Packaging engineers face a wide variety of challenges when it comes to maintenance and operation of a broad spectrum of machinery counted on to perform such tasks as wrapping, sealing, cutting, forming, pouching, blister packing, folding, stripping, trimming, filling, and greasing. Some of those problems include:

- Poor lubricity and premature wear of folding plates on overwrap machines can cause skewed overwraps, bubbles and machine jams.
- Abrasive wear of nozzle collars, cross sealers, quench sealers, filling nozzles and side sealers can stop packaging operations cold or shorten the useful life of the machinery.
- Accumulations of adhesives, glues, packing films, inks and product residues can “gum up” packaging equipment surfaces, necessitating frequent shutdown and maintenance of equipment.
- Friction on the surface of metal parts used on hoppers, chutes and other conveying equipment can cause product backups and bring packaging operations to a halt.

And if those challenges aren’t enough, special needs — such as cigarette packages which feature foil panels and embossed hot stamping — place special demands on the packaging engineer and the equipment for which he or she is responsible.

It is the recognition of wear, abrasion, corrosion and release problems such as these that has caused engineers across the country and around the world to turn to General Magnaplate Corporation for solutions that include an infusion of selected engineering polymers.

By impregnating these polymers into the substrate of packaging machinery component metal parts through a series of proprietary steps that include an infusion of selected engineering polymers, General Magnaplate has created high-tech Magnaplate-applied coatings that are impregnated into the substrate of packaging machinery component metal parts through a series of proprietary steps that include an infusion of selected engineering polymers.

Unlike “paint-ons,” these coatings become an integral part of the base metal and won’t chip, flake, peel or rub off. They are called “synergistic” because the resulting surface is superior in performance to the base metal or any of the individual coating components.

A wide diversity of coatings is available for application on specific types of metal substrates. Each meets special performance requirements for preventing wear, abrasion, corrosion and chemical attack. They each feature an extremely low coefficient of friction to reduce galling of mating parts to prevent any material from adhering to the equipment during the packaging operation.

Many of the coatings meet USDA, FDA, NSF, and AgriCanada codes, making them excellent selections for packaging machinery applications. Their non-stick properties make sanitary clean-up a relatively simple matter of fresh water rinsing.

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Many of the coatings meet USDA, FDA, NSF, and AgriCanada codes, making them excellent selections for enhancing the performance and wear life of all kinds of metal parts on food or drug packaging machinery. Their non-stick properties make sanitary clean-up a relatively simple matter of fresh water rinsing.

Here are just a few of the packaging equipment part performance and maintenance challenges Magnaplate coatings have solved.

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Magnaplate's engineers developed a new coating called Magnaplate HMF™ that imparts an ultra-hard, mirror-smooth micro finish surface with the lowest coefficient of friction obtainable from any non-burnished metal coating system.

Unlike conventional coatings which were considered and rejected, Magnaplate HMF coatings cannot chip, flake, peel or be rubbed off. Important to the ease of cleaning, speed of production, and the smoothness of the machinery parts, all very sold surfaces will permanently adhere to a Magnaplate HMF coated surface. And while some tacky materials may exhibit some temporary adhesion, almost all substances release easily.

It is this attribute that makes such "synergistic" coatings particularly advantageous when employed in conjunction with the sensitive packaging materials used in Benson & Hedges DeLux Ultra Lights. The Philip Morris engineers had early on discovered that not only would grooves and scratches in the machine parts cause problems to arise in the packagers' appearance, but any pip or protrusion on the surface of the metal would be similarly destructive to the smoothness and clean appearance the packages demanded.

The attention-getting new Benson & Hedges package, with its richly burnished colors, its highly reflective finish, and its crystal clear overwrap gives dramatic proof that Philip Morris' packaging engineers have indeed met this major packaging challenge.

**Strapping machine**

Aluminum and steel surfaces face abrasive wear problems

FMC Corporation's strapping machines, known for their reliable, high-volume strapping capabilities, subject both steel and aluminum components to the potential for excessive abrasive wear.

Polypropylene strapping is automatically fed around the entire aluminum yoke of the machinery and tensioned to a pre-set pressure before being sealed and cut off.

The FMC strapping machines can apply up to 18 straps a minute — provided the steel and aluminum surfaces involved can maintain their smooth, unhampered action. Experience has shown the company that the best way to assure that is by coating the aluminum yoke with Magnaplate's TUFRAM® and the steel components with NEDOX® to permanently lubricate and protect the path traveled by the strapping during the high-speed strapping operation.

**Pouch packing**

Faster production speeds with Magnaplate coatings

A leading manufacturer of packaging equipment supplies a variety of drug and pharmaceutical companies with vertical and horizontal form-fill-seal machines for pouch packaging of viscous and aqueous liquid products, tablets, pre-moistened applicators, and sterilizable hospital disposables in permanent seal and peel-open pouches.

According to the manufacturer, the machines feature sealing head components and other key parts whose surfaces have been improved by synergistic coatings. The coatings permit faster production speeds on form-fill-seal pouch packaging machines were dramatically improved without experiencing excessive wear, after the sealing head and other parts were enhanced by a Magnaplate coating.

**Forming rolls and throats**

Abrasion prevention frees pharmaceutical product flow

The Ivers Lee Division of Becton, Dickinson and Company specified Magnaplate coatings from the start when manufacturing its UtiliPack Machine, the BFH. The BFH has a new coating called Magnaplate HCR™ that imparts an ultra-hard, mirror-smooth micro finish surface with the lowest coefficient of friction obtainable from any non-burnished metal coating system.

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The problems were eliminated by coating the fingers with Magnaplate HCR, a surface enhancement coating exhibiting exceptionally high corrosion resistance as well as ultra-high hardness for superior wear resistance.

**Separator fingers**

Wear of aluminum reduces efficiency of packaging

The abrasive action of paper products being collected between the aluminum fingers of a packaging machine's separator caused a severe wear problem that impacted on the efficiency of operations.

The problems were eliminated by coating the fingers with Magnaplate HCR, a surface enhancement coating exhibiting exceptionally high corrosion resistance as well as ultra-high hardness for superior wear resistance.

**Filling machinery**

Aluminum surfaces require the toughness of steel

A Magnaplate HCR® coating on the aluminum fingers of a separator eliminated a severe wear problem caused by abrasive action of paper products which were being collected in the separator.

One of their large fillers is designed to handle irregularly shaped containers. The reciprocating head of the filler is timed to move with the conveyor belt so that the filling nozzle can enter, fill and leave the container without ever touching it. Engineers wanted to use aluminum for the filler heads, but they could not until Magnaplate applied a TUFRAM coating that allows the aluminum to withstand the friction encountered between the moving parts of the assembly.

Similar solutions using TUFRAM for aluminum and NEDOX for stainless steel were applied to drive and idler wheels and plugging heads, as well as to stainless steel and aluminum parts on hoppers and chutes in a line of high speed stoppering machines.

**Bagging chute**

Abrasive wear causes back-up of diapet production

A leading manufacturer of diapers and feminine hygiene products in Canada was encountering packaging operation slowdowns because of a serious wear problem.

Assembled diapers are sent down a conveyor and accumulated automatically in the precise quantities to be packaged. Bagging is initiated when an aluminum arm pushes the accumulated diapers down a stainless steel chute and into the bag attached to the end of the chute.

The problem occurred when the arm scraped against the sides and bottom of the chute, leaving material on the chute and creating friction that slowed down the speed of the packaging operation.

After trying several options, the packaging engineers reduced the size of the arm and had Magnaplate HMF coatings applied to the sides and bottom of the chute and sides and bottom of the chute with PLASMADIZE®. The wear and friction problems were solved and the packaging efficiency restored.
Licensedes in Japan, Sweden, United Kingdom, Germany, and The Netherlands.

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2924 Rapids Drive, Racine, WI 53404, (262) 637-5673  FAX: (262) 637-5876

General Magnaplate Wisconsin,

General Magnaplate California,

TUFRAM® “synergistic” coating eliminates vacuum-port icing problems on high-speed raw beef packaging machines at W.R. Grace’s Cryovac Division.

General Magnaplate Texas

Web Site: www.magnaplate.com
E-mail: info@magnaplate.com

General Magnaplate Corp.

Aerosol valve placer
Abraision problems plague aerosol packager
The installation of aerosol valves is a demanding and sensitive business. To compound the challenge, one manufacturer was having problems with abrasive wear on the spindle assembly and disc sorter.

A Magnaplate-applied coating of TUFRAM produced a super-hard, non-peeling surface that eliminated the problem of premature wear.

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