



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

23600



Instituto Politécnico Nacional



Centro Mexicano para la Producción más Limpia

PILOT PROJECTS

IN

CHEMICAL LEASING

Project No. UE/INT/06/003

Contract No. 16001472

November, 2008

TABLE OF CONTENTS

OWENS CONRNING3
MARECSA5

OWENS CORNING**Concept for a Chemical Leasing pilot project for OWENS CORNING
related to the use of Lubricants in Industrial Curing Oven****BACKGROUND*****A. Fiberglass process:***

Fiberglass refers to a group of products made from individual glass fibers combined into a variety of forms. Glass fibers can be divided into two major groups according to their geometry: continuous fibers used in yarns and textiles, and the discontinuous (short) fibers used as batts, blankets, or boards for insulation and filtration.

The basic raw materials for fiberglass products are a variety of natural minerals and manufactured chemicals. The major ingredients are silica sand, limestone, and soda ash. Other ingredients may include calcined alumina, borax, feldspar, nepheline syenite, magnesite, and kaolin clay, among others. Silica sand is used as the glass former, and soda ash and limestone help primarily to lower the melting temperature. Other ingredients are used to improve certain properties, such as borax for chemical resistance. Waste glass, also called cullet, is also used as a raw material. The raw materials must be carefully weighed in exact quantities and thoroughly mixed together (called batching) before being melted into glass.

Part of the process makes the "Glass wool". The rotary or spinner process is used to make glass wool. In this process, molten glass from the furnace flows into a cylindrical container having small holes. As the container spins rapidly, horizontal streams of glass flow out of the holes. The molten glass streams are converted into fibers by a downward blast of air, hot gas, or both. The fibers fall onto a **conveyor belt**, where they interlace with each other in a fleecy mass. This can be used for insulation, or the wool can be sprayed with a binder, compressed into the desired thickness, and **cured in an oven**. The heat sets the binder, and the resulting product may be a rigid or semi-rigid board, or a flexible batt.

B. OWENS CORNING:

Owens Corning is a \$6 billion global, industry leader with 20,000 employees around the world and with manufacturing, sales and research facilities including joint venture and licensee relationships in more than 30 countries on six continents.

Owens Corning is a world leader in building materials systems and composite solutions, delivering a broad range of high-quality products and services. Their products range from insulation, roofing and manufactured stone veneer used in residential, commercial and industrial applications.

One of the most important products applications is Veils and Specialty Non-Wovens. The products are made from randomly dispersed glass fibers, wet laid and bonded into a thin sheet. Basically, in Mexico Owens Corning develops "Panel Facer" for acoustical and thermal insulation paneled ceilings are faced with a Veil that increases panel stiffness and resists puncturing. Veils are also combined with materials such as polyurethane, polyisocyanurate, phenolic and polystyrene foam to produce complete insulation systems.

OBJECTIVE

To develop and implement a Chemical Leasing Model in Owens Corning Company, basically in a conveyors belt lubrication (use of lubricants) in an industrial curing oven.

CONCEPT

Owens Corning develops fourteen different products, the principal are MBI, AISLHOGAR and TRS with 41 %, 18 % and 15 % of production level respectively; the remaining 26 % is distributed in the rest of the products.

Each product require a specific temperature in the curing oven to make the fiberglass belt, the temperature range from 310 to 245 °C, this operation temperature differential could demand different lubricants quantities, because high temperature can reach the pour point of the lubricant and increase the metal friction for low adherence in the conveyor chain.

All products use the same production line, *i.e.*, the same curing oven, so need move the lubrication rate depending the product, production and temperature requirements. Actually Owens use the lubricant USL-600 and USL-650 "High Temperature Synthetic Bearing and Chain Lubricant" develop for LUBRICON - US INDUSTRIAL LUBRICANTS <http://www.lubricon.ca/>.

The average of lubricant consumption is 1.43 m³ per month (around 6 to 7 containers, each container has 208 liters), and represent 8965 € (1 € = 17.64 Mexican Pesos) as an average fix cost per month.

The company doesn't know exactly the quantity of lubricant apply by each product in the different operation temperature, they only know the average of productions (tons by month by product) and the total lubricant consumption per month.

The first step will be know the quantity of lubricant use by each product in order to check if high temperature demands more lubricant than low operation temperature. Actually, if only compare the total production (tons per month) and the lubricant consumption (liters per month) the average lubricant index consumption is 0.87 liters by ton of product (or 5.45 € /ton of product), doesn't specify what kind of product, so is very important for the implementation know the real consumption by product. After that, we can suggest and index payment by productivity, maybe \$/ton of product.

Finally, the Chemical Leasing implementation be increase production, reduce downtime and extend the conveyor's chain life. Actually the conveyors life is 2 years and its cost is 11338 €.

NEXT STEPS

- 1) Calculations for the lubricant consumption and technical analysis about application in the conveyors and bearing, in order to have elements of the payment index.
- 2) Meeting between Owens, Lubricon and CMPL.
- 3) Technical proposal by the supplier in terms of Chemical Leasing, Collaboration agreement and work plan.

MARECSA

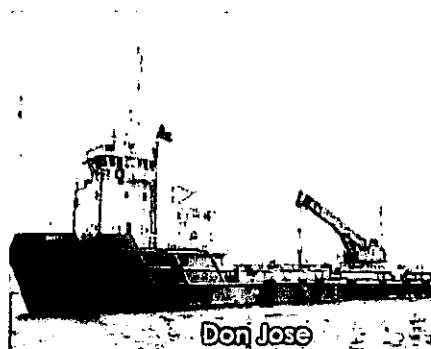
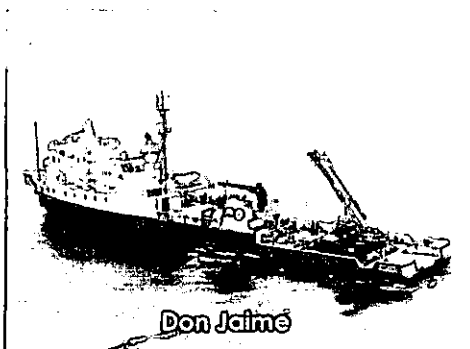
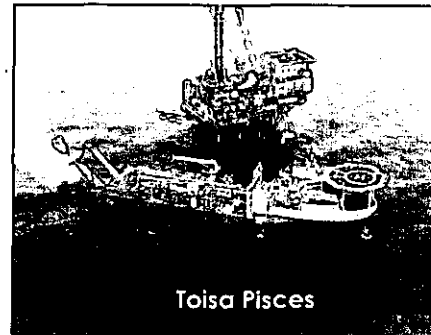
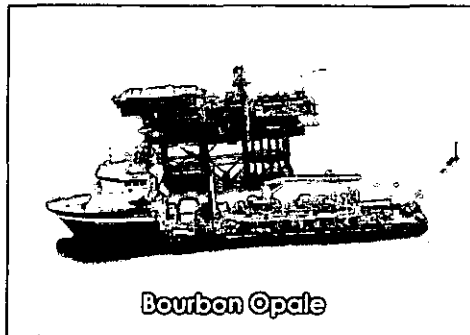
Concept for a Chemical Leasing pilot project for MARECSA related to the use of chemicals in the reception of the products from the well

BACKGROUND

MARECSA is a Mexican company with offices in Campeche, Tabasco and Veracruz. The company has 206 employees. Provides services of design, conversion and operation of dynamically positioned which provide, fluid reception, processing and disposal during: well completion and repair, well simulation, well test on superficial wells. Has experience in care of oil wells, more than 1,000 services in 3 years, crude range: 10 to 43 API, 1'000,000 bbls of crude oil recovered, 500,000 bbls of producer water recovered and disposed.

The commitments of MARECSA are: provide environmental solutions of the offshore oil platform, eliminate flaring during well service for reduce the green house gas emissions, develop innovative solutions for prevent air and sea pollution.

MARECSA has four new generation vessels: Bourbon Opale, Toisa Pisces, Don Jaime and Don Jose in 2009 will incorporate a new boat the ECO III.



A Well Testing Service Vessel (WTSV) is a vessel designed to receive, control and process the products emanating from services to marine wells during:

-
- a. Well termination
 - b. Well stimulation
 - c. Well Repair (work-over)
 - d. Well measurement

It has the capability of processing, storing or offloading the products and disposing them in an ecological (clean) manner, therefore the vessel is also defined as a Floating Production, Storage and Offloading vessel (FPSO). It must be capable of supporting early production for relatively long periods of time, as long as there is an offloading pipeline or satellite barge to offload the product and the weather is such that allows continuous operations. It will also be capable of providing assistance to the production whenever the client requires maintenance or repair of their facilities.

The WTSV's capabilities include:

- Reception of the products from the well via flexible hoses connecting the well to the production system installed on the ship.
- Process and separate water, wasted and un-wasted chemicals, gas, crude oil and solids. The water will be stored in the WTSV's tanks and later re-injected into industrial waste well or offloaded to a processing facility onshore.
- The crude and gas will be measured in quantity and quality. The combination may be returned to the export line, or if this last is not available, the gas will be flared and the crude stored in the WTSV tanks to later be exported to an onshore or an offshore offloading terminal.
- The solids are stored in containers to be disposed to shore.
- The vessel has dynamic positioning capabilities to provide autonomy in motions and the possibility of attending multiple locations as per the client's well testing program or service requirements.
- It will have all the auxiliary services for its operation and for the crew.
- Crude ranges are from low to high (12 to 430) API. Pressures up to 10,000 psi at the well head.

OBJECTIVE

To develop and implement a Chemical Leasing Model in MARECSA Company, for the use of a specific chemical in the reception of the products from the well.

CONCEPT

The CMPL had a meeting with MARECSA for explain the model and request the next information:

- Monthly Consumption of chemicals by type of intervention
- Number of doses of chemicals by type of intervention

- Historical production by type of intervention
- Type and density of crude
- Historical Flow
- Intervals of time and amount of chemicals that are added
- Costs of chemicals

At the moment MARECSA send the information and the CMPL is analyzing it.

NEXT STEPS

Calculations for:

- Know the actual situation of the operation
- Identify chemicals that could be integrate at the model
- Select the best chemical for the leasing
- Know the productivity index of chemicals
- Obtain the unit of payment

Meeting with MARECSA to explain the unit of payment.

Meeting between MARECSA, the chemical supplier and CMPL.

Technical proposal by the supplier in terms of Chemical Leasing, Collaboration agreement and work plan.