

# SYNERGIES

VOLUME 18

Tomorrow's Materials Solutions...Today.



## DOC COVINO PASSING OF A LEGEND

General Magnaplate is sad to announce the passing of its founder, Dr. Charles P. Covino. Born in 1923, Dr. Covino, often more affectionately known as "Doc", established the company in 1952 following his service in the armed forces in the South Pacific during WWII. The company was founded as a testing facility called Magnaplate Metal Finishers in a small garage in Hoboken and has blossomed into a multi-national corporation with facilities across North America and licensees throughout Europe and Asia.

A graduate of both the University of Alabama and Manhattan College, 'Doc' claimed that choosing the right problem and persevering until you found an answer was the pattern of the great minds in history. His life itself is a dedication to perseverance, mental energy and the stubbornness to succeed where others have failed.

Magnaplate began developing coatings 50 years ago when scientists sought answers to new problems arising from the performance of metals in outer space. Existing coatings could not fill the requirements for long-term, fail-safe protection. Conventional protective coatings or lubricants actually "boiled" away in the vacuum of space. New, permanent, integral, functional coatings had to be developed.

Working closely with NASA, Doc Covino created a wide variety of coatings for both ferrous and non-ferrous metals. As a result, every American space vehicle since NASA began has included thousands of individual parts coated by Magnaplate.

Today these coatings are used not only in space but for other "down-to-earth" applications across many sectors including pharmaceuticals, food processing, oil and gas, electronics and packaging, to name a few. One of Doc's greatest achievements was when his HI-T-LUBE® coating was cited in recent editions of the famous GUINNESS BOOK OF RECORDS as "the most slippery solid in the world," with a record-setting Coefficient of Friction (COF) of 0.03.

Doc also led a tremendously full and varied life outside of the General Magnaplate plants. He was an accomplished pilot, he bred and showed American Saddlebred horses, he collected cars and, of course, found time to spend with his family. Age was something that never stopped Doc from doing what he wanted – at 72 years old he entered and won 1st place at the USA Track and Field National Masters Indoor Championships in 1995. Doc is survived by his wife, his daughter and son-in-law, five granddaughters and three great-grandchildren.

*A dedication to a great mind and an inspiration to young minds.*

# NEW COATING INCREASES CLEANABILITY AND DURABILITY

General Magnaplate's continuous R&D program has once again reaped tremendous benefits for customers with the recent development of TUFGRAM 641®.

This new coating increases the cleanability of aluminum parts while also creating a steel-hard surface that increases durability and protects against corrosion.

The release properties provided by TUFGRAM 641 ensure that substances can be easily removed from aluminum parts without the need for corrosive and damaging cleaning solvents. Ink can be easily wiped off rollers and ink pans, biological materials can be easily



cleaned from clinical diagnostic equipment, and sticky foodstuffs removed from dairy mixers and food processing equipment.

In the case of the clinical and medical industry, TUFGRAM 641's properties also protect diagnostic equipment from high and low pH reagents that can stain and corrode aluminum parts. TUFGRAM 641 meets all USDA, FDA, NSF and AgriCanada codes.

According to General Magnaplate, the need for less cleaning time, the reduced requirement for corrosive cleaning solvents, and the increased hardness of the part's surface all combine to increase the lifespan of aluminum parts and increase production efficiency.

## NEW FACES IN CALIFORNIA

General Magnaplate is delighted to announce two new members of its technical sales team; **Franco Kaelani** and **Dominique Bogaards**.



**Franco Kaelani**, responsible for technical sales in Southern California, joins the company from Nusil Technologies and brings with him over 8 years experience in the organic chemistry field. Franco is a graduate of Miranda College in Suriname, South America.



**Dominique Bogaards**, who will provide technical sales support in Northern California, joins the company from CEIBIS (Cody Electronics) in the semiconductor industry. A graduate of both Alameda University and Chabot College, Dominique has been involved in the high tech industry for over

14 years and has extensive technical background in the electronics and machinery industries.

### SOUTHERN CALIFORNIA

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### NORTHERN CALIFORNIA

**Dominique Bogaards**

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## NEW BOARD CHAIR AND PRESIDENT ANNOUNCED

Prior to his passing, the Board of General Magnaplate announced that **Charles P. Covino**, the Company's Founder and Chairman of the Board, had been elected Chairman Emeritus and that **Candida C. Aversenti**, the Company's Chief Executive Officer, was elected Board Chair. In addition, **Ed Aversenti** was appointed President and COO of General Magnaplate.

Ms. Aversenti stated: "The Company's performance reflects our continued efforts to broaden our customer base and the success of our dedicated sales force. Our employees have done a fantastic job providing value to our customers, and I thank them for their continued efforts. I would also like to thank the Board for the confidence they have shown in me by electing me Chair."

Candi Aversenti took over as CEO of General Magnaplate from her father in 1999. She joined the company in 1982 and became President in 1986. Ed Aversenti joined the company in 1985.

## TRADE SHOW CALENDAR

### PROCESSEXPO2007

Oct 15-17

Las Vegas Convention Center, Las Vegas, NV  
Booth S6528

### WESTPACK 2008

Jan 29-31

Anaheim Convention Center, Anaheim, CA  
Booth: 5033

# DRY LUBRICANT FOCUS: HI-T-LUBE®

**HI-T-LUBE®** is a dry lubricant coating developed for extreme high and low temperatures and for very high compressive loads. Recognized by the Guinness Book of Records as the solid with the lowest COF in the world, this space-age, dry-film lubricant solves critical problems of wear, galling and fretting on steel, stainless steel and copper alloys at high and low temperature extremes, even under heavy loads. The coating consists of a matrix of metallic layers, and becomes a permanent, integral part of the base metal. After burnishing, it offers maximum lubricity.

**HI-T-LUBE** can be applied to virtually all metals that are normally used when the components are subjected to high compressive forces: steel, stainless steel, copper, copper alloys, etc. It may also be successfully employed on aluminum where that metal's surface will withstand the compression forces involved in the application.

## HIGH LOADS AND TEMPERATURES

In application testing for jet engine use, HI-T-LUBE proved its superiority under the most exacting conditions. In preliminary thrust bearing tests — from room temperature up to 1000°F (538°C), using an applied load of 1400 pounds rotating at 720 rpm and reversing direction every three seconds — where conventional lubricants and combinations of materials failed in less than five minutes, HI-T-LUBE performed effectively for three hours (thirty-six times greater effectiveness).

Additional verification of the uniqueness of HI-T-LUBE appears in a report from an aircraft manufacturer's Engineering Dynamic Analysis Section: "...Further tests were run with other alloys and other lubricants, however none could meet the exceedingly high loads and temperatures achieved by the combination of Haynes Alloy 25 and HI-T-LUBE."

## PERMANENCE

In addition, the aircraft manufacturer's report stated that: "...when a second set of Haynes bushings was treated with General Magnaplate's HI-T-LUBE, the life was even further extended to 849 cycles. However, this proprietary high temperature dry lubricant was tried on the bushing and also the mating part of the lever and link into which the bushings were installed, and the life cycles jumped up to 1302 cycles. This more than met the required life span of the parts." In another series of tests, HI-T-LUBE coated gears outperformed untreated gears by up to 15 times under cryogenic conditions.

## TORTURE TEST

One of the nation's leading actuator manufacturers applied HI-T-LUBE on critical component parts of a high temperature ball screw actuator used as a positioning device for the variable afterburner exhaust nozzle on the J-85 jet engine. Typical components of the actuator, which demanded an uncompromising lubricant to operate in a temperature range of -65°F (-54°C) to +840°F (+449°C), were trunion and gimbal mechanisms, sliding thrust rods, and highly loaded thrust bearings. Although

re-lubrication at 150-hour intervals was permissible on actual engine tests, more torturous testing proved that HI-T-LUBE coated parts survived without re-lubrication for up to 485 hours of test life.

## VIBRATION

From the report on a HI-T-LUBE test of an actuator used on a new high performance jet engine: "...during jittertype cycles, the bearings are subjected to extreme abuse in that the balls do not complete a revolution over the bearing race and hence tax the lubricant in localized areas. We have not had any thrust bearing failures where HI-T-LUBE was used on the actuator applications, nor was there any reported failure of any other component part where HI-T-LUBE was used."

## ADHERENCE

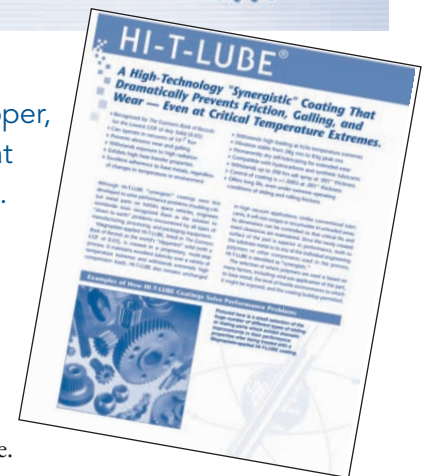
The HI-T-LUBE "synergistic" coating becomes an integral part of the load-bearing metal surface. It will not chip or rub off. It reduces wear and increases the operating life of all metals. From the official report of an aircraft engineer: "...bearing life was determined to be a function of material hardness, tolerances and finish combined with the degree of positive lubrication offered by HI-T-LUBE."

## HIGH VACUUM

Unlike conventional coatings or lubricants, which generate outgassing when subjected to high vacuums, HI-T-LUBE dry-film lubricant coated instrument parts have successfully withstood outgassing problems at 10<sup>-7</sup> Torr.

## PARENT METAL SUBSTRATES

HI-T-LUBE can be applied to virtually all metals normally used where components are subject to high compressive force: steel, stainless steel, copper, copper alloys, etc. It may also be successfully employed on aluminum where that metal's surface will withstand the compression forces involved in the application.



# MEXICO COUNTRY PROFILE

As General Magnaplate continues to grow, the company has been exploring new countries and licensees to bring the benefits of its coatings to manufacturers globally. Recently, General Magnaplate has been exploring possibilities in the thriving Mexican manufacturing sector and in the latest of a series of articles, Synergies delivers some interesting background on what Mexico has to offer.

**MAIN IMPORTS:** Metalworking machines, steel mill products, agricultural machinery, electrical equipment, car parts, repair parts for motor vehicles, aircraft and aircraft parts.

**MAIN EXPORTS:** Manufactured goods, oil and oil products, silver, fruit, vegetables, coffee and cotton.

**MAIN TRADE PARTNERS:** Canada, USA, China, Japan, Spain.

**POLITICAL:** President Felipe Calderon, from the governing, conservative National Action Party, was declared the winner of the bitterly-fought July 2006 presidential election with a lead of less than a percentage point over his left-wing rival.

**ECONOMY:** The agricultural sector, in decline for decades, now accounts for only 5% of the country's GDP yet employs about 20% of the workforce. However, US moves towards ethanol power have pushed up the world price of corn (from which ethanol is produced). Mexico, the birthplace of corn and the world's fourth largest producer, is well placed to benefit.

In the service sector, tourism is the biggest industry. In 2005, it had largely recovered from a downturn in the wake of the 9/11, when hurricanes Emily, Stan and Wilma caused millions of dollars worth of damage, and closed resorts on both coasts. Oil and manufacturing are big contributors to the country's economic health, but are at the mercy of price fluctuations, and the state of the US car industry.

Mexico is an export-oriented economy. It is one of the most open countries in the world and an important trade power as measured by the value of merchandise traded, and the country with the greatest number of free trade agreements.

**INDUSTRIAL SECTOR:** The industrial sector as a whole has benefited from trade liberalization; in 2000 it accounted for almost 90% of all export earnings. Among the most important industrial manufacturer in Mexico is the automotive industry, whose standards of quality are internationally recognized.

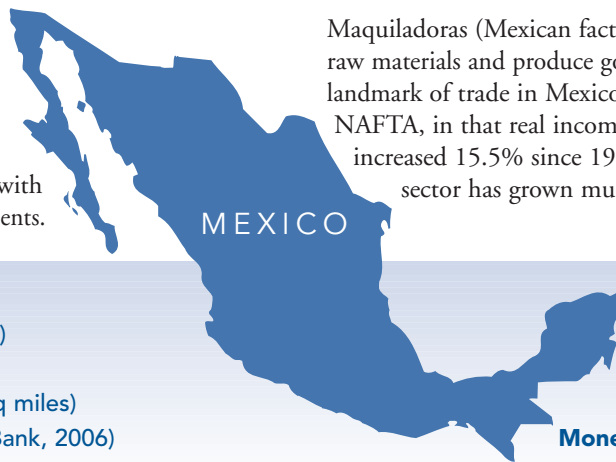
The automobile sector in Mexico differs from that in other Latin American countries and developing nations in that it does not function as a mere assembly manufacturer. The industry produces complex components and engages in some research and development activities. The "Big Three" (General Motors, Ford and Chrysler) have been operating in Mexico since the 1930s, while Volkswagen and Nissan built their plants in the 1960s. Now, Honda, BMW, and Mercedes-Benz have joined in.

Some large industries of Mexico include Cemex, the third largest cement conglomerate in the world, the alcohol beverage industries, including world-renowned players like Grupo Modelo, or conglomerates like FEMSA, which apart from owning breweries and the OXXO convenience store chain, is also the second-largest Coca-Cola bottler in the world, Gruma, the largest producer of corn flour and tortillas in the world, Bimbo, Telmex, Televisa, and many other high-tech industries, many of which are based in Monterrey. In 2001, according to the World Bank, high-tech industrial production represented 21% of total exports, the highest in Latin America.

Maquiladoras (Mexican factories which take in imported raw materials and produce goods for export) have become the landmark of trade in Mexico. This sector has benefited from NAFTA, in that real income in the maquiladora sector has increased 15.5% since 1994, though the non-maquiladora sector has grown much faster.

**Full name:** United Mexican States  
**Population:** 106.4 million (UN, 2005)  
**Capital:** Mexico City  
**Area:** 1.96 million sq km (758,449 sq miles)  
**GNI per capita:** US \$7,310 (World Bank, 2006)

**Major language:** Spanish  
**Major religion:** Christianity  
**Internet domain:** .mx  
**International dialing code:** +52  
**Monetary unit:** 1 peso = 100 centavos



For more information, or to request literature on any of our "synergistic" surface enhancement coatings, contact:



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