



## Implementation and Benefits of Environmental Management System (UNE- en ISO 14001:2004 Standard) In Shipping Company

A. Dionis<sup>1,2,\*</sup>, M. Adrián<sup>1,3</sup>, J. González<sup>1,4</sup>, S. Luis<sup>1,5</sup>, F. Padrón<sup>1,6</sup>, A. Peña<sup>1,7</sup>

### ARTICLE INFO

#### Article history:

Received 17 March 2016;  
in revised form 20 March 2016;  
accepted 28 March 2016.

#### Keywords:

Environmental, Environmental  
Regulations, Environmental  
Management, Port Dues.

### ABSTRACT

The management of a shipping company, it shouldn't be different from any other land management company, although there are some differences between both. Between them, we can be based on three main arguments for a shipping company must implement and bet on the UNE-EN ISO 14001:2004 standard environmental management: On one side introduce it in a most effective way, to all parties involved on shipping company management in the environmental politics that are related on with maritime sector. By other side, and in reference with national normative, maritime sector industry should provide with an international environmental standard in ships that make crossings on international waters, as like Peninsula-Canary Islands, studied object model on this article. Moreover, it can suppose, in addition of the prestige in front of maritime authorities and to the society in general, obtaining a quality certification, obtain cost savings in this management, inasmuch as current regulation, demonstrating that it is carrying, on by de shipping companies, an environmental management we can get cost savings in port dues.

© SEECMAR | All rights reserved

### 1. Introduction

About the base of the arguments displayed on the abstract, we can confirm that exist a social relation and an economic benefit with the implementation of UNE-EN ISO 14001:2004 standard.

There is a social commitment to all the industries and maritime's in particular, they fell more valued from a corporate point of view if you demonstrate sensitivity to all aspects or issues related to the environment. There is no doubt that implementation UNE-EN-ISO 14001:2004 standard make that every agent involved on the management and operations of the shipping company reflect about these environmental requirements.

The environmental impact of a shipping company may have in it environment can be significant. If we apply this environmental impact to the economic balance of the own shipping company, the reaching of this impact it is too much more that we have defined it before being that:

- There is a cost savings in reference to the payment of port dues on vessels operating regular lines, being that it is constant between different ports. The economic balance between benefits and cost savings can be and should be higher
- The client which requires the shipping company services is the *raison d'être* of the shipping company itself. The clients demand that the shipping company who transport their products across the pertinent maritime lines, operate with quality criteria, among which is the fact that shipping companies are involved in this type of environmental policy.
- The way in that shipping company attesting that it management are commitment with this environmental action

<sup>1</sup>Unidad Departamental Ingeniería Marítima. Universidad La Laguna.

<sup>2</sup>E-mail address: [adionis@ull.edu.es](mailto:adionis@ull.edu.es)

<sup>3</sup>E-mail address: [madriang@ull.es](mailto:madriang@ull.es)

<sup>4</sup>E-mail address: [jagonal@ull.edu.es](mailto:jagonal@ull.edu.es)

<sup>5</sup>E-mail address: [srluis@ull.edu.es](mailto:srluis@ull.edu.es)

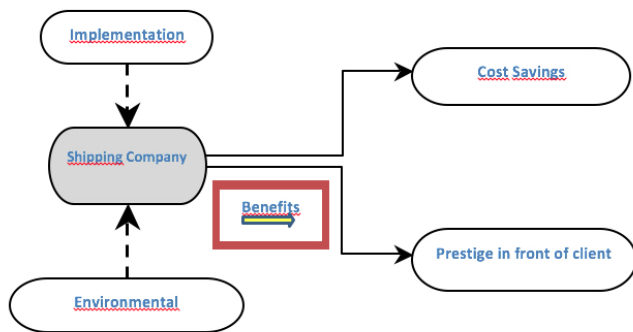
<sup>6</sup>E-mail address: [fpadron@ull.edu.es](mailto:fpadron@ull.edu.es)

<sup>7</sup>E-mail address: [amanda.penya@gmail.com](mailto:amanda.penya@gmail.com)

\*Corresponding Author: A. Dionis. E-mail address: [adionis@ull.edu.es](mailto:adionis@ull.edu.es)

lines, it is through of certification in environmental standards like as describes it in UNE-EN-ISO 14001:2004 standard.

Figure 1: Actual benefits in the implementation of UNE-EN-ISO 14001:2004 standard



Source: Authors

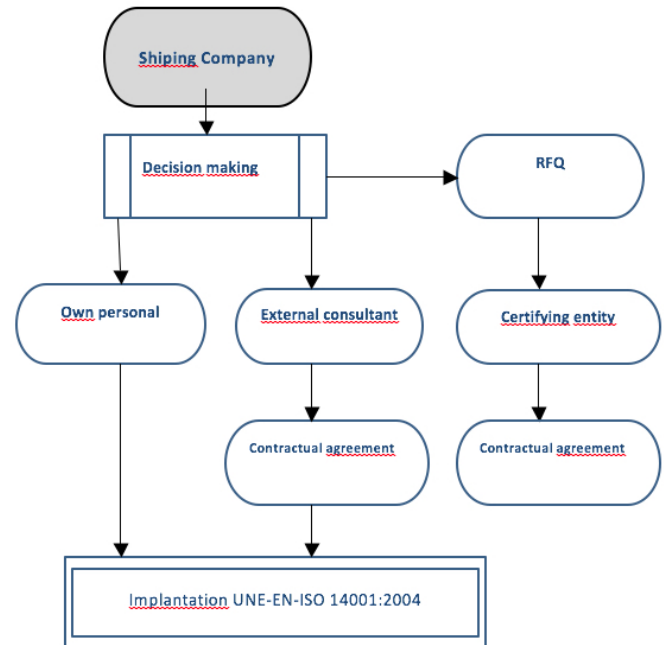
## 2. Development

First thing we want to note is that once the shipping company has decided to implement an environmental standard as described, is important to note that it must have clear three premises:

- Absolute involvement of the shipping direction. And this involvement is supported by technicians at a lower level in the organization of maritime business, for example inspection thereof that have seen the necessity and the advantages of having implemented a standard of this type. If the direction is involved and convinced, we comprehend that everything else is simply implement the requirements of UNE-EN-ISO 14001:2004 standard. Being that once the decision it has been taken it is a routine matter and is in this point where the organization can contact agents and consultants who can advise the organization to implement and then certify the environmental rule.
- In case of make the decision to implement the rule and hire or advice of an outside consultant or expert, because you could also consider the own maritime organization personnel could perform implementation. This will advise or help and especially indicates at what point is the company regarding the road to certification.
- The possibility to contact different consulting firms and organizations accredited for certification. Therefore it comes to evaluating the financial bid for the implementation and certification process, but also see the features of those entities, such as the financial offer, the proximity, the possible stay with her, etc. evaluate all these features mentioned above. And could observed in these entities which offer us guidance, as though the standard is unique,

there are entities and so we understand that not only gives pure certification, but also advice and include tool or accessories of office type control, generating records, etc.

Figure 2: decision-making to implement UNE-EN-ISO 14001:2004 standard



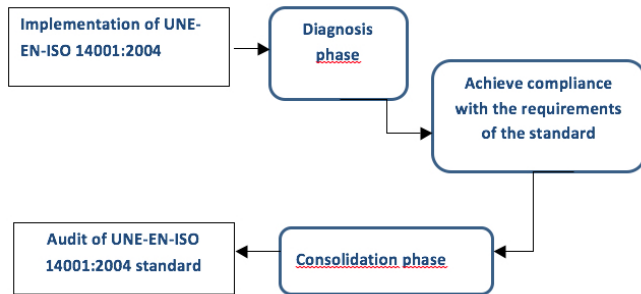
Source: Authors

Once it has been accepted the offer and there is a contractual agreement, working phases until the final certification audit are set according to what is called the scope. The scope is marked by the shipping company, that is, where it is thought to bring environmental management. The final reason seems evident, in the case of a company of these characteristics, inasmuch as the scope will reach all workplaces. It will be defined in the same office as the company vessels. The scope is marked with a certain economic objective to be achieved and as discussed above is a reduction in port dues. Then, the scope is set according to what the standard imposes to get this economic benefit. Then they understood that in this particular case the scope is very marked.

Therefore, once it was decided with which accredited entity it deemed appropriate make the certification of environmental management system based on UNE-EN-ISO 14001:2004 standard and we have a signed contractual agreement, the shipping company starts with a work planning with certification entity closely, nearby for a while until certification. But, it isn't an impediment to the shipping company is advised by an external consultant. Certification entity besides in these working phases also has its own protocols and it may be usual in the period of preparation before certification prior guidelines are established to audit. At first in parallel with the expert consultant, it is located at the shipping company in such obvious issues as they are in that section or requirements of the standard is met or not and in which ones need improvement. And a second pattern, check

that a high percentage of standard requirements have been met. We can define it like a diagnostic phase of shipping company in environmental issues in reference to standard and a second phase of consolidation of this patterns before audit by the credited entity, at the expense of, in a future, target are marked and is achieved by organizing continuous improvement in environmental aspects of the standard.

Figure 3: Implementation phases of UNE-EN-ISO 14001:2004



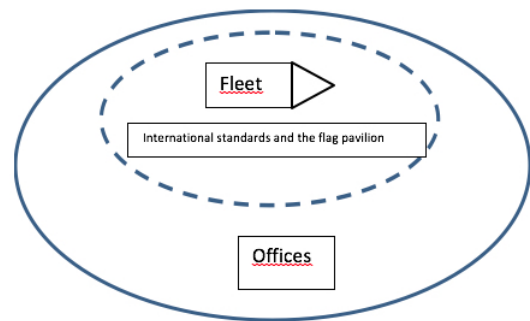
Source: Authors

A question that seems us interesting to stand out in this article is questioning in what is the shipping company performing from a legal point of view on environmental standard before or previous to get the certification. The environmental standard inside maritime sector is too prolix and to related to environmental aspects. The implementation of UNE-EN-ISO14001-2014 standard in which it's referred to fleet doesn't affect too much to the proper functioning, but obviously, gives guidelines for improvement. Given that most of existing shipping companies, like as MARPOL, at international level; the extent and requirements of energetic efficiency; Standard of national range like, for example, have a Waste Management Plan; another large standard like is ISM code, etc. Therefore, located any current shipping company within environmental perspectives and with a little extra effort, meet the requirements of UNE-EN-ISO 14001:2004 standard. Then, from our point of view, the disadvantages we are going to have it in other shipping facilities, like are the offices of the same, but in correction, the fleet correspond to the weight or to the majority activity of environmental impact. The shipping company offices are just a residual aspect respect to the environmental importance of the fleet. Arises simply establishing environmental board routines, so that evidence we help the environmental management system implemented. Is the problem on board? That's true, but as we said previously, as it complies with international and national rules whose flag the ship, we understood that it complies the majority of requirements of UNE-EN-ISO 14001:2004 standard.

Once and with the help of a consultant, it must be valued the total activity of the company, to start the diagnosis phase on maritime company. You could emphasize in the environmental impact activity that we made on board of the vessels of the fleet. Moreover, and as the proposal company has another workplace such as offices, also they generate aspects of environmental impact but obviously of reduced character against the fleet.

The challenges or the importance, it must be focus on, ba-

Figure 4: Scope of environmental management system based on UNE-EN-ISO 14001:2004 standard



Source: Authors

sically, the fleet. But, the basic challenge, it isn't on change routines that are made and meet the current regulations, we are trying to find the connecting links between the different activities that are made and they comply with the standard. The other challenge could go on the line that, if the shipping company hasn't got this environmental sensibility on reference to environmental practices on the offices, well, we must try to arrange them, implement them, follow them, propose them, staff training, reporting, etc. And basically, are the challenges that we could find.

At this point, we can begin to ask the audit with the accredited organization. Own UNE-EN-ISO 14001:2004 standard doesn't require a manual or formalized written guide and for them, the auditor should seek these activities that comply with the standard. What it seems recommended is develop a guide or procedural manual, i.e. an index of the environmental management system, since it could be understood that this guide is necessary especially when you have to bind in one paper the different activities of the company. The guide or manual it could carry out in two different areas.

- The offices area of shipping company. It could in this field define and in a generic way in one activity and in it, you could try to implement good environmental practice.
- Another area would be the fleet of the same. What it has been established are functions impact on the environment and could define some as examples. For example, the activity of maintenance and repair of engine room, another could be operational loading-unloading, ballast water management, concurrent work activity companies, and on these functions, we analyze, brake down and value the environmental aspects and it try to reduce or minimize to zero this impact functions.

With the national and international normative or the flag ship of the fleet, it doesn't seem to be enough. Therefore every reason lead us to think that there are some establishments quantified objectives for the future and could be considered as critical references to new requirements of the UNE-EN-ISO 14001:2004 standard on future versions, making decisions for

these objectives are met and is on this point where you could think that they may pose problems or consider a weak spot.

Although it may seem at first that meets the standard, it cannot seem to be clear quantified targets to raise and that to achieve these objectives are to be set very specific and very concrete policies from the environmental point of view. We understand that the standards could be too subjective and we aren't only referring to the UNE-EN-ISO 14001:2004, due to the rule provide objectivity.

If we focus on the audit phase of the standard, in the first instance the auditor-expert certifier done aboard ships a first initial visit. It therefore establishes an audit plan. On this first visit delves not enough on the requirements of the standard but it could emphasize by a generally way, previously could provide activities, aspects, facts items, that have to do from the point of view of the fleet with the environmental impact.

And we are talking from a burst of machine, clearly the generations of gases. Waste generation on board, its valuation. Noises. General cleanliness of ships, etc. With regard to documentation could show interest in itself to observe the rules may have some link with environmental issues, as could be the involvement of the ISM code, MARPOL compliance, etc, if they are documented, if records are under control and see whether the crew members are aware of generating records under environmental procedures, i.e., to summarize, in the first instance may have a certain approach in relation to environmental issues generated by activity of the fleet regarding its impact to the environment.

One aspect to consider is the link between the ISM code and the UNE-EN-ISO 14001:2004 standard. We are not going to use the expression total, but mostly all procedures manual ISM code or security management include procedures that have to do with the environmental management of a ship of the fleet and therefore are related to the own environmental standard. We may be talking about procedures for spill contingency, procedures for delivery of sludge, procedures for bunkering, procedures for making lubricants, procedures for delivering garbage, etc. in other word, UNE-EN-ISO 14001:2004 standard, when attending on board inescapably have to resort to the analysis of much management procedures of ISM code and in particular those who are concerned with environmental issues.

Following the first visit of the external auditor, it's clear that obviously for the full implementation system based on the reference standard, have all ISM Code procedures will be a significant weight within management. But you could always observe deficiencies or observations that can be incorporates in the future and could be the segregation of garbage on board and deliver them in terms that although MARPOL does not match exactly the approach with regard to industries land, does not follow the standards of MARPOL and that can assume at that initial visit an observation. The why? It is in reference to terrestrial industries discussing standardization segregating products with different colors and different containers. Instead MARPOL makes specific references to the maritime sector, which in no way is a disadvantage in carrying out the standards of land companies, but would not be any problem in relation to standardize environmental standard and the requirements of MAR-

POL, but we understand that it is not a problem to unify criteria.

If we continue on this first visit but now focusing on the offices of the shipping company, are not only offices. The offices are a physical place, is the workplace of a group of people and part of that group of people manages the fleet. This mean that we consider the auditor - expert will not only consider the activities of the offices as such, but in compliance with the environmental standard of the specific personnel who manage ships i.e., the fleet. It is to see whether there is an awareness of environmental issues, from basic operating as saving water, electricity, waste segregation, etc. But then we might consider elsewhere in the sense that if the office staff that manages the fleet working under appropriate procedures. If you have control over environmental records generated, it emphasizes the involvement of the maritime sector specific codes such as ISM Code, MARPOL, etc.

In this first visit, the auditor - expert could already generate a report. On this first visit we could talk of shortcomings, observations and nonconformities which, remember, emanating from non-compliance with the requirements of the environmental standard. Regarding non -conformities you should do an immediate action and return to the weakest point. Therefore, we need to quantify the potential impacts to the environment and minimize. And it is at this point where you would run the greatest force or action ahead of the second phase of the audit. It is, and so we understand that we are in the process of quantification. You could even add at this early stage or prior audit that the certification authority gives a correction period to rectify these nonconformities, deficiencies or observations found. Then, at this stage, while trying by the shipping company goes solving these potential problems, it could be reporting to the auditor - expert actions that are made. In ships of the fleet would be otherwise. The idea is to reporting and showing the actions to be carried out and solving.

If we now focus already in the second phase of consolidation, manual or environmental guidance, procedures, etc. is reviewed. In this second phase becomes as to perform the same procedure working as: visit the ship and visit the office. On this second visit and starting with the ships in the fleet, you could make a general visit to the ship, have greater emphasize on all action performed by ship and ship crew and can have impact, as mentioned above. We could add waste management kitchens, food stores and even how particular level wastes are managed by the crew. Could leave evidence that through various industry regulations already explained in previous paragraphs of this article, only the fulfillment of these specific regulations in the maritime sector is met with most of the requirements of UNE-EN-ISO 14001:2004 standard.

Clearly it is not only the subjectivity of industry standards, but goes beyond, as in the case of calculating the impact and measures it, also for shipping offices. Stress then in reading the final report of the audit, the points of improvement for the future. Concrete steps. Quantifications. Action plans for environmental improvement practices, etc. An internal committee of the certifier's who evaluates the actions that have taken place in the shipping. And it is who gives the final certification of environmental management system based on UNE-EN-ISO

14001:2004 standard in the determined scope. The immediate future for a shipping company that has achieved certification of the management system of environmental standard, would aim to respect this certification for a period of time. And during that period of time, the certifying organization itself performs a series of checks to verify whether the shipping company achieves its approaches and environmental aspects. And that's the pattern.

It is therefore clear that an important factor is the involvement of the staff and crew of the shipping company. That is why training is vital, intending to maintain active certification. The staff has to shape it and raise awareness. Formation is inevitable and gives it with minimal improvement. Another aspect that could be considered is the manual energy efficiency is a mandatory requirement and is a way to start a series of stricter activities. The manual energy efficiency has helped achieve environmental certification basically its existence. Within the fleet is a sensitivity with respect to energy efficiency. And it is a statement of intent in reference to energy efficiency.

There is an important aspect, and that is a requirement of manual energy efficiency and to the owner, referring to the control of emissions of CO<sub>2</sub> to the atmosphere. That is one of the aspects that have been able to contribute as quantification and as control points for setting goals. Then the existence of manual energy efficiency has been a positive added value. Another positive aspect is in reference to waste management manual that emanates known as MARPOL.

Another vital element has been the existence of the waste management plan on board. It has helped in that includes segregation of products on board quantified as waste and that establishes duplication with environmental standard. Referring to whom it is delivered, waste managers, as is handled, etc.

A key figure is the coordinator of the environmental management system. This figure stems from the implementation of the standard UNE-EN-ISO 14001:2004. The mission of the coordinator is to energize all environmental actions in relation to the standard, keeping alive the environmental management system. To comply with this guidance or environmental manual set and meet the requirements of the standard and meet the

established environmental objectives.

### 3. Conclusion

- An environmental management system based on UNE-EN-ISO 14001:2004 established bring order on environmental matters
- It has to be seen as an opportunity
- Consolidation of the image of the shipping company
- Cost savings in reference to the operation of the fleet with an environmental management
- Increased confidence with suppliers and improve the trademark of the shipping
- Integrate all environmental aspects
- Minimize environmental impacts in the workplace of the shipping. More in the fleet and to a lesser extent offices in support of it
- Making the provisions of the ISM Code, MARPOL, Energy efficiency plan, etc. Like as aid and support to implement UNE-EN-ISO 14001:2004 standard.
- Consider the audit of environmental management system as a positive requirement, where an outside shipping company to the auditor-expert, gives compliance to the standard and establishes transparency

### References

- Abril, Enríquez, Sánchez, (2008). Integración de sistemas de gestión. (fc editorial).
- AENOR, (2004). Environmental management systems - requirements with guidance for use (iso 14001:2004).
- Castellanos, Gómez, González, (2003). Gestión ambiental en navieras.
- Real Decreto Legislativo, (2011). Que aprueba el texto refundido de la ley de puertos del estado y de la marina mercante. artículo 245. bonificaciones de las tasas de actividad y utilización. bonificación del 5 tasa del buque.