u vezu s oštećenjem, no pri niskom tlaku ne dolazi do oštećenja | **confine the** ~ **to** ograničiti oštećenje/štetu na • The inspection revealed that the *damage was confined to an individual boiler tube* pregled je pokazao da je oštećenje ograničeno na samo jednu kotlovnu cijev	Δ **associate with** ~ kojarzyć, związać, łączyć. *Cavitation* is *usually* associated **with damage**, *but at low pressure condition no damage occurs*kawitacja zwykle kojarzy się z uszkodzeniem, ale w przypadku niskiego ciśnienia nie dochodzi do uszkodzenia **confine the** ~ **to** ograniczyć uszkodzenie do... • The inspection revealed that the damage was confined to an individual boiler tube przegląd wykazał, że uszkodzenie było ograniczone do jednej rury kotłowej |	Δ **be associated with** ~ essere collegarto a un danno oštećenjem • *Cavitation is usually associ iated with damage, but at low pressure condition no damage occurs* la cavitazione viene spesso collegata a un possibile danno, che tuttavia non si verifica in condizioni di bassa pressione | **confine the** ~ **to** limitare il danno a • *The inspection revealed that the damage was confined to an individual boiler* l'ispezione ha rilevato che il danno era limitato a un solo tubo della caldaia	Δ **be associated with** ~ slitage skader • *Cavitation* is *usually* **associated with damage**, *but at low pressure condition no damage occurs* Kavitation er normalt forbundet med skader, men under forhold med lavt tryk sker der in- gen skade | **confine the** ~ **to** begrænse skaden til... • *The inspection revealed that the damage was confined to an individual boiler* repareres Inspektionen viste at skaden var begrænset til et enkelt kedelrør |
o **The damage is beyond repair** oštećenje se ne da otkloniti vlastitim snagama | **The damage requires shore based assistance** oštećenje zahtijeva pomoć s kopna |	o **The damage is beyond repair** uszkodzenia nie można naprawić| **The damage requires shore based assistance** urządzenie wymaga naprawy z lądu /serwisu/.	o **The damage is beyond repair** il danno non è riparabile | **The damage requires shore based assistance** in conseguenza del danno è necessaria l'assistenza a terra |	o **The damage requires shore based assistance** Skaden kræver assistance fra land |

THE ORGANISATION SCHEME AND INFORMATION FLOW

The organisation scheme in Fig. 2 shows three essential items making part of the dictionary compiling and updating system. Those are Data Processing Centre (DPC), one or more National Coordination Centres (NCCs) and finally, End Users (EUs). The system is envisaged in three phases, i.e.

a) translation of the dictionary into mother tongue(s)
b) updating of the dictionary
c) adding sketches, illustrations and diagrams

DPC and NCCs plan and run all their activities on the basis of academic co-operation agreements or similar arrangements. The DPC team is prepared to offer all possible assistance in translating the dictionary, as well as in any other lexicographically related matter, so that the end users may get the dictionary in a translation time.

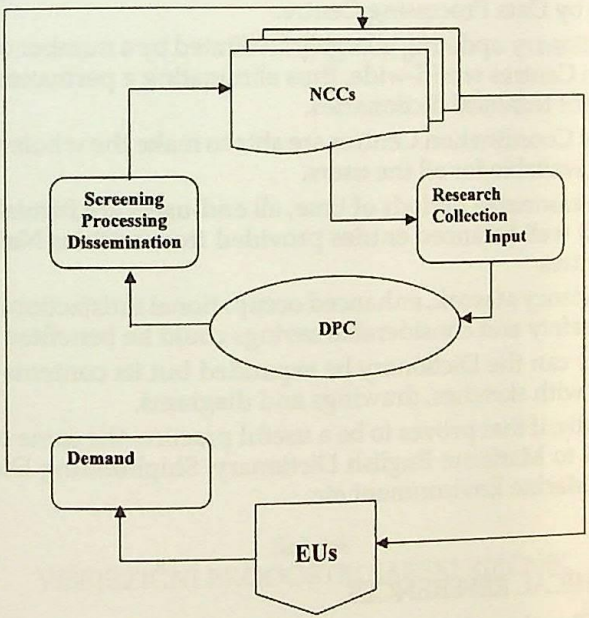

Fig. 2 The organisation scheme

The second phase, however, is a continuation of the dictionary data base permanent updating and exchange of information among the various system users. It could be done in the following manner.

The whole dictionary is stored in a DPC and all the data are accessible through Internet. DPC is made up of a limited number of experts whose duty is to select, process and disseminate new and acceptable entries to National coordina-

tion centres (NCCs), following the required formal lexicographic criteria. NCCs are further responsible for lexicographic research, collection and contributing with new entries for a permanent dictionary updating. They also gather additional information by on-the job end users (EUs) on their actual lexicographic needs (e.g. in new technologies, designs, systems, IMO rules and regulations). Such information are utilised for selecting appropriate text bodies and making the necessary new entries. NCCs may make the dictionary available either via Internet or in hard copies, thus including always new and updated entries.

In the third phase, which is optional, various possibilities are envisaged, as for instance, introduction of sketches, diagrams and photographs that may substantially help in understanding of the various meanings.

CONCLUSIONS

1. Each nation may have a modern Marine Engineering Dictionary in a relatively short time requred for its translation, and in so doing, receive full assistance by Data Processing Centre.
2. The Dictionary updating is largely facilitated by a number of National Coordination Centres world-wide, thus eliminating a permanent drawback of a number of technical dictionaries.
3. National Coordination Centres are able to make the whole multilingual dictionary available for all the users.
4. Within reasonable periods of time, all end-users are furnished with always new and well balanced entries provided from various National Coordination Centres.
5. The efficiency at work, enhanced occupational satisfaction, increased operational safety and considerable savings could be benefited
6. Not only can the Dictionary be expanded but its contents may be supplemented with sketches, drawings and diagrams.
7. Eventually, if that proves to be a useful practice, the same concept could be adopted to Maritime English Dictionary, Shipbuilding Dictionary, Dictionary of Marine Environment etc.

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Sažetak

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Ključne riječi: brodostrojarski rječnik, leksikografija, unos, baza podataka, Softlex