

Focus on Customers: Page 4  
LCD screens meet fine art and music  
at Chi Mei, a key customer in Taiwan.

Innovation: Page 8  
Fasten seatbelts as Lucite® Alloys break  
into the airline market.

Manufacturing Excellence: Page 10  
President's Island wins ISO recognition  
using MEx.

Creativity: Page 14  
Big ideas lead to quick, slick Perspex®  
and LI's future looking bright.

Issue Number 2, June 2004

# Going Further

Going Further magazine celebrates the achievements of Lucite International worldwide, its products and all the skilled people who help to produce and promote them.



 **Lucite**  
International

In 1978 Kaohsiung Monomer Company (KMC) delivered its first hundred tonnes of MMA to Chi Mei Corporation (CMC) based in Taiwan. Maintaining an excellent relationship ever since, together with CMC affiliated companies including Chi Mei Optoelectricals (CMO), they continue to push the boundaries of future technologies.



## Flat screens and much, much more...

**Key Facts - 1.** CMC is one of the world's major suppliers of PMMA/extruded sheet as well as other electronic materials for LCD applications, **2.** CMO is one of the world's leading manufacturers of TFT-LCD panels, **3.** CMO's screens are used in TV and office automation equipment including computers by some of the best known companies in the world including Samsung, IBM and Fujitsu, Sony, Apple, Dell, HP etc., **4.** KMC and Lucite International (LI) supplied some 50 kte MMA to CMC in 2003, sharing more than 50% of CMC total MMA consumption in the year, **5.** KMC/LI works in partnership with CMC to develop new products and also improve PMMA quality for LCD applications.

#### The TFT-LCD flat screen story

Flat panel Thin Film Transistor Liquid Crystal Displays (TFT LCDs) were first used in small screen applications such as calculators in 1980 but Liquid Crystals were actually discovered in 1888. In the 1960s scientists went on to discover that if arrays of Liquid Crystal molecules were stimulated by an electrical charge, the amount of light passing through the array could be changed. These discoveries eventually led to the invention of the first liquid crystal displays.

TFT LCDs were first used in computers in 1991. CMC saw the unique opportunity of TFT-LCD and took a quick decision to get involved in its manufacture, setting up CMO in 1998. Frank Liao, Chairman of CMC said at the time: "TFT-LCD is a unique opportunity and provides the chance for CMC to integrate into the optoelectronic industry. It took only a short period of time for CMC to decide on the investment."

Mark Davies, New Business Development Manager, is part of the R&D team at Wilton in the UK who work with CMC and its subsidiary, Chi Lin. Mark says: "Acrylic will probably always be the material of choice for LCD backlight units because of its lightweight and exceptional optical characteristics which do not deteriorate over the lifetime of a display. And pure PMMA has a higher light transmission percentage than glass."

#### The KMC/LI story

KMC is a joint venture between LI and China Petrochemical Development Corporation (CPDC) in Taiwan. KMC began production in 1978 and CMC was its first major client. Through KMC, LI has developed PMMA grades specifically

for TFT-LCD applications, is evaluating new light sourcing and, in anticipation of the future trend for large screen TFT-LCD TV, is developing suitable acrylic polymer sheet for these applications.

LI's products are perfect for future technologies. Jack Tseng, KMC Commercial Manager, says: "We produce our new product, Acrylong, in partnership with Chi Lin using polymer from CMC. Acrylong is an impact modified acrylic sheet which has many applications such as basketball board, transparent computer mice, signboards and skylight windows."

CMC are working at the cutting-edge of technology. Jack says: "CMC is KMC's largest customer and LI's second largest. It's a privilege to work with them and supply such a world-renowned company. We have an excellent relationship - both business and personal. But it's a team effort at KMC. Our team includes Victor Tan, Sales Manager; Terry Shih and Eric Wang who work with CMC's lab to control the quality of PMMA we purchase for Acrylong; Billy Tseng, responsible for delivery; Debbie Chin, CSR, who coordinates MMA shipments; Angela Wu, in charge of procurement of CMC's PMMA for Acrylong; Kurby Tsai and Annie Chen, CSRs, responsible for supplying MMA to CMC."

Mark Davies agrees: "It's always good to work closely with an end user of your development materials. And it's particularly good with CMC as they have such a high profile in their industry. We have visited them in Taiwan and they have visited us for technical exchanges. As a result of our close working relationship, we have a good understanding of their technical requirements and can therefore develop products that deliver the exacting performance necessary."

Images: (1) Today's leading edge flat screen technology produced by Chi Mei. (2) The LI Board visit CMC in January 2004 (L-R) Mr Gregory Liou, Mr KS Lin, Ian Lambert, Geoff Arbutnott, Peter Shaw

1



2

#### The Chi Mei Corporation Story

Founded in 1959, CMC is a unique company. It is more than a business; it is a philosophy and a way of life - it aims to promote the elevation of mind, body and spirit by making culture a part of people's lives. Mr KS Lin, Assistant Vice President of CMC, says: "Our goal is not only to do business and make a profit but also to enrich people's lives and satisfy their spiritual needs."

CMC has, on-site, a museum with displays including art, paintings, sculpture and musical instruments. Through its Cultural Foundation, the company gives grants to local social and cultural projects, grants to artists and scholarships to musicians. CMC has its own symphony orchestra and has established and maintains the Chi Mei Medical Centre, the largest hospital in the local area.

CMC's business credentials are highly impressive. They were the first cast sheet operation in Taiwan, shifting to PMMA and extruded sheet production in 1981; beginning other lines of production including ABS, PS, SBR and TPE. With a total capacity of 1.25 million tons, CMC is the largest ABS producer in the world.

Since its foundation in 1998, CMO has established three TFT-LCD panel plants, is building the fourth one and plans to build three more plants by 2008. CMO's sales turnover is expected to almost double every year from US\$2.5 billions in 2003 to US\$9 billions in 2005.

#### A great partnership

CMC enjoys good relationships with KMC and LI. Mr Lin says: "We have confidence in LI's products and services. They are very friendly and easy to get close to. They definitely 'go further' for CMC."

"We rely on their professional knowledge and experience to lead us to create more acrylic polymers applications. Their materials are always of a high standard and reliable quality, and their service and technical skills are impressive. Together we have been developing new products such as edge-lit light guide panels incorporating diffusion effect, direct backlight using LEDs and special polymer grades both of which reduce PMMA warpage.

"CMC would like to take this opportunity to express our appreciation of Mr Scott Davidson and his successor Mr Ian Lambert, who gave, and continue to give, their full support to CMC in supplying MMA. We are also grateful to Mr Gregory Liou, Jack Tseng and his teams who always offer us their best service and comply with our requests."

The strong relationship in Taiwan will be extended to China when LI's Caojing MMA plant is up and running and CMC establishes a PMMA plant at its Zhengjiang Site. Mr Lin says: "Both companies have been growing together in the acrylic industry. I have no doubt that CMC and KMC/LI will retain a long-standing relationship and join in developments on new polymers applications to achieve a 'win-win' strategy and reap the benefits of co-operation."

#### Contributors to this article:

A special thanks to all those involved in putting this article together including: Mr KS Lin from CMC, Mark Davies, LI in Wilton, Mr Gregory Liou, Jack Tseng and Debbie Chin at KMC.

## Lucite® Alloys take-off!

Aircraft safety gets a boost as new Lucite alloys are launched at Aircraft Interiors Expo in Hamburg, Germany. Lucite International (LI) has teamed up with American thermoplastics specialist, Spartech, to produce and sell new fire retardant alloys.

### A successful blend

Until recently LI's research focused mainly on products that were 100% acrylic. Rowena Sellens, Global Research & Development Director, explains why a change in approach took place, "LI saw potential to combine acrylic material properties with those of other plastics. The result was the opportunity to create new thermoplastic alloys with enhanced properties. Scott Davidson and the Executive team recognised the commercial opportunity and work started in the mid-90s on a range of projects. The key challenge with new products like these is to get the right balance of properties and processability to meet the customer's needs. We recognised that to do this effectively we would need expert partners. The development work we are doing with Spartech on the alloys project is a good example of how such a partnership can work to create new products for the market."

### Alloys for airlines

LI has partnered with Spartech, a leading producer of engineered thermoplastic materials, to offer a range of fire rated alloys, specifically engineered to meet the most stringent flammability requirements of the transportation, construction and electronics industries. The alloys are cost-effective products with significantly enhanced capabilities, including excellent fire retardation, low smoke emission and low toxicity, ideal for use in the aircraft industry.

Spartech manufacture these thermoplastic sheet products in the USA and they will be sold under the Lucite brand in Europe in 2004. The plan is to develop and commercialise them on a global basis, but the initial focus is on opportunities in Europe

### New products, new markets, future forward

Mal Tabb, Business Development Manager, says: "I am very pleased with the way we've been able to assimilate market information, put together a product range, identify a potential customer base and construct a supply chain for a new class of products, in just one year and with a very small but dedicated team."

Howard Kenney, Marketing Manager of Spartech believes growth in this area will undoubtedly follow: "I have set a goal of growing this business significantly over the next two to three years, which is very achievable given the broad range of the product portfolio and commitment from both companies."

And what of the future? Mal says: "I think the existing Spartech products will provide European customers with an extensive portfolio of fire retardant materials which conform to international fire regulations. These products will allow them to create new and innovative designs and my hope is that the new LI fire rated alloys will open up markets currently inaccessible to acrylics."

*"The development work we are doing with Spartech on the alloys project is a good example of how such a partnership can work to create new products for the market."*

**Spartech Stateside . . . and beyond**

Spartech Corporation has been extruding thermoplastic sheet products for more than 40 years. The company's extensive portfolio of high quality products is used in areas as diverse as food and medical packaging, boats, refrigerators, toys, garden equipment and cars. Spartech has 47 facilities in the United States, Canada, Mexico, and Europe.

Howard Kenney, Marketing Director of Spartech, says: "We have formed an excellent partnership with LI. Everyone I deal with wants to go that extra mile to deliver high quality and exceptional service."

And as for the future, Howard says: "I hope that LI and Spartech will continue to collaborate to use our respective technical expertise to develop that next generation of acrylic based 'Alloy Plastics'."

**Contributors to this article:**

Howard Kenney, Spartech; Rowena Sellens, Mal Tabb, LI. Contributors to the project include: Julie Angus, Andy Bragg, Helen Bunch, Colin Cuthill, Ray Digby, Simon Ellis, Paul Eustace, John Halley, Fogge Heinemann, Terry Lenaghan, Nick Marston, John Oliver, Gary Phillipson, Valerie Primaux, Alan Roger, Rob Weenink, Thilo Weyrauch, Glyn Williams.

Images: (1) The team display their ISO9000:2000 certificate. L-R Curtis Deener, Tom Veerkamp, Dennis Foeller, Rufus Brown, John Flanigan, Kim Duckett, Jeff Day, Tom Eubank, Mike Moore. (2) John Flanigan - proud of his MEx-based ISO plan.



1

*"We've long known that MEx is a powerful tool for improvement. President's Island has now demonstrated this to ISO experts . . ."*



2

# It's a first

President's Island uses Manufacturing Excellence (MEx) to become the first Lucite International Inc. site to gain the globally recognised ISO9000:2001 accreditation. GF talks to John Flanigan, the site's ISO coordinator.

#### What is ISO9000:2001?

In 1946, delegates from 25 countries created a new body to co-ordinate and unify industrial standards. Called the International Organisation for Standardisation, it is known as ISO after the Greek word meaning 'equal'. ISO now has members from 148 countries and is the world's largest standards' developer. The ISO9000 family is the agreed standard of good management practices, helping organisations to deliver top quality products and services that meet customers' requirements.

#### How did President's Island gain accreditation?

"Solely on the basis of using MEx. I simply complied with MEx and let ISO come along for the ride!" says John Flanigan, President's Island ISO Co-ordinator. "The MEx programme exceeded the expectations of the ISO standard so we gained the new accreditation without having to develop a special 'ISO-style' management system."

#### Why is it good news for President's Island?

John says: "MEx is superior in a number of ways to ISO and because we now have the same system for running the plant and for maintaining our ISO registration we can put all our efforts into one system - MEx."

#### How does it affect the workforce?

"MEx is, by design, implemented by everyone," says John. "I'm still the interface between the business and the ISO Registrar, but the system itself belongs to all of us at President's Island. And implementation of MEx has improved our production and increased employee involvement a great deal."

#### Are you pleased with the results?

"Oh, yes! Buy-in has improved - more people are involved and want to be involved - and more people are obtaining and reading the documents. And I don't have to maintain a separate auditing schedule and records - so a great result all round!" says John.

Global SHE and MEx Manager Phil Eames says: "We've long known that MEx is a powerful tool for improvement. President's Island has now demonstrated this to ISO experts, and at the same time ensured that the site can maintain its accreditation with a reduced workload. This experience clearly shows the very real value of the MEx programme to ourselves and our customers."

**Did you know - President's Island:** **1.** President's Island is in Memphis, Tennessee in the mid-south of the USA, **2.** Memphis is in Shelby County and has a population of more than 660,000, **3.** Known as the Home of The Blues and Birthplace of Rock 'n' Roll, Memphis was home to Elvis Presley, Stax records and Sun recording studios.