Coating: It's not just what's on the web!

- *Running slow because of sticking?*
- *Productivity down because of clean up?*
- *Higher tensions causing difficulties?*

These are common issues facing today's converter and machine builder alike. Solutions abound and are not always the "old or default standard". Throughout the next few minutes we will define specific problem areas or "PAINS" and provide proven engineered " SOLUTIONS" through the use of Industrial Polymer and Plasma Coatings.

Industrial Coatings are becoming more and more prevalent in the original machine design. The ability to modify the surface characteristics of a flat or round surface to provide a functional property or attribute enables a more flexible and cost effective machine design.

These functional properties can:

- Reduce the number of idler rolls required to obtain optimum roll wrap angles.
- Be used to create proper tension differentials without the use of nip rollers.
- Reduce the reliance on special or exotic materials of construction to combat environment issues.
- End the use of temporary, band-aid solutions just to get through check out and acceptance trials.
- Increase actual operating speeds as adhesive build up is eliminated.

Polymer and plasma coatings serve a wide variety of industries:

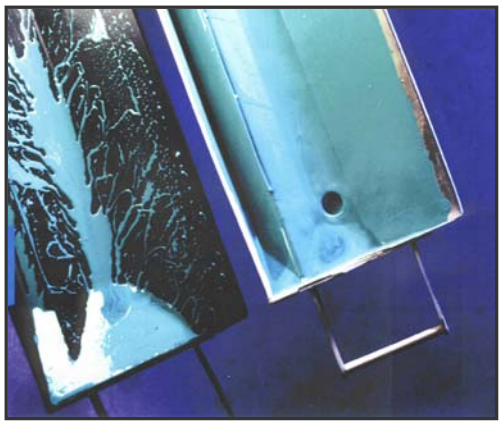
- Paper
- Rubber
- Non-woven
- Paint & Adhesive
- Food
- Plastics
- Converting
- Printing
- Textile
- Automotive

Based on today's audience we will focus on the Converting industry, which includes our paper, film and foil manufacturers, coaters, laminators, printers and metallizers.

WHY DO WE NEED COATINGS?

The coatings are used to solve operating pains, problems or environment issues such as:

- Sticking
- Wear
- Abrasion resistance
- Chemical resistance
- Chemical reaction
- Corrosion resistance
- Static build up
- Traction
- COF
- Clean-up
- Restore part integrity



ON WHAT SURFACES CAN THEY BE USED?

- Mild, galvanized, ridgidized, stainless or hardened steels
- Various aluminum grades
- Composite materials, i.e., carbon fiber, phenolic, epoxy, some foams

WHAT ARE THE COATINGS?

Generally, these coating solutions can be summed up in three technologies:

1. Polymer Coating
2. Metallization and Plasma Coating
3. Hard Facing

Polymer coatings referred to as "*spray and bake*" involve thermoplastic, thermoset and cross linked polymers with exotic names like PTFE, PFA, FEP, and ETFE all of which are members of the Dupont Teflon® resin family. To provide the most up to date solution your coater needs to be a Dupont Licensed Industrial Applicator. The exact solution may be a very basic one-coat system or others quite complex to meet or exceed salt spray test values, COF requirements, abrasion test standards or to be chemically resistant. Both low and high temperature cure materials are available to reduce damage or deformation of original parts.

Plasma Coating, commonly referred to as **Flame Spray**, is the application of molten metal or ceramic particles that under heat and pressure are bombarded against a metal or composite surface to modify its original characteristics. These surfaces enable improved performance in areas such as traction, air entrapment, polymer absorption and longer life through enhanced hardness.

Hard Facing, or **Thermal Spray**, is a high end plasma coating using specialized equipment and materials to spray harder than original coatings, providing better abrasion and wear resistance with surface hardness up to 75 Rc with less than 1% porosity and no micocracks.

The most interesting process involves impregnating or a **combination** of two or more of the above technologies to enhance both the properties of metallization and the polymer layer. The solution possibilities are endless but usually provide the best in wear and release.

HOW DO I DETERMINE THE COATING?

While not difficult, the use of a very simple principle begins the "*coating suppliers' selection process"*. We rely on the KISS principle and our "START" model where:

S= Slide
T= Traction
A= Abrasion
R= Release
T= Temperature

The START basic problem is further developed into a specific coating solution using the following coating technology:

TempCoat

When durability is not an issue, this family of coatings is an economical alternative to Plasma Coating solutions.

PlasmaCoat/ CeraCoat/ StarCoat

Is a broad range of coatings that are designed to solve industrial surface problems. These durable coatings can be tailored for any combination of attributes.

MagnaCoat

Is the right choice for the toughest chemical and corrosion problems.

Along with using the KISS principle, we also employ the old Sears philosophy of *"Good-Better-Best"* in terms of solutions to the issues. The price point of the solution varies with the technologies involved in processing the part and the type of coating required. Many times "Good" is good enough.

Application	Problem		Solution	
		Good	Better	Best
Idler roll	Better surface contact, web speed match, non-stick	TempCoat	PlasmaCoat	CeraCoat

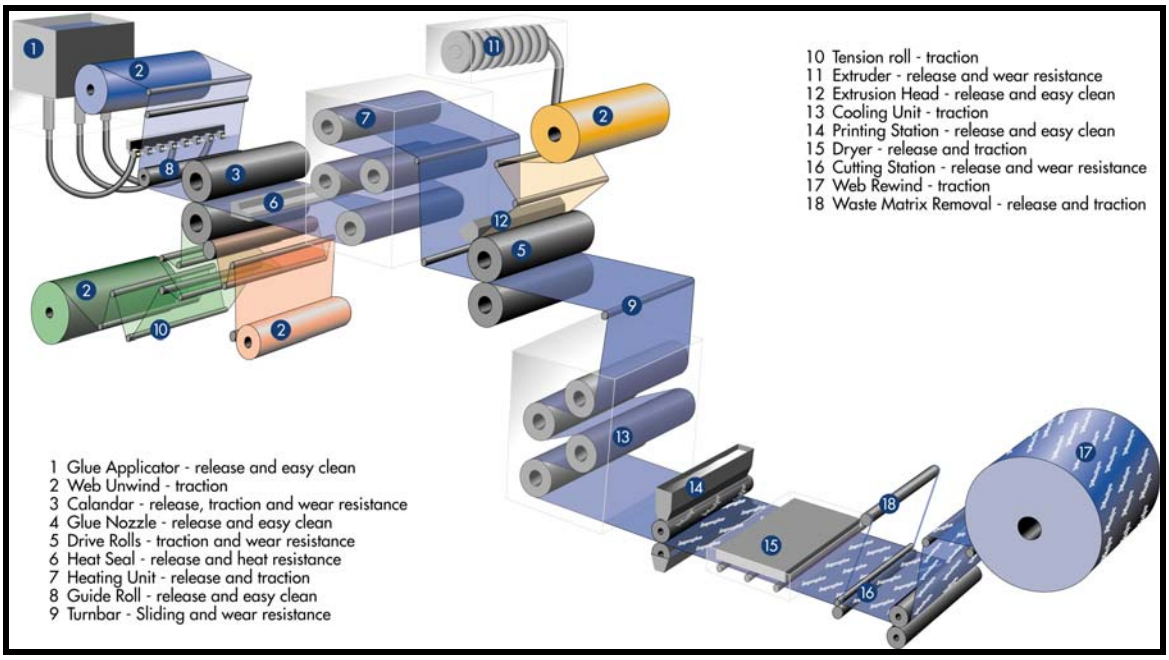
WHAT ARE THE ALTERNATIVES TO COATING?

The use of temporary or *"band aids"* such as

- paints, sprays
- tape products, glue on wraps
- shrink sleeves
- anodizing
- plating
- simply applied "spray metals"

WHAT ARE THESE APPLICATIONS?

Using the all-encompassing, fictitious machine line rendering in the following Figure, I'd like to identify some areas of concern and the solutions available.



APPLICATION CHART

	Problem		Solution	
		Good	Better	Best
Common areas in web handling.				
Web carrying rolls	sticking in conjunction with slip and match web speed	TC1524F	PC30302/4001F	PC60331/4001F
Drive rolls	slip, abrasive wear	PC30502/4001F	PC40511/4001F	CeC60531/4001F
Chill roll	thermal transfer, wear, corrosion, sticking	TC1524F	PC30302/4001F	PC60331/4001F
Turn Bars	high friction, abrasive wear, sticking	TC1002F	PC30302/1002F	PC60331/1002F
Web guide rolls	slip, speed match	TC1522F	PC30502/4001F	PC60331/4002F
Vacuum / Pull Roll	slip, sticking, high temp	PC30702/2009F	PC40711/2009F	SC40511/2009F
Winder drum	slip, impact, abrasive wear, dust entrapment	PC30502/2009F	PC40511/2009F	CeC40511/2009F
Steam Cans	sticking, chemical attack & abrasion	TC3026F	TC1524F	PC30302/1524F
Specific areas- Coating & Laminating				
Pad, pan or applicator rolls	corrosion, chemical attack	TC1501F	SC80301	SC75301
Dryer Nozzles / air bars	sticking, cleaning, accessibility	TC1504	PC30502/4001F	PC40511/4001F
Adhesive /Coater / ink contact surfaces	clean ability, raw material waste, chemical attack	TC1501F	TC1002F	PC30502/1501F
Enclosed doctor	build up, clean ability, chemical reaction	PC30302/1501F	PC30302/1505	PC40511/2009F
Laminating roll	traction, adhesive strike thru, edge bleed out, wear	PC30502/4001F	PC40511/4001F	PC60331/4002F
Waste trim handling parts	sticking	TC1524F	PC30302/4001F	PC40511/4001F

APPLICATION CHART *CONTINUED*

	Problem		Solution	
		Good	Better	Best
Common areas in web handling.				
Pumps, valves, fittings	solid particle erosion, chemical attack	Delta MKS	TC1501	MC1501
Hot melt tanks, applicators, pots	sticking, clean ability	TC1501F	TC1501F	PC30302/1002F
Specific Areas- Film Production				
Chill roll- matte or gloss	release, wear	SC80301	SC75301	SC80301
Collapsing Nip Steel roll	accessibility, slip, wear, sticking	TC1002F	PC30302/1002F	PC60331/1002F
Draw / Orienting rolls	edge wear, abrasion, film sticking, smooth finish	XTC15BB	TC1002F	SC75301
Bag Folders	abrasion, slip,	TC1002F	PC30302/1002F	PC60331/1002F
Heat Seal	sticking, high temp, wear	TC1002F	TC1522F	PC30302/1504F
Specific Areas- Printing				
S-wrap / Pull Rolls	slip, surface texture	TC1002F	PC30302/2009F	PC60331/2009F
Ink idlers	slip, clean ability	TC1524F	PC30302/4001F	PC60331/4001F
Die Cutting Tool	sticking	TC4004		PC30302/4001F

In conclusion, many of the converted webs subsequently feed into the food, bakery and packaging markets. The applications for engineered surfaces grow into other downstream operations such as product handling as well as overwrap web handling, sealing and boxing.

Cost effective coating solution are available with a quick return on investment!

- Eliminate waste
- Increase uptimes
- Decrease unproductive make ready or clean up times
- Improve operator safety

Don’t settle for the *“band aid”* approach with so many real solutions available to you.

Impreglon, Inc. employs Michael A. Ferrante as a Regional Manager. With 11 locations worldwide and twenty years experience, Impreglon continues to be a leader in the development and application of high performance coatings. Mike has an Engineering degree and a Management degree and has worked in various capacities within the converting industry. His experience has included, but not been limited to: engineering, field service, sales and management with a number of machinery suppliers, component suppliers and as an engineering consultant. The integration of Mike’s knowledge and Impreglon’s expertise is part of the many components that make Impreglon a success.

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