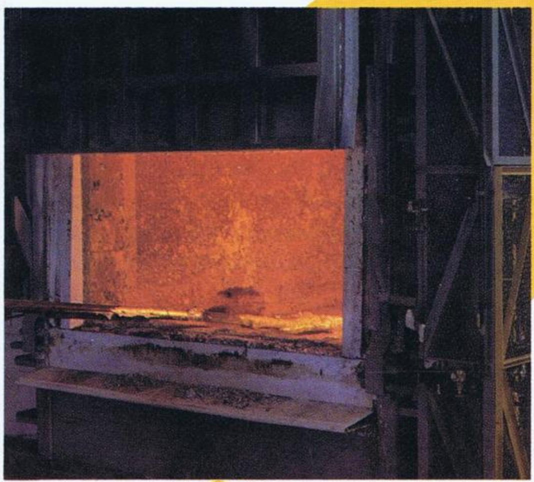
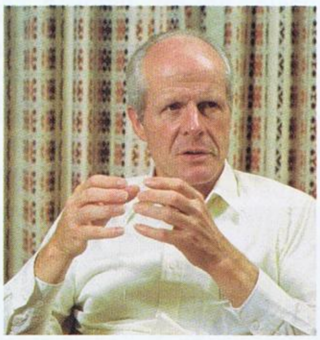
OCTOBER 1984

Modern Metals

Casting



Melting

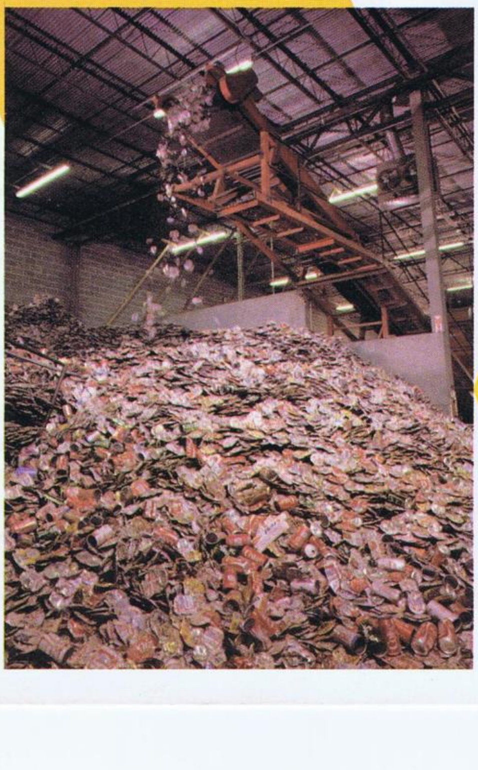


"With UBC at 40¢ a pound and end stock at $1.50, we have $1.10 to work with..."

Bill Coors

Rolling

Cans



Can scrap

Coors closes the recycling loop

Coors cranks up canstock mill; closes recycling loop

New continuous casting/rolling plant converts cheap can scrap into sheet for easy-open ends at big saving compared with commercial canstock; could create turmoil in aluminum's biggest market

Fred L. Church, editor

UNIQUE is the word for a plant in central Colorado that has become the newest producer of aluminum sheet for manufacturing carbonated beverage cans.

It is unique for three big reasons: It was conceived, built and operated by a brewery; its source of raw material is one of the dirtiest, most hard-to-handle forms of aluminum scrap—used beverage cans (UBC); and it is producing a new canstock alloy.

If the venture succeeds—and it certainly looked like it would when we visited it in late August—it could foreshadow a major upheaval in the world's canstock-rolling business.

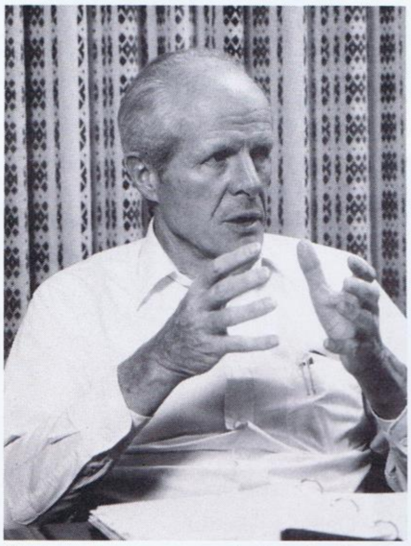
Such an upheaval would take years to unfold. In the meantime, the Fort Lupton plant of Golden Recycle Company has achieved the ultimate goal of recycling. Together with its sole customer, the mammoth Coors can plant in nearby Golden, CO, it has closed the recycling loop.

At the can plant, coils of canstock are fabricated into cans, which are filled with beer, which is consumed by people who return the used cans to distributors, who ship the cans to Golden Recycle, which melts, casts and rolls the metal into coiled sheet for the can plant.

Sounds so sensible, you wonder why somebody didn't think of it long ago.

Somebody did. Back in 1954, when Adolph Coors Co. joined forces with Beatrice Foods to develop methods to produce beer cans, William K. Coors, then president of the company and now chairman and CEO, favored aluminum over steel, not only because it was more chemically compatible with beer, but because its intrinsic value would encourage consumers to return the cans for cash. This, he reasoned, would help reduce container litter, which some militant groups of the day cited as an excuse for a return to prohibition.

A tour of several can plants in Europe convinced Coors and his associates that impact extrusion was the way to make aluminum cans. After several years of development, the first U.S.-made commercial aluminum beer can—a slender 7-oz container—made its debut in 1959.



"There's been a lot of skepticism about this venture. . . . We have heard second hand comments that it won't work. Well, I hate to disappoint them, but it is working."

William K. Coors

But the new venture needed impact extrusion slugs. Alcoa was contacted for price quotes, which came in at 54¢/lb.

"At that time, ingot was about 16¢/lb," Bill Coors recalled when we talked to him a couple months ago. "We thought that was a pretty stiff markup."

So Coors proceeded to develop its own process for continuous casting rolling and blanking impact extrusion slugs. "We got our conversion cost down to about 5¢/lb," he noted.

"But we spent six years learning to make aluminum cans the wrong way," Bill Coors added. "Our research proved that there was no way to economically scale up the process to make 12-oz cans."

Though the first attempt failed, it proved to Coors' satisfaction that the aluminum can was a viable proposition, and that recycling could play a vital role in making the can environmentally acceptable.

Within a few years, Coors was embarked on a massive campaign to develop its own version of the drawn-and-ironed (D&I) aluminum can. The company was committed to a 100% conversion from steel to aluminum cans, and by the early seventies it had the world's biggest beverage can plant with five high-speed lines producing over 2 billion cans annually.

At the same time, the company was intensively promoting its new "Cash for Cans" recycling program, enlisting the efforts of its 116 distributors in its 11-state marketing area.

Within two years Coors paid out over $2 million for used beverage cans, and the return rate shot up from 25% of the cans shipped by Coors in 1971 to over 46% the following year.

But that was only the beginning. In less than 10 years, the equivalent of 75% of the aluminum cans sold annually by Coors were returned for recycling. Nearly one billion lbs of aluminum have been recycled through the company's wholly-owned subsidiary, Golden Recycle Co., which was formally established in 1980.

The recycling program was picking up momentum when we interviewed Bill Coors back in 1971. But he must have sensed some foot-dragging by the aluminum industry at that time.

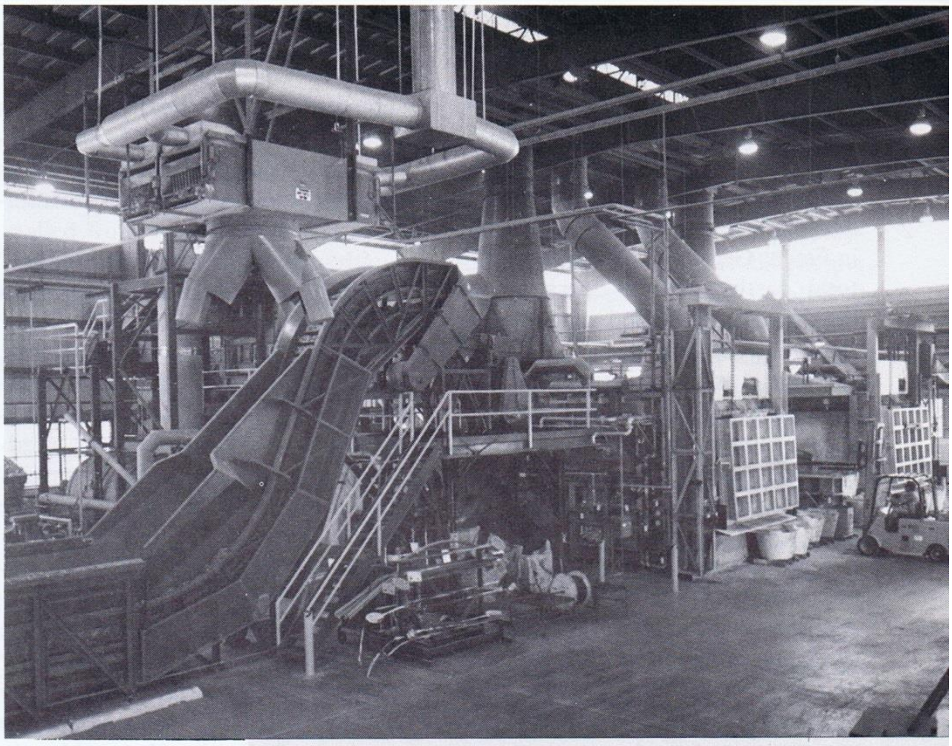
"Get on the ball or else . . ."

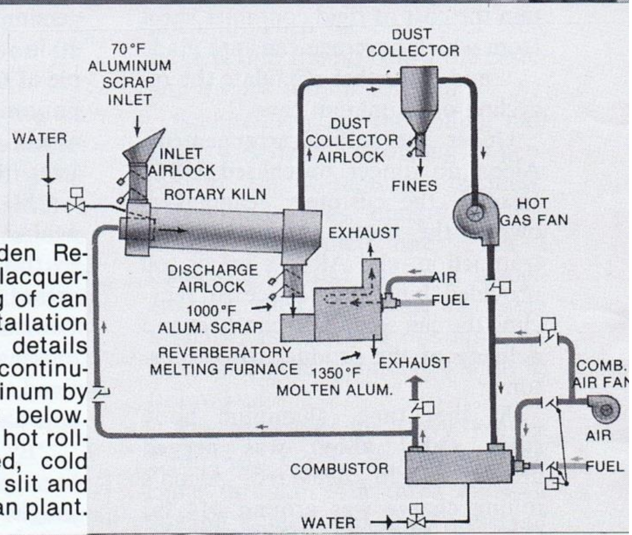
"We have suggested to the aluminum companies that they either get on the ball and support the price of these cans and be ready to recycle them, or we'll do it ourselves," he told us. "Our next project could be an aluminum rolling mill."

That may have sounded like a bluff to some aluminum officials, but not to the perceptive ones who have witnessed the success of integration efforts at Coors. The huge can plant alone should have been ample evidence of the company's urge to be self-sufficient.

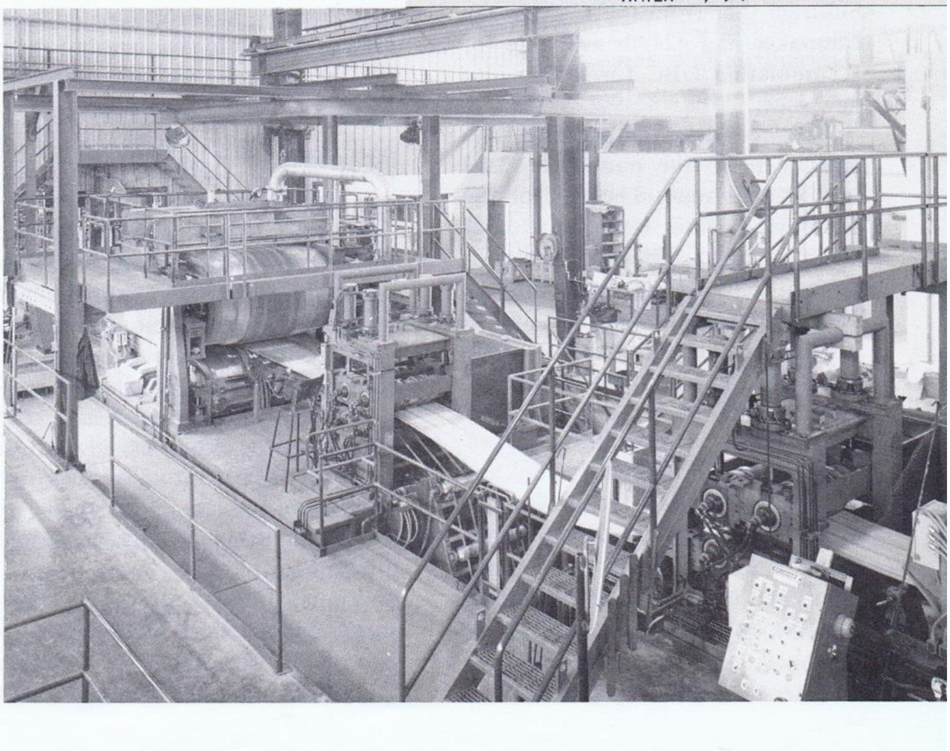
It was just about 10 years ago that Coors became serious enough about the sheet rolling idea to start looking for technology suited to its needs. Its experience with the line for making impact extrusion slugs was promising enough to focus its attention on improved continuous casting techniques.

This led to a cooperative effort with Swiss Aluminum Ltd. (Alusuisse), which had developed its Caster I process and was working on a whol-





Two key elements in Golden Recycle's new mill are the delacquering, preheating and melting of can scrap in the APROS installation above (principal operating details are illustrated at right) and continuous casting of molten aluminum by Alusuisse Caster II shown below. Cast slab goes directly into hot rolling mill; is then annealed, cold rolled, levelled, coil coated, slit and packaged for shipment to can plant.



ly different approach dubbed Caster II.

Originally, Coors was considering the huge, 60-in. width Caster II that Alusuisse was building for its plant in Essen, Germany. But the cost of a total casting/rolling operation of that magnitude added up to something like $200 million.

"That was too great a risk," Bill Coors commented. "And there were a lot of unknowns, one of them being the source of raw material (scrap) which was unstable at that time."

The Caster II project nearly got the greenlight in 1979. But then Alcoa announced an innovative canstock marketing program called tolling. An Alcoa official described this as "a major initiative to help contain the cost of rigid container sheet from which beverage cans are made . . . and to further stimulate the recycling of aluminum cans."

Under the tolling arrangement, Alcoa no longer purchased UBC. Instead, the customer (canmaker) owned the metal throughout the transaction, and Alcoa's fee or toll provided both the service of recycling the can scrap into cansheet and delivery of the product to the customer.

At that time, aluminum body stock (3004 alloy) was pegged around 83¢/lb, delivered. Alcoa's tolling charge was around 41¢/lb. Subtract that from the 83¢ and the canmaker had 42¢/lb available for accumulating UBC for tolling into new sheet.

Most recycling centers were paying 20¢/lb to the public for used cans at that time. The cost of the can buying center was estimated at 6¢/lb and transportation and processing of UBC was an estimated 8¢/lb. Subtract the resultant 34¢/lb from the balance left after Alcoa's tolling charge, and the saving became 8¢/lb.

Very attractive savings

For a big time user of canstock the saving was very attractive. Coors, for example, consumed about 180 million lbs of canstock a year. Multiply that by 8¢/lb and the saving was a tidy $14.4 million/year.

Other aluminum producers announced similar schemes, the effect of which was to head off self-manufacture plans under consideration not only at Coors, but at Anheuser-Busch as well.

"It made a lot of sense to us," Bill Coors commented in our recent interview.

"When they offered the tolling arrangement, they diverted our attention from our own rolling facility. But as time went on, they gradually squeezed that tolling margin. They squeezed it too much, because in the meantime we came up with the mini-mill approach to continuous casting."

Whatever the reasons, the decline of tolling encouraged Coors to shift the sheet casting/rolling project to the front burner. The scaled-down version of Caster II would cast 30-in. wide material. Technical people at Coors reasoned that it would be much easier to control, and would pose less formidable problems in terms of gauge control.

"So we began to get excited again," Bill Coors explained. "And by this time we were able to put together the other elements of the line. For example, the melting and delacquering of UBC were not as well defined when we first considered this approach.

"By now, those technologies had been pretty well worked out. We sought out the suppliers that we thought were at the cutting edge of various technologies, and so help me, they've done a pretty good job. . . ."

Mill gets green light in '82

It was in mid-1982 that the decision was made to proceed with the casting/rolling operation, to be installed in an existing unused plant structure in Fort Lupton, about 35 miles northeast of Golden.

Coors, of course, has its own construction group—reportedly the largest private group of its kind in Colorado—and normally does not engage the services of an engineering firm. In this instance, however, it asked for bids.

Winner of the contract was Comstock Engineering, Inc., a subsidiary of The Comstock Co. Work on the Golden Recycle operation was done out of Comstock's office in Pleasant Hill, CA.

Comstock had already done some of the preliminary engineering—in connection with the earlier project that would have cost $200 million—so the new project had a head start. Although it was slated to be installed in an existing building, substantial additional space was necessary to accommodate a mill that was also a secondary melting operation.

A quick plant tour

The plant is divided into six areas, based on function: Scrap receiving, processing and melting; continuous casting and hot rolling; annealing; cold rolling; coil coating; and tension leveling and slitting. Rounding out the facility are quality control, maintenance, metallurgical laboratory, shipping and offices.

When we toured the plant, most of the raw material in the storage bins was shredded UBC. But an addition was under construction, in which a big blade-type shredder will be housed. It will take densified (baled or briquetted) UBC, converting it to shreds about 2 in. in diameter and feeding them either to the storage bins or directly to the scrap processing, delacquering and melting system.

This system was designed and built by Automated Production Systems Corp. (APROS), Tustin, CA. Its main function is the prepare the scrap for melting by removing unwanted materials such as stray ferrous contaminants (this is removed magnetically) and organic coatings.

Removal of organics is especially important. Beverage cans are coated inside and out with a variety of lacquers and inks, and the ends have latex sealing compounds. All told, the UBC averages about 2% by weight organics. They could be removed by burning, but that is *not* what happens in the APROS system.

It uses a large rotary kiln fitted with air locks, rotary seals, a dust collector, a hot gas recirculation fan and a hot gas generator. In operation, shredded UBC is fed through a double-gate air lock into the rotary kiln, where a spiral pusher moves it forward rapidly. Hot flue gases are fed through the kiln in parallel with the scrap.

Bucket type lifters in the kiln lift and shower the scrap as it traverses the kiln, after which it is discharged through the other double-gate air lock onto a conveyor that feeds it directly into one of the melting furnaces.

As the shredded UBC is showered through the stream of hot flue gas, the organic material (coatings) is vaporized in a flameless mode. This, together with the feeding of hot scrap to the melting furnace, results in a low level of melt loss plus a substantial energy saving.

This is one of the key factors in the successful reclamation of metal from UBC. The extremely light gauge of the can wall—14 to 15 thousandths—plus the presence of organic coatings and inks could result in a low rate of metal recovery if an efficient delacquering process was not available.

At Golden Recycle, early experience indicates a melt loss in the 10% range. "We believe, however, that a 6% melt loss is a realistic goal," said Ivan M. Marsh, director of mill operations.

The process achieves two other goals: Air pollution is avoided because the vaporized organic materials are incinerated; and fuel consumption is reduced by salvaging of the energy content of the vaporized coatings.

Melt loss is also reduced by the removal of dust and aluminum fines by the sweeping action of the hot flue gases in the kiln. This, in turn, reduces the formation of dross in the melt furnace.

It's gotta melt fast

The preheated and delacquered UBC is not fed directly into the melt furnace, but through an impeller-driven vortex in a side chamber on the furnace. It passes through a salt flux which removes residual titanium oxide and other remaining contaminants. The scrap melts quickly and the molten metal passes into the main chamber of the furnace.

Here, alloying elements are added and the molten metal is degassed with argon (using Pechiney's Alpure process), then channeled to the holding furnace.

(Apros also supplied the two melters and the holding furnace. A third melting furnace was being installed when we visited the facility.)

Before it goes into the continuous casting machine, the molten metal gets a final "scrubbing" by passing through a Selee filter. Supplied by Consolidated Aluminum, this ceramic foam type medium provides some 10,000 sq. in. of filter surface area per cu. in. of volume. When it is spent, it is simply thrown away and replaced.

The alloyed, ultra-clean, temperature-adjusted molten aluminum then flows through a launder system into the continuous strip caster. Together with the delacquering/melting system, this is a key element of the plant. It provides a cost-cutting shortcut to reroll stock for the plant's rolling mills.

In conventional practice, molten aluminum is cast into large ingots which are machined smooth to remove surface oxides and reheated prior to breakdown by a massive reversing hot mill. Slab from this mill then proceeds to a multi-stand mill to be further reduced to about quarter-inch thick reroll stock, which is then coiled for subsequent cold rolling to final gauge and temper.

The Alusuisse Caster II bypasses capital intensive units, providing quality reroll for a fraction of the conventional mill investment and in a much more compact space.

Key element of Caster II is a pair of chilling blocks resembling caterpillar tractor treads. Rotated in opposing senses, they form a casting mold into which molten metal is introduced through a thermally insulated nozzle. Adjustable side dams determine the width of cast slab.

Upon contact with the mold surface, the metal is chilled and solidified, and the freshly cast slab travels along with the chilling blocks until it is cool enough for the blocks to lift off and start their return path. The blocks pass through a cooling zone where water sprays draw off the heat absorbed from the molten metal, then return to the casting phase.

The number of chilling blocks—which determines the length of the casting mold—can be varied to accommodate different casting rates and various alloys. When we toured the plant, the machine was employing 32 machined copper blocks per set, and was casting Coors' patented Uni-Alloy.

The Caster II at Fort Lupton produces 30-in. wide slab, nominally 3/4-in. thick. Ivan Marsh calls the machine his "100,000-lb Swiss watch," and reported that it is capable of casting 250,000 lbs of metal per day, "more than enough for our target capacity of 65 million pounds a year."

When a cast is started, a bridge-like carry-over table between the caster and the hot mill supports the slab until it is fully engaged by the hot mill. Then the carry-over table retracts into the pit below the caster and a slack loop is formed.

Competition for the rolling mill order was fierce, according to people in the equipment business. "Everybody was hungry at the time," commented one, "but I think the prestige of being associated with the Coors name was as big a factor, especially if this mill succeeds and other canmakers want to follow suit."

The job went to Davy McKee Equipment Corp., Pittsburgh, who came through with three mills—a 2-stand tandem hot mill, a 2-stand tandem cold mill, and a single-stand "roughing" mill, plus auxiliaries.

The hot mill is a brand new unit. The cold mill and the roughing mill came from an aluminum rolling complex in the U.K. They were built by Davy McKee several years ago, and became available on the market as used equipment at just the right time. They also were the right width.

One informant said that the roughing mill was not needed right away because the hot mill cranks out lighter gauges than expected. If and when the Fort Lupton plant is expanded to produce body stock, the so-called roughing mill stand may be retooled to serve as a finishing mill. Space has been set aside for it.

Golden Recycle officials will not

discuss details of the rolling schedule—it is probably being fine-tuned anyway—but did reveal that the freshly cast 3/4-in. thick slab from the continuous caster enters the hot mill at 15 fpm and emerges from the second stand at 100 fpm and at a nominal thickness of 1/8-in. Width is 30 in.

This reroll is immediately coiled and is ready for treatment in the Sunbeam controlled (nitrogen) atmosphere annealing furnace built by Seco/Warwick Corp., Meadville, PA. The annealing step conditions the metal for its passes through the cold rolling mill.

The housings and chocks for this 2-stand mill came from the U.K. mill and were refurbished in this country by Davy McKee. Basically, they received new drives, new terminal equipment and new rolls, plus some auxiliaries such as coil handling equipment. Several passes—Golden Recycle won't say how many or percent reduction—through this mill reduces sheet to final gauge for end stock.

All cold rolled material is then routed to the tension leveller built by Monarch/Stamco Division, New Bremen, OH. Tension levelling imparts the canstock "shape" that canmakers love. This equipment also removes any edge cracks when it edge trims the material. Trim scrap is routed to the remelt furnaces.

Reconditioned coil coating line

The next step is coil coating. This is accomplished on a reconditioned line which originally coil coated strip, mainly for building products, at an Alcan plant in Riverside, CA.

But it did need substantial rework for its new role as a canstock coater, and this job went to Hunter Engineering Co., Riverside, CA, although it was originally a Ross Waldron line.

It employs the ovens and pretreatment section of the original line except that some stainless steel tanks were added to the wet section. A Behlen splicer replaced the original stitcher, but all of the original Herr Voss terminal equipment was retained.

All of the drives were replaced with Reliance Electric units—which are used throughout the plant in the interests of in-plant standardization.

With the new drives, the speed was revved up to about 350 fpm. With additional time on the accumulator, it could probably run still faster, but the current capability seems to be adequate for Golden Recycle's needs.

There's nothing unusual about the coating operation, according to mill operations manager Ivan Marsh. A special epoxy coating by Celanese is applied to both sides—gold colored on one, untinted on the other. (Gold is for cans packed with Coors standard "Banquet" beer, and untinted is for Coors Light. Coating stock this way avoids the need to inventory two end materials.)

Ivan Marsh said the Celanese coating does not require a conversion coated substrate, so pretreatment consists of caustic etch and acid rinse.

The final product off the coil coating line is a gleaming coil of metal weighing 6500 lbs and containing 15,000 lineal ft of 30-in. wide can end stock, coated on both sides and ready to be slit in half on the Monarch/Stamco slitting line, packaged and shipped to the end lines at the can plant in Golden.

We visited the can plant for a talk with Art Larson, vice president of container manufacturing. Our obvious question to him was: "You've run this Uni-Alloy end stock through your end lines. Does it run as well as standard 5182 alloy?"

He replied that the brewery's end lines have been running the new material for some time and sending the cans out into the market just like any other.

"We are running it at the same speed as 5182, and we don't see any difference in reject rates. It is also the same gauge. There will be a slight modification or adjustment of the tooling for the end shells, but that is very minor. The scoring is as good or better in pull force."

Larson acknowledged that since Coors beer is not pasteurized, the can and end are not subjected to as severe stresses as other beer cans. But he thinks other cans could use Uni-Alloy rather than the expensive 5182 alloys used throughout the industry.

So does Bill Coors, who points out that there is nothing mysterious about Uni-Alloy. "It's what you get when you melt the can end and can body together," he pointed out. Other beer and soft drink cans could use it, especially for the bodies.

"The lids might be a different proposition, but they could build up to the desired strength and ductility metallurgically."

He believes the use of two different alloys could have been avoided long ago if the aluminum industry had faced up to the fact that cans would be recycled. Then they could use close to 100% UBC when they produced new canstock.

"As far as Uni-Alloy is concerned, we will eventually use nearly 100% UBC," he said. "We have refined the metallurgy to the point where we can make can bodies out of it, as well as lids and tabs."

The Fort Lupton plant is already using 90% UBC, according to Joe Lamb, who is both president of Golden Recycle and vice president of materials and commodities of Adolph Coors Co.

But will there be enough scrap?

Five or six years ago, when both Coors and Anheuser-Busch were laying plans for rolling mills fed by recycled cans, others in the canmaking and beverage industries scoffed, claiming there simply wouldn't be enough UBC to support those ventures.

That argument was based on the assumption that each brewer would go whole hog with a $200 million facility to produce all or most or their metal needs. Shrewdly, Coors elected to start on a more modest scale with a much smaller mill to produce end stock only, which represents only 25% of aluminum needed by the brewery. That will amount to something over 40 million lbs a year.

"More than 1.2 *billion* lbs of UBC are recycled per year," explained Joe Lamb. "So we can get whatever we need. It's available."

Clearly, a shortage of UBC for recycling is not an imminent hazard.

But even if a tight supply did develop, that would not put Golden Recycle out of business. "The ceiling is the availability of all forms of aluminum—scrap and prime metal," Joe Lamb pointed out.

"The way this plant is sized, I don't have to use one pound of UBC. I could run prime ingot. Or low-copper clips. I could exist off the plant scrap from the brewery. I just don't see a metal resource risk to us, even if Busch or somebody else did get into the picture."

Ample capacity for body stock

Will Coors stop at end stock? Or is it planning to broaden the mill's role to include body stock? The continuous caster is sized far in excess of the brewery's end stock needs.

"The caster will eat up about 25,000 lbs an hour," Bill Coors pointed out. "We could get it up to 30,000 lbs an hour if we really got mean about it."

The day before we visited Fort Lupton, the plant melted, cast and rolled 55 coils in two 8-hour shifts. That added up to over 375,000 lbs of sheet in one day—at a time when the crews were still learning.

If the caster were pushed to the 25,000 lbs/hour level mentioned by Bill Coors, and if it ran two shifts a day, five days a week, it would grind out 2 million lbs of continuous cast slab a week.

Obviously, the hot and cold mills could not handle that volume of metal. "We don't have the capacity in place to run body stock," explained Joe Lamb. "We did not design for that initially. Our target was end stock.

"But we think the mills could be upgraded fairly easily to provide the gauge control you need on body stock."

And, of course, that unused "roughing" mill is waiting in the wings. It's temporarily parked in the plant's front yard, but ample space for it exists in the plant today.

"And we don't have to confine all the cold rolling to the same location," Bill Coors reminded us. "We could put in another cold mill anywhere . . .

"But I'm convinced that the next major piece of equipment we should put in there would be a continuous annealing line," he added. "This would let us accomplish things we can't do with batch annealing. It would really enable us to optimize Uni-Alloy for body stock—but strictly for our own needs."

The ramifications of the Fort Lupton adventure will not be lost on the aluminum industry, the commercial can manufacturers or the other brewers and even soft drink bottlers.

When we asked Bill Coors how the company could justify a $40-45 million investment in the plant when can ends cost on average only $24 per thousand to make, he replied:

"Don't look at the cost of making ends. Look, instead, at the cost of UBC and the price of 5182 alloy end stock. With the UBC price currently at around 40¢ a pound (late August) and with end stock at $1.50, we have $1.10 to play with . . . "

Numbers like that have to grab the attention of anyone in the beverage can game, and the implications for the aluminum industry are nothing short of staggering.

Anheuser-Busch has its canstock scheme on hold, but has the financial clout to reactivate it. More disturbing to major canstock producers is the Continental Can/Alumax venture in Texas. With capacity of some 11 billion cans/year, Continental is the world's largest canstock user.

Suppose Anheuser-Busch alone opted to follow the Coors route and build a plant to serve all of its own end stock needs. A-B uses about 11 billion cans a year, of which one-third (3.66 billion cans) are made in its own plants. This puts A-B's needs at around 45.5 million lbs of end stock a year. Add this to Coors' 40 million lbs and you have nearly $130 million worth of product a year at the current list price for end stock.

Body stock is a whole different world. Its list price is about $1.05/lb, but it is destined to become another aluminum commodity. Virtually every mill will get into the body stock act, with marketing men targeting "X" percentage of the market for their own mills. With off-shore interests coming in (plenty of high quality Japanese stock has been floating around for years), the body stock market will become a jungle.

Comstock Engineering has conducted studies of the market and has come up with a proposal for continuous casting and rolling of canstock from UBC. It was based (a couple years ago) on an average canstock price of $1.01/lb, UBC at 41¢/lb, and primary aluminum at 65¢/lb.

A 27% return on investment

Comstock proposed a continuous casting/rolling/coating operation costing $89.4 million and groomed to produce 154 million lbs of canstock per year in continuous operation. (It would have a Hazelett continuous caster, not a Caster II, our informant said).

With these parameters, the facility would generate a return on investment of 27%. You can't get close to that in the best of the money markets.

This analysis may have its weak points, but there can be no doubt but what the aluminum canstock game will be a scene of turmoil for the next several years. It is not surprising that much of the "credit" for this impending upheaval goes to the man who probably did more than any other to make the aluminum can the premier container for beverages.

"Based on what we hear," Bill Coors told us, "there's been a lot of skepticism about this venture in Fort Lupton, and perhaps a lot of wishful hoping that we won't succeed. We have heard second-hand comments that it won't work.

"Well, I hate to disappoint them, but it *is* working." □

For additional comments, see over →

LOOKING AHEAD

Turmoil was brewing in aluminum's biggest market long before Coors started to produce some of its own canstock in the new plant depicted on this month's cover. Alcoa, Reynolds and Kaiser had a corner on the business for years, but other producers were already nibbling away when the fifth largest brewer was assembling the technology to ''close the loop'' and transform can scrap (UBC) into new canstock. And a few Japanese mills were getting into it with canstock that was equal in quality of any produced here. One of them—Sumitomo—has even shipped in some can sheet made entirely from UBC.

But Bill Coors is the great innovator who—alone—foresaw the recycling value of aluminum beer and pop cans. The big merchant canmakers at first resisted the aluminum invasion, so Coors built his own can plant. Its success lured every other major brewer into self-manufacture of cans which now account for 16% of total U.S. beverage can capacity. That's a painful reality to major can companies. Now that Coors has taken the next step and started producing canstock, how long will it take other brewers to follow? Anheuser-Busch has already invested over $6 million in an arrangement with Alusuisse for the continuous casting technology, and A-B certainly has the money to set up its own mill. If A-B makes the move, it will probably opt for a bigger operation because their end lines are designed to take wider stock. Capacity of the Coors caster is far in excess of its end stock needs, and same would be true of an Anheuser-Busch mill. So the next step would be to rationalize that big investment and put in more rolling mills to produce body stock. Coors says its Uni-Alloy (same metal for ends and bodies) would do the job.

Coors is using 90% UBC feedstock at the Golden Recycle mill. So low-cost UBC is the ideal feedstock for such mills. We estimate shipments of beverage cans in the U.S. will hit 75.6 billion by the end of the decade. Some say UBC recycling will reach the 75% rate by then. If true, that would add up to 56.7 billion cans (about one million tpy) or equivalent to nearly five world-class primary smelters. So ample material should be available for sizable self-manufacture ventures in canstock. And other types of scrap—even primary ingot—could be used. As we state in the report (page 12) the canstock business can become a jungle. And for a look at why Budweiser and Coca-Cola are sold in aluminum cans, see page 74.

Another player in the canstock derby is Montreal-based Alcan Aluminum, a more recent and minor supplier to canmakers. With its huge, low-cost primary ingot capacity in Canada, Alcan made a strong bid for Arco Metals' new $450 million mill in Kentucky, and just got a piece of it. Some view it as the ''jewel in the crown'' for rolling canstock. When this 250,000-tpy mill gets in gear, it will automatically add considerable over-capacity to the canstock market. And since the stakes are so high, severe price competition will develop. Canmakers will be the beneficiaries, which could entice other big can users to install their own canmaking facilities. Thus, the advent of the giant Arco Metals rolling mill and the Coors entry into rolling canstock are doubtless the biggest events in the very competitive and low-profit primary aluminum business in a decade. And they converged at a time when the price of primary aluminum is the lowest in the same time frame.

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