



apex

machine company

Engineered solutions "without risk"

turn-key parts handling & printing solutions

What does “without risk” mean?

The first stage of any new machine project undertaken at Apex is a full review of every requirement to assess potential risk factors inherent in any part of the required parts handling and printing processes.

Any areas which are identified as having ‘risk’ potential are individually addressed by testing in our print laboratory or, where needed, by construction of beta units to prove out handling and other processes. This risk assessment and the subsequent testing activities ensure that any issues can be identified and addressed prior to commencement of detailed engineering drawings or any machine construction.

Additionally, any specifically product related issues with materials or design constraints which may affect success can be identified and addressed.

Risk management is the route to success

The Apex risk assessment procedures remove the uncertainties often associated with new designs and handling processes.



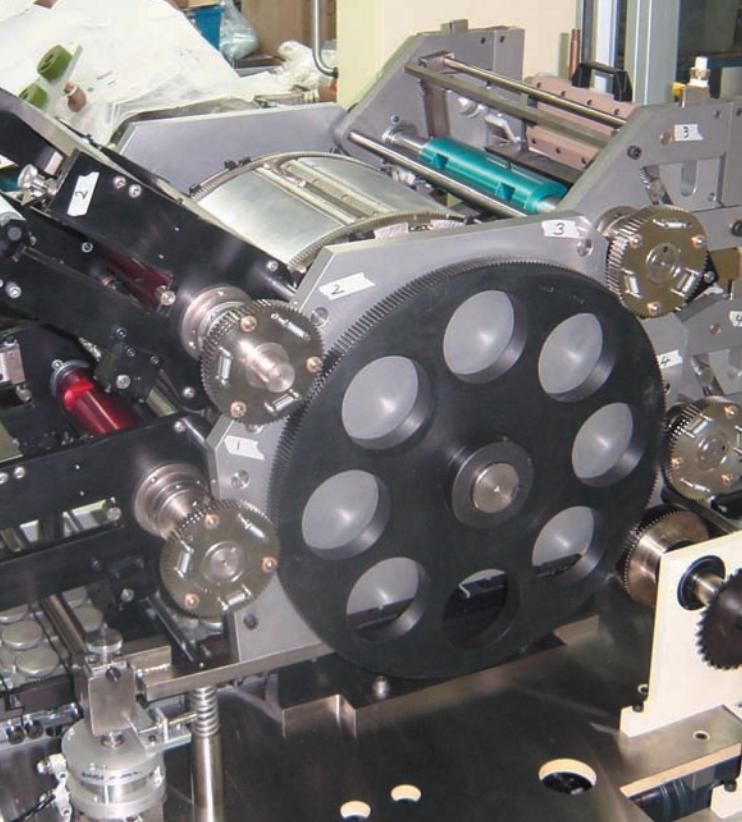
Engineering parts handling and printing solutions

Apex designs, engineers and builds custom parts handling and printing solutions for a wide variety of parts in an ever increasing range of industry sectors. With over 100 years of continuous development and experience we offer customers fully designed and engineered systems.

Apex printing systems are currently used throughout the world to print graphics, in up to 6 colors for decoration or marking, on a wide variety of products like disposable and non-disposable syringes and pipettes, pencils, pens, tubes (rigid and/or flexible), caps & closures, synthetic corks, sidewall containers, oil filters, razor handles, lollipop sticks and a diversity of part components.

Apex offers a specialization in production solutions for various types of medical and pharmaceutical devices including centrifuge tubes, cryule vials, catheters and stents, insulin dispenser devices, pill boxes, syringes and more.

Apex's expertise covers a wide range of industries including medical & pharmaceutical, food & beverage, writing & stationery, electrical, cosmetics & personal care, computers & media, military and munitions, automotive, household, hardware, sporting goods, and packaging.



How the company started

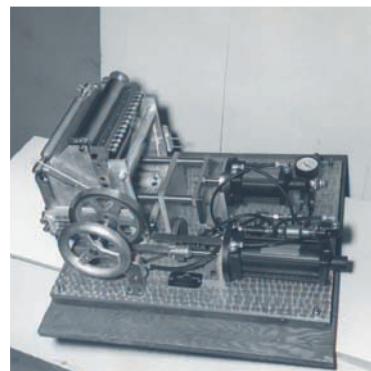
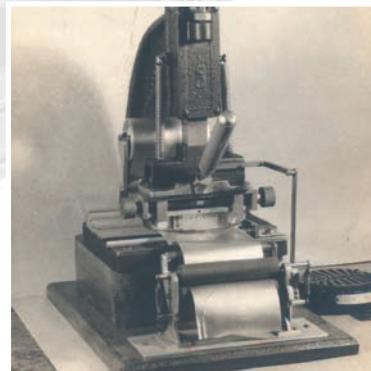
In 1903 the great grandfather of the current owners emigrated from Hungary to New York City. He was a lawyer in Hungary but, due to the language barrier on reaching the USA, he had to rely on his technical skills as a "Gold Leaf Lifter". This is the art of printing names with gold leaf on glass for doctors, lawyers and other professionals.

He invented a small machine to place "gold leaf" initials in the sweat band of top hats. He offered these to department stores, including Macy's, who would emboss the customer's initials into the band of the new hat for identification purposes because all top hats were extremely similar.

Since then the family business of printing on "things" has been passed from great grandfather to grandfather, from grandfather to father, from father to sons, and it is now overseen in the fourth generation by four brothers. The modern, sophisticated machines now made by the company for a wide range of different product sectors and industries have ensured the growth and development of the business internationally. The scope and success of the business today is a far cry from the early beginnings printing hat bands!



Oliver Bodor, founder of the company



Apex quality standards

Since 1903, we have developed the standards we believe to be essential for maintaining the quality level of our systems. We respect our customers' opinions, judgement and experience. In our constant search for excellence we are always open to recommendations, and are very willing to amend our standards if the change results in improved systems and quality.

The selection of our parts' suppliers is based upon sound engineering judgment as to the best possible sources for quality, durability, reliability, fair price and availability. Our standards are never knowingly lowered. Our over-riding goal is to produce a better Apex machine, and a more satisfied Apex customer with the delivery of each Apex system.

Engineering All systems are produced from complete engineering drawings. Assembly drawings are submitted prior to manufacturing as requested.

Quality Control Each individual part is inspected and part-numbered. Each system is fully tested in a simulated production run for the customer's approval prior to shipment.

Instruction Manuals Two copies of a complete instruction manual consisting of the concept of the system, broad-based instructions, detailed instructions for set-up, testing, and trouble-shooting are supplied with every machine.

Spare Parts A Recommended Spare Parts List is provided with each system. Standard items are maintained in our inventory. Other items are manufactured rapidly as required.

Continuing Support The Apex staff is available at any time for consultation in all areas of the equipment and supplies of our company.

Open Factory We welcome and encourage customers to visit our factory at any time before, during and after the construction of their machinery.



Standards compliance

We undertake to supply our equipment in compliance with Apex Standards and our interpretation of the latest OSHA and CE regulations.

Apex machines are manufactured according to good practices of the USA and in accordance with the requirements specified by the buyer.



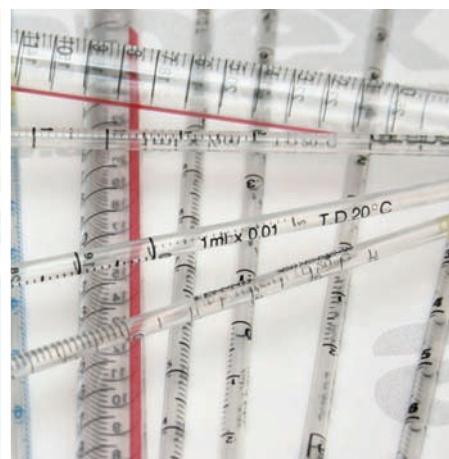
Medical and pharmaceutical printers

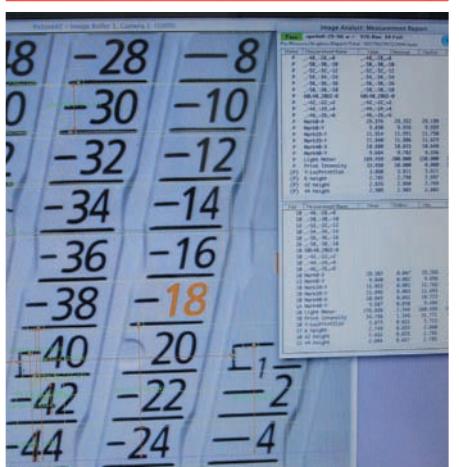
Custom engineering and manufacturing of specialist machinery and turn-key solutions for the medical and pharmaceutical industry sectors is an area where Apex has a track record of success at the leading edge of development. Our ability to provide solutions for critical components where accuracy, repeatability, and quality are paramount has placed Apex as a first choice supplier for many household names in the industry for many years.

We routinely provide turn-key systems in this market area, working together with major suppliers in the fields of plastic injection molding, complex parts assembly systems, vision systems and others as appropriate to provide the ideal solutions for our customers. Typically our involvement with projects may commence at the planning and design stages, where we are often able to provide input regarding suitability of parts for handling and printing. We regularly conduct trials for customers to assess the suitability of both parts and materials for compliance with the printing, marking or decoration methods that may be envisaged.

Our corporate aim is to work with customers in this industry area as long-term partners, acting not only as a machinery solutions provider but also as a development arm to assist with projects where our expertise is relevant.

The range of products covered is extensive and includes items like Blood Collection Tubes, Cryule Vials, Pipettes, Syringes, Dental Needle Holders, Centrifuge Tubes, Dosage Tubes, Dispensers, Pill Cases, Pill Dispensers, Pill Jars, Pills, Safety Components, Stents/Catheters, Thermometers, and components for insulin and other drug dispensing devices.





IQ, PQ and OQ services

Apex Machine Company has worked with many major manufacturers of medical and pharmaceutical products and is thoroughly conversant with the requirements and procedures for IQ, PQ and OQ related to the verification and validation of product handling, printing and vision inspection equipment. Our in-house specialist department is available to assist customers with the validation processes, documentation and specifications.

Vision systems

Vision systems are an important part of many of the modern machines built by Apex for customers in medical, pharmaceutical and other industries.

Modern camera systems can be programmed to inspect every aspect of the marking and decoration of a component, checking a variety of print parameters such as positional accuracy, density, integrity and color of image. Additional checks for part concentricity, presence of assembled parts, etc. can also be performed. The camera systems are typically linked into the PLC of the Apex line to ensure that 'bad parts' are rejected from the system and linked computer systems can provide complete traceability and other functions for quality control purposes.

Many Apex machines are now available with 'intelligent' print systems where vision cameras are linked into the printer PLC controls to enable automatic adjustment of ink flows and other printing parameters based on what the cameras are sensing. This monitoring enables machines to run operator free for much of the time with systems notifying any requirement for attention and, if necessary, slowing or stopping production automatically.

Machines to suit a wide range . .

Apex engineers and manufactures a wide range of specialist three dimensional product printing machines. Each machine typically consists of a transport system to capture and move the parts through the various processes as required for pre-treating, printing, curing, validating, sub-assembling, etc.

Many of the basic transport systems are available in several sizes and different configurations, as well as with a choice of different printing technologies, to suit particular product sizes and types. All systems are individually customized for each customer's specific requirements.





... of industry sectors and products

Industry sectors

- Automotive
- Beverages
- Caps & Closures
- Cartons & Packaging
- Computer and Entertainment
- Cosmetics & Personal Care
- Electrical & Electronics
- Food Packaging & Containers
- Hardware & Tools
- Household & Miscellaneous
- Medical & Dental Devices and Components
- Military & Ammunition
- Pharmaceutical
- Sports & Leisure
- Veterinary Devices
- Writing Instruments & Stationery



Every type of printing technology

Apex manufactures machines using virtually every type of printing technology available.

The choice of printing system depends on specific customer and parts decoration requirements. We will advise and recommend the most suitable production methods based upon specific requirements. Technologies we use include:

Flexography

Flexographic printing uses flexible printing plates and the application of liquid ink, as opposed to paste ink. Flexographic printing most often utilizes rotary methods.



Dry Offset

The image is transferred from a raised profile plate to a smooth piece of elastomer material known as a blanket, and transfers to the part.

Pad Printing

A soft silicone pad accepts ink from an etched plate and transfers this to the part using a reciprocating motion. Multicolors are printed by tandem operations.



Flexapex Process

A new process from Apex - see details on inside back cover.



Gravure

Liquid ink is flowed into a backward reading etching on a cylinder or plate. Excess ink is removed and the image is then transferred to the substrate.



Hot Stamping

This process uses a relieved, backward reading metal plate on a heated die. For each impression, a fresh section of colored or metallic foil is pressed against the product so transferring the image. Systems are available in flat bed or rotary versions.



Rotogravure

Like gravure, but using a rotary process.

The development of printing technologies

It is interesting to reflect that many of the techniques commonly in use in product printing and decoration today are simply derivations of techniques invented, in some cases, centuries ago. Developments in three dimensional product printing have largely been adaptations of printing techniques and technologies designed for paper.

Below is a condensed history of printing showing some significant dates and developments which impact on and affect the printing of three dimensional products in today's markets. Techniques commonly in use today, with approximate date of origination, include:

2000 BC Metal Foil Stamping - used by ancient Egyptians. Now usually referred to as Hot Foil Stamping and used extensively for decoration of cosmetic items and the like.

AD200 Woodblock / Woodcut printing - originated in China in antiquity as a method of printing on textiles and later paper.

1430 Intaglio (Gravure) - is a family of printmaking techniques in which the image is incised into a surface, known as the matrix or plate.

1454 Printing press - Gutenberg was the first in Western Europe to develop a printing press.

1796 Lithography - is a method for printing using a stone (Lithographic Limestone) or a metal plate with a completely smooth surface. Lithography uses oil or fat and gum arabic to divide the smooth surface into hydrophilic regions which accept the ink, and hydrophobic regions which reject it and thus become the background.

1843 Rotary press - rotary drum printing was invented by Richard March Hoe, and then slightly improved by William Bullock.

1873 Flexography - basically an updated version of letterpress that can be used for printing on almost any type of substrate including plastic, metallic films, cellophane, and paper.

1886 Hot metal typesetting - Two different approaches to mechanising typesetting were independently developed in the late 19th century.

1903 Offset press - Offset printing is a commonly used printing technique where the inked image is transferred (or "offset") from a plate to a rubber blanket, then to the substrate.

1907 Screen-printing - its first appearance in a recognizable form was in China during the Song Dynasty (960-1279 AD).

1960's Pad printing (gravure) - a printing process that can transfer a 2-D image onto a 3-D object.

1976 Inkjet printer - used in many forms for basic product marking and coding.

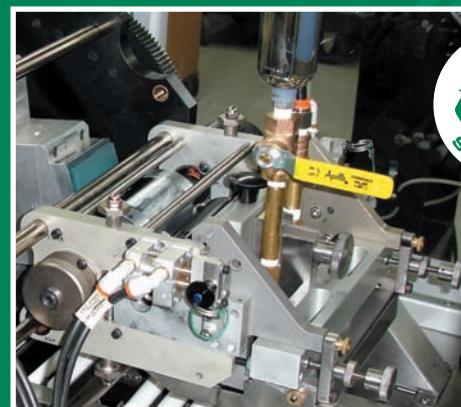
1993 Digital press (an advanced inkjet based technology) - mostly used in flat sheet paper printing.

Flexapex - something new!

Flexapex is the trade name for a new printing process developed in 2005 by Apex Machine Company to address some common problem areas experienced with printing methods currently used in the marking and decorating of three dimensional products.

FlexApex is an offset printing process developed by Apex Machine Company which utilizes modified flexographic inking technologies and UV (ultraviolet) cured inks in combination with an offset printing process in multi-colors and at high speeds. Unlike any other offset process, Flexapex provides the capability of transferring large volumes of ink for the printing of dense artworks and solids, thus offering great potential for improved quality of solids and for the printing of light coloured inks onto dark substrates.

Flexapex can also be combined with conventional dry offset printing in the same machine thus offering the best of both worlds. The process uses solvent free UV cured liquid inks and it is increasingly replacing solvent based ink technologies such as pad printing and gravure, as well as providing a low cost alternative to silkscreen printing for high volume products. Flexapex offers a low-cost, high-speed, multi-color technology which is easy to operate and which provides great repeatability combined with very high quality.





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