A look toward the future of coated papers

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The future should bring increasing use of coated printing papers, but many factors will influence both the demand and constraints challenging the industry.

The coated paper industry in the year 2000 and beyond will be influenced, most significantly, by six factors:

1. Environmental awareness
2. The rejection of communism, the conversion to democratic governments, and the development of "market economies" in Eastern Europe and the former Soviet Republics
3. Rising standards of living
4. The upward shift in the average age of the population in North America and Europe primarily, but also in other nations
5. Changing printing technology
6. Balance between printed and electronic methods of communication.

Of those, the most significant single factor will be the effect of the current "environmental movement."

Environmental pressures

Concern for the environment is not a new event—it's been an issue for years. However, beginning in the 1980s, the movement gathered enormous momentum, and its voice rose in volume and stridency. Part of that was the result of creative as well as persistent methods to extract vast financial support from wide-ranging sources: individuals, industries, and others. These provided organizations like Green Peace, Sierra Club, Friends of the Earth, and other "Green Groups" with money to support their various agendas with extensive and expensive publicity.

Such groups focused the world's attention upon the evils of dioxins, chlorine, and AOXs. Campaigns were instituted to end nuclear war, nuclear energy, clear cutting, and the Alaskan pipeline. We are urged to save the whales, the seals, the redwoods, the dolphins, the snail darter, the spotted owl, the Colorado squawfish, the razorback sucker, and on and on.

Many believe that the environmental movement which began with great sincerity and altruism has become politicized—in some cases, "radicalized"—and that humanitarianism has often been replaced with selfish and contentious motivation.

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One consequence may be that a "backlash" has begun which could neutralize some of the rhetoric and actions of the less benevolent groups. This development is not surprising. Many industries and individuals are beginning to ask questions about how their contributions are being used. In this difficult economic climate, it is not surprising that contributors try to balance the potential benefits of the various environmental causes with the availability of jobs.

Recycling

The passionate environmental movement of the past decade has caused structural changes to occur in the pulp and paper industry from which there is no retreat. Certainly "elemental chlorine" is, or will shortly, be a non-issue. It is already disappearing from the system, and so too are chlorine-based compounds used in bleaching and other papermaking activities. The pace of paper recycling will increase, with the attention shifting to the real culprit, the lack of landfill space, rather than the more emotional, glamorous cause of saving trees.

It has become fashionable these days, in an overly simplistic conception, to declare that papermaking fibers belong only in two categories, "recycled" and "virgin," and that "recycled" implies "always good" and "virgin" implies the opposite, an interesting reversal of the conventional interpretation for those two words! Regardless of the truth, the idea has become woven into our social fabric, and provokes certain consequences. For example, because of pressure from the buyers, "recycled" fibers are replacing "virgin" fibers at an increasing rate. This will undoubtedly continue, at least until pulping technology is generally upgraded and systems are on-stream which produce products free of all "unfriendly" chemicals and by-products.

The strong urging to recycle is *not* "always good." There are counteracting issues which deserve more than casual consideration. When paper is recycled, fibers are separated from the other materials. The leftover "sludge" contains the *un*wanted residue: pigments, heavy metals and other ingredients from printing inks, adhesives used to glue the pages, and more. People love clean fibers, but no fan club exists for the "sludge" created during recycling. Therefore, disposal has become a *major* problem.

In addition, the quality of products produced with recycled fibers tends to be less desirable. In some cases, there are limits to the amounts of such material which can be used

without sacrificing other important performance characteristics. Additionally, it is still unclear whether recycling fibers actually requires the use of less energy than the manufacture of virgin fibers. Recycling can reduce the stress on landfills. But the ultimate answer to the landfill issue will be to improve the technology for clean and efficient incineration and to utilize refuse for fuel.

The strong "green movement" in Europe with emphasis now on "packaging materials" will be an interesting development. It could act as a deterrent to inter-country sales. It might even be construed as "protective" to the local paper industry in a given country. It certainly could affect exports of printing and writing papers if the original manufacturer must be responsible for disposal of "transport materials." An obvious answer is that a coordinated, cost-effective system must be developed in each country, available to all suppliers of products to that country. Otherwise, suppliers located outside of a country would be severely penalized.

Consideration for the environment also will have a cardinal influence upon how coated papers are chemically and physically made as we enter a new century. The industry will have to continue to reduce levels of contamination, as defined by government and science, or voluntarily, and in advance of a bureaucratic mandate, as it has done on many occasions.

Changing consumer demands

In addition, a rising standard of living and an upward shift in the age of the population will have an impact upon coated papers in A.D. 2000. Those factors will influence the quantity needed to satisfy the demand. The population is aging, in North America, in the EEC, in other developing and third world countries too. There has been a notable change in the structure of the labor force. The trend has been to "multiple wage earners" in the family and a large increase in the number of women employed. For various reasons, people are postponing full retirement to later ages. These circumstances also restrict the available leisure time, which itself has increased the reliance on mail order catalogs. Such catalogs, most of which use coated paper, are appealing because they offer an effective as well as convenient method to buy a huge variety of items.

We live in an age of high technology, and associated with this is the increased need to upgrade education. There will be a much larger emphasis upon improving the curriculum in our schools, colleges, and universities. On-the-job training facilities are also needed to provide the skills necessary to understand and operate sophisticated equipment.

Literate people with discretionary income tend to use magazines and books more often. They also are interested in the quality of such publications—the fidelity of printing and the preference for multicolor printing. Both of those are accomplished more readily with the use of coated papers. As the population increases, so will the demand for coated paper.

The average age of the population is, and will continue, to increase. That suggests there will be more people with less than perfect vision. That segment of society may insist that printed information should be easier to read, but without a major loss in clarity and fidelity. Thus it may signal a change to matte or dull surfaces for editorial material. In addition, the older population will most likely continue to prefer "hard copy" over computer screens as the vehicle for reading.

The "niche marketing" concept—the "rifle" vs. "shotgun" philosophy—has received much publicity in the past decade and will likely continue to be a significant force. Many magazines are having serious problems these days. There is a vast variety from which to choose, and perhaps some in each interest category may change or perish through merger, acquisition, or loss of audience. The general interest magazines seem to have the most difficult problem with declining ad revenue and readership. Most are struggling to find their own identity in an ocean awash with magazines. During the years remaining in this decade, changes in magazines will occur which may redefine the audience. Magazines will increase appeal through improved graphics, paper, printing techniques, and more logical frequency. They also will focus more on the audience. By using selective binding techniques, several publishers are offering a "personal magazine," one with certain editorial content customized to the interests of individuals.

The cost for distribution of magazines, catalogs, direct mail materials will continue to increase. Consequently, the basis weights for paper, and particularly the No. 5/C2S grade so commonly used, will continue to decline. Several manufacturers now offer 28.5-lb paper. With improvements in coated formulations and technology, basis weights below 28.5 lb will be common within 10 years, although we may be quite near the lower limit for basis weight. Magazines and catalogs could lose consumer appeal if they become too thin and limp. Not surprisingly, the users will expect the paper manufacturer to offer such products with virtually no sacrifice in quality. They will want brightness, opacity, printed fidelity, and satisfactory performance on printing presses operating at 3000 ft/min and faster, comparable to the heavier basis weights used today.

A changing world

In the past very few years, we have witnessed an extraordinary series of political events. To many of us, the "Berlin Wall" was "forever" . . . and in 1989 it disappeared! In 1990, a prosperous, capitalistic West Germany absorbed its brother-nation, an impoverished, contaminated, communistic East Germany and created, again, a single Germany. In recent months, the USSR—a monolithic force—perished, and is replaced by essentially a democratic "Commonwealth" of the same nations. This is only the beginning of a huge geopolitical movement which may well reach to The People's Republic of China, Cuba, and other parts of the world. Communism is dying . . . and will be replaced with "market economies" in some form. The swift change will influence the paper industry, but in a manner which is impossible to quantify at this time.

There will be an increased demand for paper, to be sure, to satiate the thirst for information. The populations in the Eastern Bloc and former Soviet Union had been allowed to read and view only what their governments approved. Their curiosity about the world has been stimulated from outside sources, often. They will demand "unfiltered" news and information on a current basis. Initially, the need will be for the relatively low-cost papers such as newsprint. But this will be followed by

movement up the "value-added ladder" to coated papers in a relatively short period of time.

Thus the quest for knowledge and information encourages the use of paper of all types, including coated printed papers. A second stimulant is also an integral element of the metamorphosis from "centrally controlled" to "market driven" economies. Manufacturers now must encourage sale of their products through advertising. The word "advertising" conjures visions of provocative images in eye-catching colors, designs, and activities which stimulate, motivate, and inspire, which cause products and services to move to the consumer. The use of multicolor printing for advertising becomes much more effective when using coated papers.

The search for information and the need to advertise promise that coated printing papers will receive a major stimulus from the political changes in the new, formerly communistic nations before the end of this decade.

Changes in printing technology

Coated papers have not been an important ingredient for business communications. However, with the advent of more sophisticated computers and software and better printers, coated papers might establish a niche in desk-top publishing applications for manuals, house organs, and certain types of advertising materials. In this capacity, they would probably replace uncoated grades initially. Ultimately, they might establish their own market and identity in the field of business communications.

There has been a progressive, rapid improvement in "photo copy machines." Today, it is estimated that about one trillion sheets of paper are used for copies... literally a blizzard! The newest phase is the advent of multicolor photo copiers, with the ability to reproduce color quickly and relatively inexpensively. This new generation of equipment will encourage and accelerate the use of coated papers to optimize their unique features.

The technology of printing will influence the quantitiy and qualities of paper which will be consumed in the year 2000. One of the most interesting developments concerns the venerable lithographic process which has undergone a number of metamorphoses. Among these was the discovery of the "dry offset" in the United States. The Japanese made many progressive modifications which were based upon this concept, and the result has been the introduction of the "Toray Plate." With this high-tech, "waterless" system, the ink-receptive areas of the plate are separated from the non-printing segments by the ingenious use of plastic materials. A unique feature of this new process is that excellent printed fidelity is possible with halftone screens of up to 1000 lines per linear inch. That's one million dots per square inch, per color printed.

The first presses to use the Toray plate were sheet-fed, but roll fed presses now exist. The use of the innovative Toray printing system is extremely popular in Japan, and it is beginning to appear in North America and elsewhere in the world.

The Toray process has a number of advantages. First, the fidelity of printing is outstanding. As a waterless system, it obviates the need for alcohol and such compounds in the dampening system. The inks are non-petrochemical—vegetable oil compounds are used for the vehicle. Although the presses require sophisticated temperature control devices, which adds to the capital cost, we are likely to see more and more of this type replacing older sheet-fed and roll-fed presses.

The "Toray type" process is most effective when used on coated papers, which may require modifications in substrate and coating formulation to fully utilize its high potential. We believe that this is simply one example of many forthcoming mutations which will significantly improve the quality, and therefore, the effectiveness of printed materials. Furthermore, we expect that the maximum potential for most of these emerging technologies will be achieved only with the use of coated printing papers.

The world market

The world market today for coated printing papers is about 24.5 million short tons. Normally, consumption of these products increases at a rate in excess of the GDP. The current difficult market for coated papers causes us to use an arbitrary and modest assumption for growth of only 3% per year. On a compounded basis, in A.D. 2000 the world will consume about 31 million tons, an *increase* of 6.5 million tons. About 50% of the consumption is in "coated mechanical" grades. A number of new machines in the United States and the EEC commenced operations since 1990. Most are producing at or near their design efficiency. The newest machine, in Italy, is at the early stage of its "learning curve," and thus there will be incremental capacity available during the next several years. However, beyond that point, there is no new capacity projected for the future.

There has been a very substantial increase in capacity for "coated woodfree" grades. Some of the machines have become operational recently, or will shortly. The expansion for these grades far exceeded the immediate demand. Thus, a few years will be necessary for the market to absorb the additional volume which will be available, before need equals supply. Again, beyond the current wave of new machines, there is no new capacity on the horizon.

Based on those consumption estimates, using conservative growth rates, clearly demonstrate that new capacity for coated paper will be essential in just eight years. An enormous amount of capital is necessary to construct a +300-in.-wide machine, coaters, supercalenders, etc. Assuming that the capital is available and can be justified financially (which is exceedingly difficult with today's pricing scenario), the "lead time" to install such a monster is about three years, and it would probably take two more years for the machine to reach design capacity. However, there is no indication that plans for any such project are currently in the works.

As we attempt to peer "beyond the horizon," it looks as if coated printing papers will grow in demand and perhaps even in diversity. There will be an enlarging need to gratify the very substantial appetite of the population for printed products which have a targeted audience and require excellent pictorial definition, more vibrant colors, and the use of "environmentally friendly" materials. Printing processes will evolve to meet that challenge, and the coated paper industry will respond as it has so often in the past to meet the expectations of the market. □