

Engel at NPE 2006

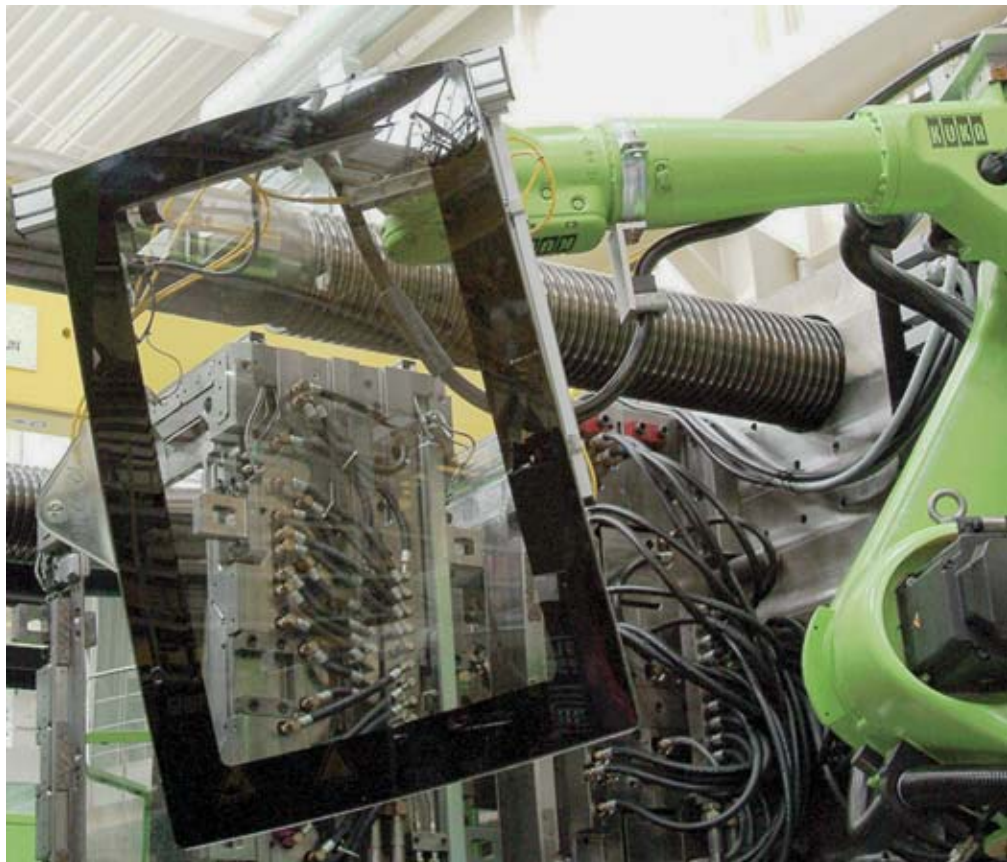
The Power Of Green



>> With some 2,000 exhibitors, you will find new materials, processing machinery, equipment and technologies that can turn your product ingenuity into competitive strength. You'll witness more machinery in operation than any other exposition. You'll find the greatest number of global leaders, engineering experts and industry decision makers in nearly 1,000,000 net square feet (93,000 m²) of exhibits, as well as conference sessions, seminars, and workshops.

Excellence by Design

Engel has put together a powerful display for this year's visitor. No matter what your



Engel display:

South hall, booth #2286

It is time once again for the largest North American trade event dedicated to the plastics industry – NPE 2006: The International Plastics Showcase

industry sector, you will find something new and exciting at the Engel booth.

Over 14,000 square feet of floor space will showcase eight fully automated cells. In addition, Engel will be showcasing our new interactive training tools: the virtual molding machine and the CC200 e-trainer.

Let's take a walk through.

Automotive

Sheer size provides a presence. The ENGEL DUO 1650 US Combi-M machine will be the largest machine on display at NPE 2006.

Molding a two color sunroof panel using ENGEL's unique GLAZEMELT technology, the machine incorporates two injection units arranged horizontally, pointing towards each other: the main injection unit in the standard position and the second injection unit in the position usually occupied by the ejector on the moving platen. The Combi M multi-injection unit configuration, designed specifically for the DUO machine, allows the use of a stack-type multi-component tool.

Part removal is performed by an integrated Kuka articulating robot.

The ENGEL INSERT 100 H US is being shown in a new Global design concept. The new design incorporates improved precision and energy efficiency via smart pump technology, faster cycle times through a "no-lift" rotary table design, and larger standard table diameters for improved price/performance ratio.

This cell will also incorporate an ENGEL ERV 31 single-axis servo robot for placement of inserts, finished part removal and final assembly.

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Dear Customers,

>> Welcome to NPE 2006!

This international plastics showcase offers insight, inspiration, ingenuity, innovation, influence and ideas.

Our theme for NPE 2006 is "The Power of Green". You may ask, what do we mean by The Power of Green?

We see Power as the strength of Engel and the benefits that it offers to you the customer. The power of global manufacturing on three continents, with the newest facility opening in Shanghai, China in 2006; sales and service in over 90 countries; full scope of high quality machinery, automation and technology – one stop source; almost 60 years perfecting our ability and expertise to match the requirements of our customers. All this plus the financial stability you require from a partner. Consistent performance – consistent support.

Green is the color of our machines; and the color of money. Money Engel saves you by providing the highest quality equipment at a competitive price. Money saved by investing in Engel technology through: reduced cycle times, state-of-the-art processing technologies that can dramatically reduce manufacturing costs, increased uptime, and automation concepts that ensure competitiveness versus lower cost off-shore labor.

>> We invite you to come and experience "The Power of Green".



Our customers are the driving force behind our success, and perhaps, some old-fashioned guidelines, such as entrepreneurial spirit, long term thinking, and financial restraints in the right areas.

The fundamental principals, created within our company many years ago, have not changed. Neither has our commitment to service, nor the belief in personal one-on-one dialogue that lies at the heart of the way we interact with our customers.

One of the things that Engel always stresses in our company's culture is the importance of listening to what our customers have to say, whether the comments are good, bad or indifferent.

Our industry is exposed to many new challenges that can be very rewarding to those with a clear strategy and the ability to incorporate new molding processes quickly within their production environment.

We, at Engel, see NPE 2006 as a great opportunity to meet, to listen and to learn. We are also pleased to present and explore some of the ways that can help you to succeed.

What a great opportunity to meet and get together at the NPE 2006 in Chicago.

>> We look forward to seeing you! <<

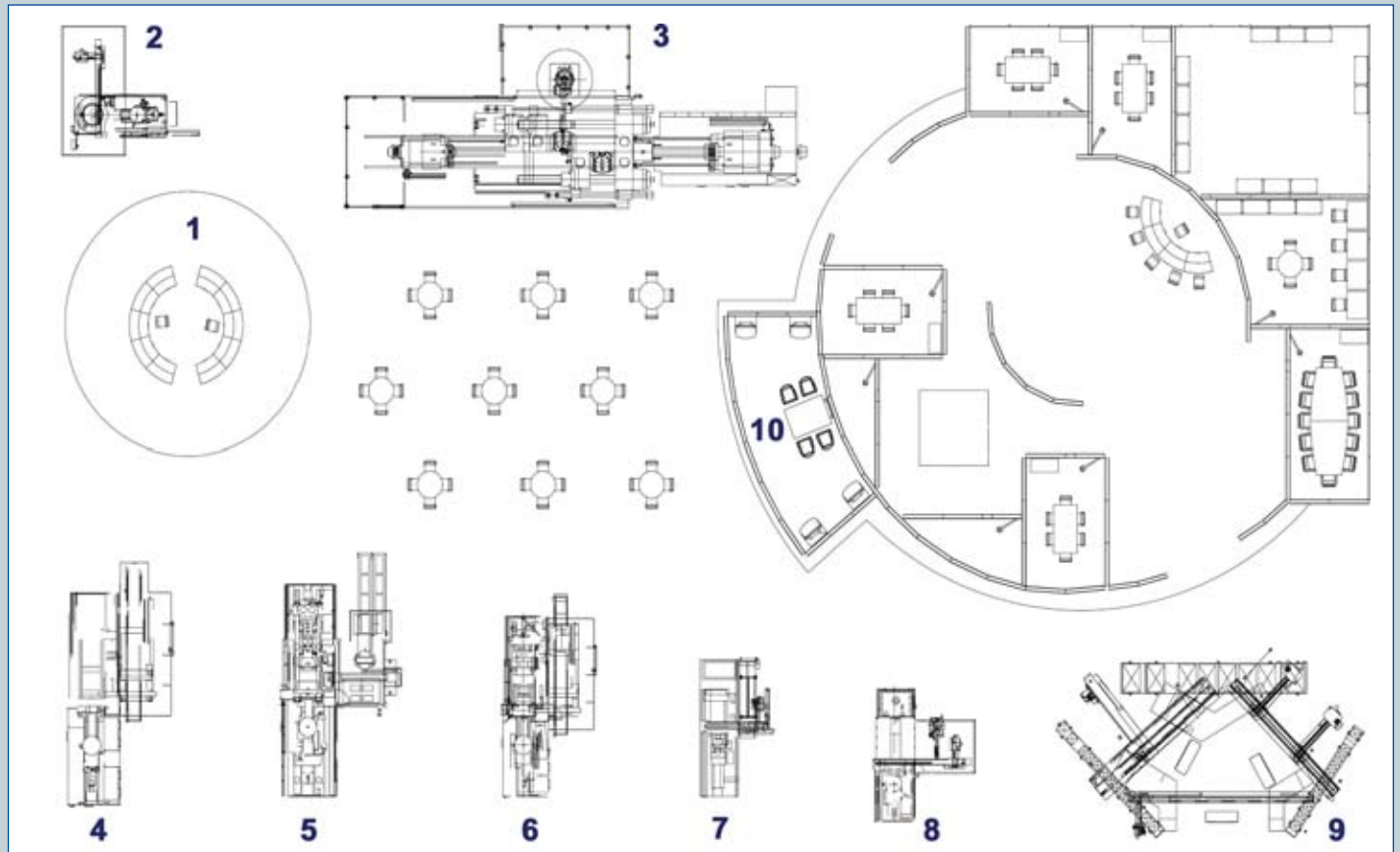
Walter J. Jungwirth

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Packaging

Moving across the booth, you will come to our new ENGEL SPEED machine line designed specifically for the packaging industry. These fast-cycling machines feature a five-point toggle clamping system providing highly dynamic movements for opening and closing. Designed for the mass-production of packaging containers, the planned size range for the Speed machine line is 135 to 650 metric tons.

On display will be two fully automated cells utilizing the ENGEL SPEED 300 US. The first cell will be molding a dessert cup, with a cycle time of 2.7 seconds! The ENGEL ERS Speedy robot will take care of part removal, handing off to a horizontal stacker. The new ENGEL ERC 13 servo robot will remove finished part stacks and place them in boxes.



The second Speed cell, also a 300 ton, will incorporate an in-mold labeling process of a stadium cup. The in-mold label system, designed by Ilseman, will incorporate the loading of a specially designed 3D lens, and removal and packaging of the finished parts. All this in less than 8 seconds!

Pushing the limits with Engel technology

The next exhibit shows a high speed application using a standard all-electric injection molding machine and ENGEL X-MELT technology. The ENGEL E-MOTION 200 T US is molding a 6 cavity beverage cup, with L/T ratio in excess of 400:1 – unheard of in the packaging industry. Cycle time projected to be 4 seconds or less.

The ENGEL ERS Speedy robot will provide part removal. With an in/out time of 0.6 to 0.8 seconds, it is the robot for high speed applications with cycle times less than 5 seconds.

All-electric, multi-component machine technology

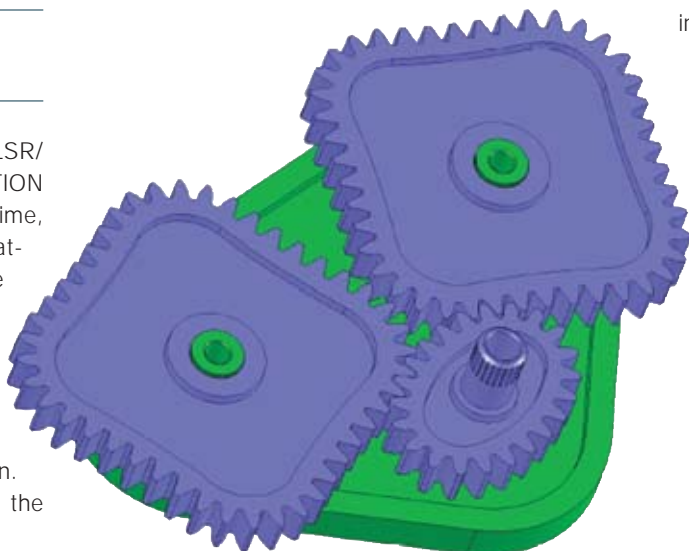
Engel will display the first all-electric, LSR/TP two component machine. The E-MOTION 110 Combi US combines for the first time, three distinctive technologies into one platform. The space-saving machine has the secondary injection unit mounted in the "W" (piggy-back) configuration and will be producing a 2-component cover plate. First to second shot transfer is accomplished utilizing a high-speed servo rotary table for optimized mold rotation.

The opportunities and benefits to the molder are endless.

Defect free molding now possible

Integrating trusted processing philosophy into an all-electric injection molding machine provides the molder with the highest degree of quality ever possible in the history of injection molding. Using the industry accepted RJG decoupled molding software integrated into the state-of-the-art CC200 Engel control technology, molders can now truly experience defect free molding.

The cell incorporates a standard 60 ton all-electric Engel machine, molding three different gears. The ENGEL ERC 13 servo robot will provide the part removal function, and a Kuka KR6 articulating robot will place the parts into an inspection station and assemble the inter-linking gears onto a pre-molded base.



Engel Automation in Action

Engel Automation has created a part packaging cell, show casing our ENGEL ERC E-series servo robots. The system consists of three independent stand-alone Engel ERC servo robots, transfer and output conveyors, a Vision system station and weigh scale – all put together to display the automatic sorting, grid-pattern placement, packing, stacking and conveying of bottled products.

Technology / Training Center

Central to the booth you will find the Engel Technology-Training Center, where the latest and most advanced Engel training materials will be demonstrated. The CC200 e-trainer is a training program with information and interactive practice units — allowing the user to learn at their computer, at their own speed.

The second module of the e-trainer is the Virtual Molding Machine software, allowing users to familiarize themselves with the CC200 machine control system in 'virtual reality'. When seated at this "machine simulator", the trainee has the complete control panel in front of him on the PC screen, together with a visualization of the machine movements resulting from his inputted commands. The user can set up mold sequences off-line, test them and then load the final set-up to the machine. <<

Machines in the Engel booth

- 1 Information and reception area
- 2 ENGEL INSERT 100 US
With an ENGEL ERV 31 side entry robot part: desk accessory
- 3 ENGEL DUO 1650 Combi M US
GLAZEMELT technology with Kuka articulating robot part: 2 component automotive sunroof panel
- 4 ENGEL SPEED 300 US
with an ENGEL ERC 13 and ENGEL ERS Speedy robots part: dessert cup
- 5 ENGEL SPEED 300 US
with Ilseman automation system In-mold labelling part: stadium cup
- 6 ENGEL E-MOTION 200 T US
X-MELT technology ENGEL ERS Speedy robot part: beverage cup
- 7 ENGEL E-MOTION 110 Combi US
TP / LSR Combimelt ENGEL ERC 23 robot part: cover plate
- 8 ENGEL E-MOTION 60 US
ENGEL ERC 13 robot and Kuka KR6 articulating robot part: gears
- 9 Automation cell including
ENGEL ERC 35 E, ENGEL ERC 68 E and ENGEL ERC 94 E robots
- 10 Technology and Training Center

Engel Machines in Partner booths

- >> IFW - M. Otte GmbH & Co. KG
East hall, booth #9946
ENGEL VICTORY 220 US
part: large fitting
- >> Kurz Transfer Products
North hall, booth #5516
ENGEL VICTORY 50 Tech US with an ENGEL ERC 13 robot
part: in-mold decorated cell phone faceplate
- >> Kistler Instrument Corp.
South hall, booth #3045
ENGEL E-MOTION 60 US
part: nut cracker
- >> Top Grade Molds
North hall, booth #4975
ENGEL SPEED 200 US
part: rectangular container with lid (treasure chest)
- >> Electroform Company Inc.
North hall, booth #4644
ENGEL VICTORY 200 Combi US with an ERC 43 robot
process: in-mold labelling and assembly
- >> SAS Automation, LLC
South hall, booth #976
ENGEL ERC 63

>> Some time has passed and a lot has happened since our last update on Engel's Shanghai Project in the 11th edition of injection from June 2005.

Moving and enlarging the Engel Shanghai office

The Engel Shanghai office moved from a 120 sqm office into a 1000 sqm temporary facility close to the construction site of the new factory. This new location, houses the Project management team for the factory set up and the sales and service department.

The Customer Service department of Engel Machinery (Shanghai) Co., Ltd. has a spare part warehouse, a Customer Training room and an Engel VC 300/120 HV4 Tech Pro with 600 mm/s injection speed equipped with the new ERC 13 robot for hands on customer training. Engel Shanghai offers regularly scheduled Customer Training courses throughout China using Global training material, tailored for our Chinese market. The local setup allows us to invoice service, training and in a couple of weeks even spare parts in the local currency CNY.



The shop floor layout design for the Shanghai Factory was derived from its sister factory in St. Valentin, Austria as will be the manufacturing process. This design allows us to even assemble the largest machines in the Engel product range.

Production start preparations

While construction is at full swing the local project team has been reinforced with a logistic manager from Engel Austria to set up together with his Chinese colleagues a local supply chain for the production start later this year. Following the general start up plan localizing is first focusing on the clamping side, suppliers for castings, steel raw materials and a number of supply components have to be found locally. To make no compromise on Engel's proven quality all critical components in direct connection with the mechanical functionality of the machine will either be manufactured in house or are supplied by other Engel factories.

In the first year of operation the master production plan already covers a range from 650 ton to 1500 ton clamping force. In total 30 large machines are planned to leave the Shanghai plant in the first 12 Month. To ensure that machines manufactured in the Shanghai factory are of absolute equal quality to the machines made in its sister factory in St. Valentin, Austria, recruiting of local technicians, manufacturing personal and assembly staff has already started to send them to Engel Austria where they undergo a professional on the job training. At the same time experienced Engel Austria staff is already appointed to safeguard the successful start up on site when Engel Machinery (Shanghai) Co., Ltd will start production late this year. <<



Dr. Peter Neumann, Chairman of Engel Holding, at the ground breaking ceremony for the new factory of Engel Machinery Shanghai on 28th of November 2005.

Engel Machinery (Shanghai) Co., Ltd Progress update

Construction commencement

With the ground breaking ceremony on 28th of November 2005 construction for the new factory finally started. Dr. Peter Neumann, CEO of Engel Holding, was pleased to welcome local Government and Administration Officials, the Consul General of Austria the Commercial Counselor of Austria in Shanghai and representatives of neighboring companies among many other guests for the groundbreaking ceremony. For the Engel Shanghai Project Team it was a great moment as from that day on all the preparation and planning work is turning into reality. Right after the ceremony, even before the last glass of champagne was empty the extensive foundation works started on the 35.000 square meter land.

A long term investment needs a solid foundation

Highest building standards requested by Engel such as floor loads of up to 15 ton per square meter, heavy overhead crane loads with 100 ton lifting capacity and special machine foundations for large scaled high accuracy machining resulted in a carefully calculated pile supported floor slab design. The entire building with office, shop floor and utility facilities has an 8452 square meter footprint and is entirely resting on pile foundation. In total 1387 piles of 500 to 600 mm diameter were driven 30 to 38 meters into the ground. Adding them all together the total length of piles reaches over 46 kilometers. The driving of the piles was conducted 24 hours a day, 7 days a week without interruption for more than 2 months.



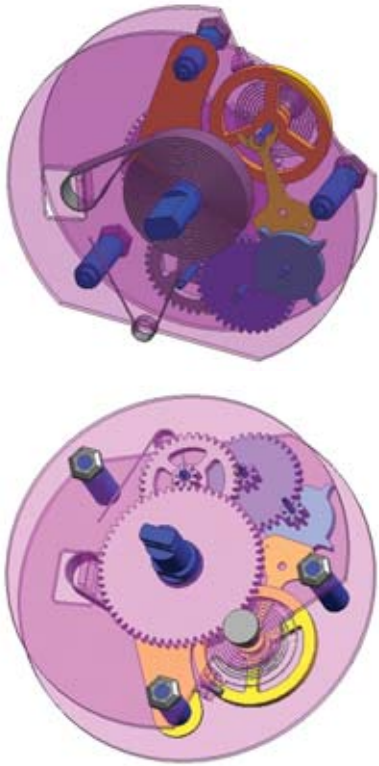
With the force of 800 ton piles were driven into the ground.



Engel Shanghai office (photo on top) with: Training room (2nd from top), Training machine (3rd from top) and Warehouse (bottom)



Logistics department at Engel Shanghai office.



Designs of precision plastic gears.

>> Sakura Tech (S) Pte. Ltd. had been established in 1995 with a small shop for manufacturing tools & dies for a very small customer base. From the early days the company focussed not only on mouldmaking but also on injection moulding starting with a few injection moulding machines.

Singapore: Sakura Tech

Focus on high precision

Today, Sakura Tech has four (4) manufacturing plants outside Singapore, namely in China, Malaysia, Thailand and Japan (tools & dies fabrication only). In total today Sakura Tech has over 100 injection molding machines in operation and has developed to a company with global approach with a customer base in Europe and South America.

Vietnam, Indonesia, Europe and South America are Sakura Tech's second phase plan of expansion.

The injection moulding machines operated in the Sakura plants are Japanese (Sumitomo and Sodick) and European brands (Krauss Maffei and Engel) with a majority of machines from Engel.

Being asked about the reasons for deciding for the machines from Engel Razali Bin Jaafar, the general manager stated: "Sakura



Tech decided to choose the machines from Engel because of the special features that are unique compared to other machines, especially the tiebarless system for the clamping unit. That can accommodate for bigger molds related to platen size. The tiebarless system also saves us a lot of down time during mold change". And he continues, "Sakura Tech's production focus is on moulds for , connectors, precision engineering parts. The majority of these components are assembled to custom made consumer electronic devices – and that according to International Standards. We can achieve AGMA d" 12 or JGMA e" 0 or DIN Standard."

The production system of Sakura Tech is certified according to the International Standards ISO 9001:2000, TS 16949: 2002 and ISO 14001: 2004. The company goal is to strive for global recognition in competitive plastics solution through technology and capability with social environmental responsibility:

>> "Our primary strategy is drive technology to defray and manage costs to be competitive in the market place. To do this, we are continuously challenging ourselves to deliver best direct cost benefit to our customers. This is done through design innovation, efficient process control and quality delivery". <<

China: Huiyuan Beverage Group A milestone of ENGEL macPET in China



>> Over the years, the PET perform market in China has been dominated by the world leading PET players Husky and Netstal, however, with the breakthrough of Engel first macPET system in China, this pattern could be possibly reshaped in the future. Last month, Engel China has just concluded a contract with Huiyuan Beverage Group for a complete 48 cavity macPET system – macPET320/120/48.

As a top notch juice manufacturer in China, Huiyuan Beverage Group was established in 1992, headquartered in Beijing. It owns 27 satellite plants throughout the country with producing over 10 categories ranging from fruit juice, fruit puree, and vegetable juice to tea drinks etc with 470 types of products. The products have been exporting to over 20 countries. Its Huiyuan 100 % juice has been ranked the top brand of its kind in China. The company has won many prizes and honors from the central government, such as "No.1 Satisfactory Brand in China's Beverage Market", and "Top Ten in China's Beverage Industry".

By seeking for advanced equipment and technology, the success has thus been

ensured. The company has introduced raw materials processing equipments and filling lines of world class. Over 60 cold aseptic

filling machines are running in different plants, among which 14 are of most advanced PET cold aseptic filling lines from Europe and North America.

Our guaranteed system performance and service, fast delivery time, close relationship with the customer, particularly the customer's confidence in Engel is an instrumental for this partnership build up. As commented by the Deputy General Manager Production, Mr. Geng: "Giving the fact that Engel is now considered an experienced new comer to China's PET industry, with Engel's decades of leading role in injection molding machinery industry worldwide, we have confidence that our production will be benefit from your system performance and service, and likewise, Engel will derive benefits as well from our repeat orders as our production expands, which will ultimately lead to a win-win situation." <<



The ENGEL macPET system.

