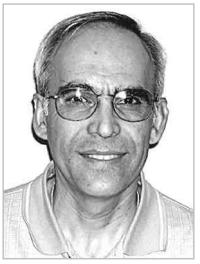
Finisher's Think Tank



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A New Year, a New Set of Opportunities

The coming of a new year brings with it a big surprise, that of having arrived. Planning ahead during the old year always provides timetables, project dates, plans to expand, modify, or change processes and systems. Frequently, we find ourselves at or close to specific planning and execution. Sometimes, however, time passes so quickly that we could miss out on important opportunities. In this case, be assured that late is certainly better than never.

Looking around any finishing installation, we can readily confirm changes that could pay dividends. The benefits can be seen as: process improvements, safety, environmental, certification, new finishes, and equipment, to name a few. A net result would be new, steady, and expanding business. In fact, new directives such as RoHS, make it imperative to replace soon-to-be prohibitive processes with approved types.

Continuous improvement and taking advantage of new technologies leads to success that can have a very positive effect on business. Two recent examples give witness to what can happen. Germany is currently the world's number one exporter of fabricated parts. It has attained this highest level by continually investing in technology to improve overall manufacturing capabilities. Satisfaction is short lived, giving way to on going improvement. Japan has recently emerged from a prolonged economic recession. During the down time, it was determined that business lost to growing industries in China and India, for example, should be considered gone. In it's place, a focus on innovative types of business and manufacturing lead to new ventures and a reinvigorated economy. These examples make a strong case for striving to improve. The focus should be on how and what can make us better. Let us consider some positive areas for improvement that can reduce operating costs, increase throughput, improve quality finishing, and keep customers coming back.

Waste Treatment

This can be considered the most important area of the plant or finishing department. Non-compliance can result in fines, unwanted publication, and quite possibly, enforced shutdown. There is a lot of instrumentation and equipment that is essential to the operation, such as: pumps, filters, automatic dosing, meters, probes (pH, ORP), tanks, plumbing, presses, and chemicals (proprietary and generic). Whether the treatment and conditioning is batch or continuous flow, there are several important sections of the process that should be evaluated for update, replacement, or re-conditioning.

Federal, state, and local water authorities continually monitor effluent discharge for compliance. It is not uncommon for new discharge limits to reduce some metals by perhaps 10–25%. Because we deal in ppm values, replacing 1 ppm of a metal with a new limit of 0.75 ppm is very significant. More so to the system's capability to run compliantly. This can occur regularly or periodically. Using the same process may keep the system in compliance. However, changes may be required in how each step is performed or with what type of chemicals. This is why waste treatment must be continually monitored for rapid, efficient operation.

Surface Preparation

Traditional cleaners are primarily alkaline, in powder or liquid concentrates. Either of these blends provide effective cleaning and conditioning of the substrate surface. However, a case can be made for liquid cleaners. These blends typically contain similar additives that are found in powder blends. However, they do not contain fillers, such as soda ash. Therefore, liquid cleaners are up to 85% less sludging when treating a spent cleaner bath. The same concentrate may be used in ratio with liquid caustic (already used in waste treatment) in the soak cleaner and a different ratio in the electrocleaner. Localized boiling and splashback are avoided when adding the liquid cleaner. One cannot beat a liquid cleaner for uniform product blending. Liquid cleaners may be obtained from the supplier in returnable totes, thereby eliminating the disposal of empty drums.

Plating Baths

Any of the typical plating baths, such as copper, nickel, alloy zinc and chrome offer specific functions of the deposit. This may range from aesthetic appearance to corrosion protection and wear resistance. However, improvements in the additives allow the finisher to be more selective with regard to the quality of the deposit. Rapid leveling, soft, bright acid copper and nickel provide an excellent deposit over the base metal. Improvements in these systems offer excellent deposit characteristics, while minimizing the required products to maintain the baths.

The blended product additives also substantially minimize previously encountered problems, such as brittleness or deposit flaking, and dark recesses. Unique catalysts in hexavalent chrome improve plating efficiency, beyond the traditional 10–15%. Newer, longer functioning fume suppressants can be over 98% effective. Trivalent chrome baths markedly improve safety

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so the electronic equipment can be hand stripped the next day for valuable metals. The most sought for metal is gold—every ton of computers contains about 0.9 kilogram of gold. The next is copper, which is then sold to metal processing manufacturers. The empty 'carcasses' and broken, unrecyclable internal components are dumped indiscriminately. These improper recycling methods release large amounts of pernicious gases and toxic materials such as lead, tin, mercury, and cadmium into the air, soil, and water—causing particularly severe contamination of rivers and irrigation canals. Workers in these recycling operations usually do not wear protective gear as they melt and strip away plastic wiring. The human health costs of these toxins in the air, water, and food include stomach and lung disease, miscarriages, birth deformities, and premature deaths."[9]

As with with the ship dismantling in India, this is clearly dangerous work. But those involved provide responses similar to their Indian counterparts regarding outsiders trying to interfere with their efforts. "We need this work," said a farmer from Guizhou province, "If the government shuts it down here, it will just move somewhere else and we'll move with it."

"It's dangerous, yes, but no money is more dangerous," said an 18 year old woman named Lin. "No money means you'll die of hunger."[10]

Summary

Pravin Nagarsheth, mentioned earlier, has this to say, "Everybody knows this is bad! It is not a point of dispute! What Greenpeace is saying is even excellent! But their ideology does not provide solutions! This generation cannot afford it!"[11]

Langewiesche observes, "Too often we have a view of what is desirable for some other part of the world—on the ocean, in the slums from which sailors come, in Alang—which is so detached from daily existence there that it becomes counterproductive, or even inhumane." He concludes by reporting: At Alang, resentful Indians kept saying to me, "You had your industrial revolution, and so we should have ours."[12] ***P&SF***

References

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Answers to I.Q. Quiz #414

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1. The current Cr^{+6} PEL is 52 $\mu g/m^3$ (ceiling concentration). The proposed Cr^{+6} PEL is 1.0 $\mu g/m^3$ (8-hr time-weighted average)

2. The Metal Products & Machinery Rule

3. The End-of-Life Vehicle Directive, mandated by the European Union, requires that producers limit the use of certain hazardous substances in the manufacture of new vehicles and automotive components and promote the recyclability of their vehicles.

4. The Waste Electrical and Electronic Equipment Directive, mandated by the European Union, restricts the use of certain hazardous substances in electrical/electronic equipment and deals with the disposal of waste electrical/electronic equipment in landfills.

5. The Restriction of Use of Certain Hazardous Substances Directive, mandated by the European Union, requires producers to restrict the use of hazardous substances in electrical/electronic equipment. It specifically bans lead, mercury, cadmium, Cr^{+6}, PBBs and PBDEs. (and seems to overlap with WEEE).

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versus the hexavalent baths, and are about twice as efficient. This means that flight bars can accommodate significantly more parts for plating, speeding up production. The deposit is close in color to hexavalent and is suitable for decorative finishes. Alloy zinc (zinc nickel) provides a deposited coating that significantly improves the corrosion resistance with a special chromate, compared to a traditional zinc and chromate. 500 hours to neutral salt spray and upwards can be readily achieved.

More in depth information for any of the mentioned processes is available in specific printed literature and courtesy of the suppliers. The more you know, the better off you will be when change becomes apparent.

Specification

This has become an important link to being able to do business not only domestically, but also internationally. ISO is the most common and probably predominant specification. Much of industry supports and is active in dealing only with similarly specified companies. It has, therefore, become not only good business sense, but critical in some aspects of companies working together. From a practical aspect, adhering to a specification keeps the member company on track, in all aspects of it's daily operation.

May this be not only a happy new year, but a 2006 that meets or exceeds every facet of your company. ***P&SF***