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# Viewing UC-METC-INC's partnership on vermi-composting towards environmental management system certification and pedagogy

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**Abstract**

Since its establishment in 1990, being one of the top maritime universities in the Philippines based in Cebu City, the University of Cebu-Maritime Education and Training Center (UC-METC) continues to endeavour to be compliant in almost all of its quality management certification applications and external audit requirements. With the current 18 scholarship sponsoring shipping companies, fostering partnerships with global navigation and shipping companies in environmental protection and conservation means motivating the university in taking active role in complying with the task of quality management systems towards sustainable development.

This unique process of private to private partnerships (PtPP) between the UC-METC and INC NAVIGATION COMPANY PHILIPPINES, Inc was born out of the desire of INC to have the sponsored cadets, under the scholarship program, participate in environmental stewardship such as waste management, specifically vermi-composting technology. This continuing initiative have been packaged in a mutually- beneficial project by trying to achieve the goal of ISO 14001 certification of UC-METC supported by the INC.

In the process, the project allows environmental education pedagogy and advocacy nurtured among its target participants, the sponsored maritime cadets in particular and the rest of the studentry, and the non-teaching and teaching forces of the university multiplied by the outside stakeholders in general.

**Keywords:** Waste management, vermi-composting, private to private partnerships, maritime environmental education, certification, quality management system

## Introduction

Major industry leaders, managers, academicians, and professionals have to face different demands from various entities and public sector to improve environmental performance whether in workplaces, international and domestic stations (offshore and otherwise), universities and academic institutions and in the products and services they create. The most pressing demand nowadays for instance is how to the balance social and political dimension in order to continually protect the environment and the pressure to deliver excellent returns to shareholders. The University of Cebu is up to the challenge in the modern times. It was founded by Atty. Augusto W. Go in 1964 as Cebu College of Commerce (CCC), after eight years, it became Cebu Central Colleges to cater to growing customers and clients. Almost 40 years later, it sprouted to four big campuses (University of Cebu-Main, University of Cebu-Lapu-lapu/Mandaue, University of Cebu-Banilad and University of Cebu-Maritime Education Training Center) strategically spread out in the cities of Mandaue and Cebu. The University of Cebu-Maritime Education Training Center (UC-METC) is home to the maritime courses, the Bachelor of Science in Marine Transportation, Marine Engineering and Seafarer Catering and Stewarding Courses. To date, the campus reached around 7,000 enrollees.

Adhering to the various international quality and certification principles, in 1997, the Quality Management System (QMS) of UC-METC was certified by Det Norkes Veritas (DNV) as

compliant to the DNV Rules for Maritime Academies per Standard for Certification No. 3.401 and DNV Rules for Training Centers per Standard for Certification No. 3.402. Later in 2002, the DNV certified METC as compliant to the ISO 9001-QMS standard for both Maritime Academy and Training Center.

With the current 18 scholarship sponsoring shipping companies, fostering partnerships with global navigation and shipping companies in environmental protection and conservation means motivating the University in taking active role in complying with the requirements of quality management systems towards sustainable development. On the other hand, of the 18 companies that provided scholarship to qualified Cadets, five (5) of these namely;

Norwegian Shipowners Association (NSA), Interorient Navigation Co., Inc. (INC), International Maritime Employers' Committee (IMEC), Breise, and Anglo-Eastern are sponsoring one (1) class of around 25 Cadets for Deck and Engine. On the other hand, 37 shipping companies have hired-cum employed METC products as apprentice Cadets on board their vessels for one (1) year. The UC-METC-INC collaboration hopefully starts the expediting the process of certification since environmental management is one of the key objectives of UC-METC.

This paper brings the private sector to the fore in an important capacity in development stage particularly on environmental protection vis-a-vis sustainable development. Corporate and academic institutions must undergo this process in the light of various economic, social and environmental changes and developments the world have seen so far.

The United Nations Development Programme (UNDP) defines capacity development as the *process individuals, organizations, institutions and societies develop certain "abilities" to perform functions, solve problems and set and achieve objectives.* Certainly, the UC-METC in close cooperation with the maritime and navigation companies could help in every process or step to fulfil the institutional and global mandates and help to carry out seeking better ways to balance social, economic and natural goals, that is in sustainable manner.

**Materials and Methods**

In 2010, one of the 18 companies, the Interorient Navigation Co., Inc., thru its Philippine branch, the INC NAVIGATION COMPANY PHILIPPINES expressed willingness to let their sponsored Cadets to engage in a regular community service that is linked with environmental protection. Before INC partnered with UC-METC, the company has already been serving the global need for seafarers back in the 1979 when it was set up. It is an independent ship manning management company providing the Interorient Marine Services based in Limassol, Cyprus. With crewing services based on ISO 9001: 2000 of which the company is certified and all crew accepted are screened in consonance with the company's hiring procedures in conformity with the requirements of the principal Standards of Training Certification and WatchKeeping for seafarers as amended and the provisions of SOLAS.

Interorient provides trained seafarers for various types of vessels such as container vessels, tankers, bulks and asphalt carriers with more than 1000 seafarers presently employed onboard. In its Philosophy, it strives to protect the marine environment and is constantly encouraging employees to be innovative in finding new solutions to old challenges. One of its core values is - Safety and Environmental Awareness and an excerpt of its Environmental Policy Statement states that "*The company's environmental management system defines and documents all procedures and instructions commensurate and appropriate to the nature, scale and environmental impacts of its activities, products and services. The company fully recognizes the environmental impact of sea transport of all commodities and is committed to preventing and eliminating pollution, including implementing measures to reduce emissions - and continually improve its environmental performance by working in an environmental friendly manner and implementing the company procedures…..*" (http://www.interorient.com/manila.asp accessed August 5, 2011)

At the outset, UC-METC suggested to ink a Memorandum of Agreement (MOA) with INC and make the latter assist in establishing EMS in the University. In the process, the Cadets will assist the campus in establishing, operating and maintaining a composting facility using vermi

(worm) as low-maintenance technique in treating the organic fraction of the generated solid waste in the campus considering the magnitude and size of students and employees. This unique process of private to private partnerships (PtPP) between the UC-METC and INC was born out of the desire of UC-METC's goal of ISO 14001 certification to be supported by INC. Specifically, the method of partnership takes the form of covenant through the Memorandum of Agreement with INC Navigation Company Philippines, Inc. represented by Capt. Jerome Delos Santos as the first party and UC-METC represented by Atty. Augusto W. Go (UC-METC) as the second party.

On March 18, 2011, both parties obligated themselves in the establishment of a partnership in protecting and conserving our environment by signing the MOA. With particular considerations, INC Navigation Company Philippines, Inc shall, to wit:

1. Assist UC-METC in the 14001 (EMS) implementation,
2. Allow UC-METC to conduct site/office observation and study of its environmental management system,
3. Allow UC-METC to have access to its EMS manual for benchmarking,
4. Provide technical assistance concerning ISO 14001 (EMS)
5. Conduct EMS Orientation and an Annual External EMS audit once the METC's Environmental Management System is established.

On the other hand, UC-METC's reciprocal obligation of the MOA shall, to wit:

1. Assign UC-METC INC Cadets to spearhead the vermi-composting activities
2. Schedule anEMS orientation and an Annual External EMS Audit in coordination with INC Cebu,
3. Allow INC to conduct EMS Orientation and an Annual External EMS Audit once the METC's EMS is established.

In the process, the project allows environmental education pedagogy and advocacy nurtured among its targeted participants, the sponsored maritime Cadets in particular, and the rest of the studentry, including the non-teaching and teaching forces of the University multiplied by the outside customers-cum stakeholders in general.

**Results and Discussions**

The INC NAVIGATION COMPANY PHILIPPINES Inc, as the first local manning company to have been certified to ISO 4001 as the global standard for EMS shared its initiative by deciding to support environmental management education to UC-METC. Driven by corporate social responsibility and mutual understanding within the realm of sustainable development, UC-METC through its Quality Management Representative (QMR) Office in time for the signing of the MOA on March 2011, a first orientation on vermi-composting technology using earthworm (*Eudrilus eugeniae* specie or African night crawler) was provided to students, teaching and non-teaching personnel to treat and process biodegradable waste. The African night crawler kind (ANC) is touted as the most efficient earthworm that breaks down organic material in the tropical zone and is widely used in the country. Even in 1981, Dr. Otto Graff who brought the original cocoons to the Philippines through Dr. Rafael D. Guerrero III, already concluded that the ANC is one of the earthworm species used for vermi-composting in the tropics. In 1982, Dr. Rafael D. Guerrero III introduced it in the Philippines via West Germany. The origin of this species is West Africa, but it is widely distributed in both tropical and subtropical countries of the world today (Graff 1981, cited by Guerrero et al. 1984, 2009). However, some government and non-government research institutions and farms are using this technology to hit two purposes, waste management and organic farming advocacy.

The prior admission that the problem of overflowing, unmanaged and less attention given to the treatment of generated organic waste at UC-METC is an example of non-conformity to the QMS standards. Dealing with it is a big step towards standards requirements compliance. Not only that, the implementation of statutory Republic Act 9003 or the Ecological Solid Waste Management Act (ESWM) of 2000 inside the campus is viewed as proactively helping the community (barangay) by contributing an improved system as well. The law specifically provides:

> *"Article 4, Section 33. Guidelines for Establishment of Materials Recovery Facility - Materials recovery facilities (MRF) shall be designed to receive, sort, process and store compostable and recyclable material efficiently and in an environmentally sound manner. The facility shall address the following considerations:*
>
> *(a) The building and/or land layout and equipment must be designed to accommodate efficient and safe materials processing, movement, and storage; and*
>
> *(b) The building must be designed to allow efficient and safe external access and to accommodate internal flow."*

In the Philippines, the legal bases for such MRF specifically pinpoint Section 20: Mandatory Solid Waste Diversion – 25% of all solid wastes must be diverted from waste disposal facilities within five (5) years thru resource recovery activities and increased diversion targets after every three (3) years. Section 32 and 33 which mandates every barangay to establish MRFs. Furthermore, Section 45 points out incentives wherein rewards, tax and duty exemption, tax credit, non-fiscal incentives and financial incentives shall be given to barangays if these are implementing properly the waste law.

Source separation or segregation of waste into various classifications would play a key role in the successful treatment of organic wastes into composting methods like the case in Ghana, Africa where economic incentives influenced household attitudes towards SW segregation at source (Owusu et al, 2011). Following the provisions in the MOA, the UC-METC has already constructed three (3) beds for composting facility and is technically complying with the law even if it is not a local government unit by providing a MRF inside the campus. An MRF is considered as such if it has segregation, recycling and composting component.

Once the composting system reaches stability, a training pavillion or corner and an organic garden will be set-up to physically showcase the objective indicators the project will generate in the future. It will have enormous potential to train other UC campus stakeholders and the neighbouring communities in the city that will need assistance, consultancy and advisory pertaining to waste management and related concerns. Hence, social corporate responsibility of the campus scales up.

Similarly, outreach and extension programs of UC-METC are normally facilitated by its Community Extension Services and Development (CESDEV) unit. Equally important environmental activities such as coastal clean-up, forestation, relief operations to Cebu city villages and communities affected by calamities and disasters are usually tied up with non-government and government organizations. In the future, plans in the pipeline will be released to support the University in its insatiable quest for partnerships with other entities and do its share for sustainable development through proper resource and environmental management. But this particular MOA between UC-METC and INC establishing the project usher a new face of integrating and linking existing similar activities in UC-METC especially relevant themes on environment and social development that affect scaling up quality management standards.

**Recommendations**

To complement with the newly established vermi-composting facility, there are ongoing plans specifically on waste management within UC-METC, to wit:

1) To have another *in situ* composting area using the windrows and natural process technique intended for the cut grass trimmings, branches of pruned trees and other green bulk waste.

2) To organize the cafeteria locators at the old building and at the 5$^{th}$ floor of the new "I-Building" by setting-up a system of food waste retrieval system so that a smooth flow of food waste coming from the source to the composting area shall be obtained to supply organic waste to the worm beds. The MRF shall follow the general process flow of composting which the Solid Waste Management Association of the Philippines (SWAPP, Inc) formulated to bring the technology to the smallest units of governance around the country. The process starts from a)

receiving, b) processing, c) decomposition, curing, d) refining and customizing, e) storage, and f) bagging. The receiving phase or the delivery area determines segregation, delivery intervals. Processing phase shall feature removal of impurities, shredding, manual separation into various materials, and screening. Decomposition, in this case, shall have the ANC worms work and the actual decomposition takes place. Curing phase takes in the factor of favorable climate and temperature with time as the main focus. Storage phase features vermicast or the compost products are stored and bagged ready for utilization. 3) To recommend to the University to allocate budget and provide full support to conduct a first in the City, a rapid waste characterization study (WACS) in the campus to know the waste profile of UC-METC to serve as input to the environmental database and shall be available for future use in accreditation/quality management application processes.

**Conclusions**

The project stakeholders will have the basic understanding of environmental initiatives to be able to promote sustainable development and environmental principles in the campus, thus, upgrading a notch higher in the continuing quest for EMS. This process as a benchmark for QMS in the long term creates a pedagogical culture at UC-METC wherein Cadets and students will have hands on training on how to be involved in 3Rs (waste reduction, reuse and recycling) and be engaged in the operation and maintenance of the composting facility. The leadership of UC-METC on the other hand will be part of that process by allowing innovations, continual improvement of the system – composting system which treats organic fraction - in an efficient manner for resource efficiency is defined as the amount of resources consumed in producing a unit, product or service. Certainly this requires a perspective and a decision-making process that takes into account economic value and environmental sustainability (ADB/IGES, 2008). To follow the principle of "less is more" is actually efficiency in relation to resources used. With the way the partnership is being managed so far, it is seen that the potential for success is achievable as resources with manpower is a given factor and in fact the support just keep on coming. The technical training and know-how will come in step by step as long as the full support given by the leadership with the partner will not be altered.

There is that QMS maxim which says, "write what you do and do what you write". This process of setting up the composting facility goes beyond what the maxim alludes to. Certainly it will not just be a case of documenting what UC-METC tries to do and doing what is written, but rather it will be living up to what has been written and implemented and eventually reaping the good fruits of the seeds sown towards sustainable development embedded in the pedagogical culture UC-METC will be known for in the future.

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