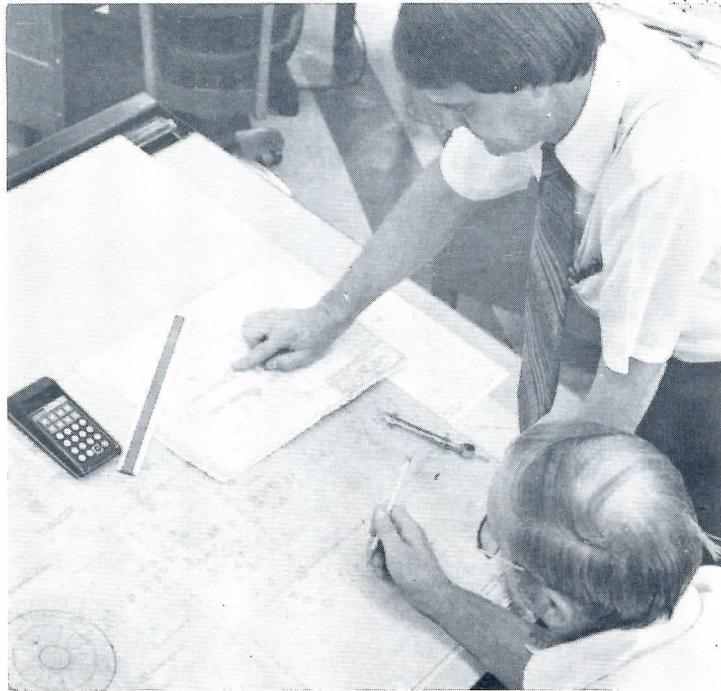


Mueller Service Lines

NOVEMBER 1978

NEWS ABOUT MUELLER MARKETS, PLANTS, PRODUCTS, PERFORMANCE, AND PEOPLE

From idea to product — the first step is engineering



Joe Daghe, Manager of Engineering Projects, and a Mueller draftsman review a proposed modification to a fire hydrant operating nut before having the design duplicated in the model shop.

(Editor's note — This is the first in a series of articles that will examine the various departments of Mueller Co. and how they fit into the overall scheme of how our company works.

Through these articles we will see how each department is, in its own way, directly involved with the quality of the end product. And by meeting these responsibilities, each department maintains the Mueller Margin.)

How does an idea become a product? Who translates that idea into design drawings, then into models for production—and sale?

Once an idea has been defined, the first step in the process to make it a product starts with the engineers. And for Mueller Co. products, that means our engineering department at the home office in Decatur, Illinois. Mueller designs originate there

and are used by all our manufacturing facilities. (Some modifications can be made at the plants—with approval from Decatur).

We visited the engineering department to see how ideas get transformed and talked to Joe Daghe, Manager of Engineering Projects. We asked Joe where ideas come from.

Where do ideas come from?

"They come from several sources. Many originate right here in engineering," Joe explained. "Many come from the sales department or other in-company sources. Some ideas are generated externally by customers, inventors and even competitors."

"Often the 'new product' is not really very new or exotic. We may see a need to design a product to fill a gap in an exist-

ing product line; ways to improve an older product.

"But what's important here is that a new or improved product is almost always designed to fill a need for the customer. The customer wants to do something, or do it faster, easier, safer, more economically. We have always tried to anticipate what our customers need and then fill that need with the product that would do the job best.

"We consider more than just the customers needs. We also look at such things as how long the product should last to give the best return on the original cost of the product. And at how to make the product easier and less costly to maintain. Really,

it all adds up to giving our customers what they need, at a reasonable price, while providing a product that's easy to use and maintain.

"Mueller has always tried to make the best products available in our industry. And that, in turn, is why our products often become the basis for industry standards. We give our customers the best value possible. When we quit doing that, we'll lose customers."

After the idea?

Once an idea is refined, the rough sketches begin. The idea has to be translated by design engineers into "picture" form

Continued on page 2



Coming next issue . . .

Meet Edward D. Powers, our new Company President. We will have an in-depth interview with him in the next issue of Service Lines where you can read about his business philosophy, find out about his background and learn a little about his personal life, too. □

on paper. It has to be understandable to everyone involved with the project.

The next step is to turn the rough sketches over to the drafting department. Here the specifications as to dimensions and material are established and the drawings are made exact.

Rough costs for production are usually developed at this stage to measure economic feasibility of the new product. Sometimes market surveys are required to determine potential demand for the product.

Specifications and drawings go to the model shop where skilled machinists make prototype models of the product. Then the prototypes are subjected to a series of tests in the testing lab. "Here is where we discover how usable the design really is," Joe emphasizes.

All during these steps, the engineers are on hand to watch the tests they previously specified, and interpret results.

Once a prototype has been proven to do what it was designed for, it goes to manufacturing.

Here, a production cost estimate is made. Questions have to be answered — "What would it take to manufacture this product?"

"Do we already have the nec-

essary equipment?" "Can we make the product at a reasonable cost?"

Meetings are held. If the engineers, sales department and management agree on the feasibility of the product, the product gets the OK and becomes a reality.

Manufacturing may have to make special tools, dies, fixtures, and equipment to manufacture the product before production begins. But when manufacturing does begin, engineering doesn't lose interest.

Once a sufficient number of the new product has been made, engineering performs an evaluation. Tests are performed to see if the product that comes from manufacturing matches the prototype.

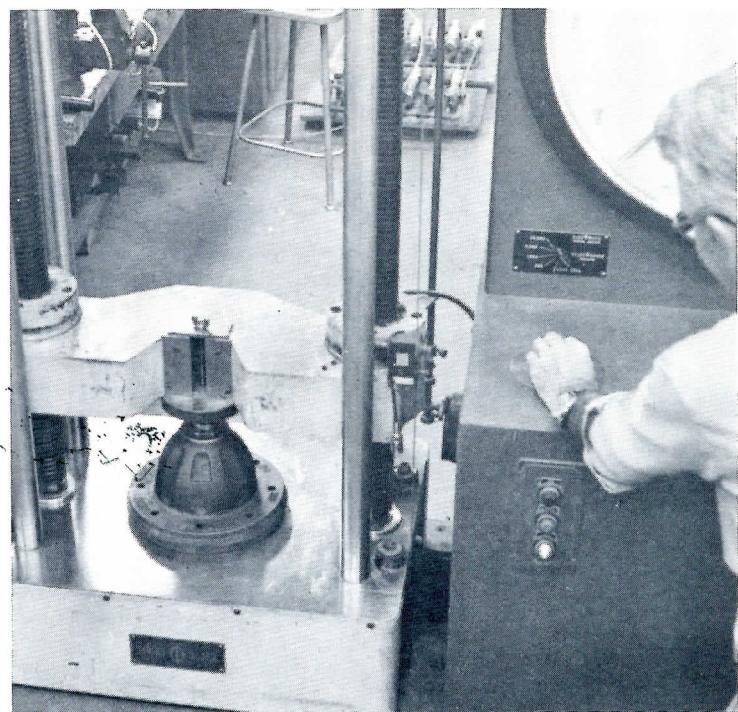
Joe tells us, "Here is where we learn: 'Yes, the product works.' Or 'Yes, but it needs modification.'"

Quality is the key

We asked Joe what the key is to a successful new product design once all of these steps are completed. He summed it up for us in one word.

"Quality. We must give the marketplace the best that may be obtained."

"Our products have long lives



Part of the process of evaluating the modification to the operating nut is a compression load test on a Tinius Olson Tensil Machine.

and most are buried underground. The customers shouldn't have to continually maintain or upgrade the products.

"Our responsibility in engineering doesn't stop once the product is designed. The engineers are fully responsible for that product. We have to answer all questions about use and performance and occasional complaints about the products."

"Engineers are also responsible for obtaining patents for their designs. In fact, for Mueller Co.'s size, we have a patent-per-engineer ratio higher than the national average."

And after a product has been on the market for a year, an audit is made. Engineering periodically takes several pieces off the assembly line and tests them. Again, to see if the design still meets original specifications. Sometimes products that were installed in the field are obtained to check performance under actual conditions.

What are some of the drawbacks?

We asked Joe what factors could hinder the progress of an idea to a product.

"There are many variables that may affect the outcome of the

product's future," he replied. "People, machine and plant capabilities all have to be carefully considered. Materials and tolerances have to be evaluated."

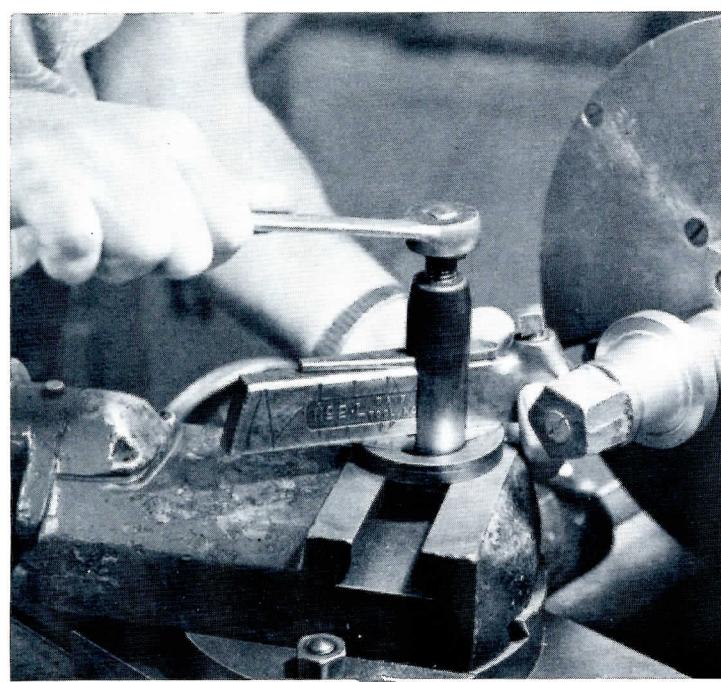
"Sometimes the costs to make a product at acceptable quality standards can be prohibitive. Then it means more development is needed to find materials and/or designs that provide acceptable costs while still meeting quality and performance requirements."

"The industry can also enter into the picture and influence the progress of a product. An example is the introduction of plastics on the market. A new material to work with can send us back to the beginning, to a new design. So could new size requirements."

"The demand for a product or the competitive market could change dramatically during the development period and change our goals. It could even 'kill' the new product," he added.

"That's another example of the quality that goes into everything that Mueller does—from the very first idea through every step to the finished product."

"And that's part of the Mueller Margin." □



In the model shop, a machinist alters a fire hydrant operating nut to match the engineering drawings.

Strictly Personal Decatur

Don Bathe

NEWS ABOUT MUELLER CO. EMPLOYEES AND THEIR FAMILIES

WARREN SEXSON RETIRES



NO PHONE NO MONEY
WILL ASSUME NO RESPONSIBILITIES

**WARREN SEXSON
RETIRED**

Route 2 - Box 33
Blue Mound, Illinois 62513

NO OFFICE NO BUSINESS
NO WORRIES NO PROSPECTS

Warren Sexson receives a \$1000 check from former president, Harlan White for 45 years

A PARTY FOR MR. WHITE

The ladies in the main office brought in the food and a table was set up for a party honoring Harlan White. The ladies, left to right are Vivian Doolen, Evelyn Cox and Shirley Catron.

They are joined by Harlan for samples of the fine food prepared by the ladies.

As the day winds down, Mr. White is still at his desk going over last minute business.



I am fully aware that my youth has been spent
That my "get up and go" has "got up and went"
But I really don't mind when I think with a grin
Of all the grand places my "get up" has been.

of service. Warren then presented Mr. White with his card.



A BIT OF REMINISCENCE

Frank Mueller had a pleasant surprise as Walter Bowen, left, retired and Professor Harold Walker, Professor Emeritus and Head of Department of Mining and Metallurgical Engineer, University of Illinois dropped in for a visit and began reminiscing over old times.

During World War II Professor Walker was called in to as-

DONALD M. LINDSTROM APPOINTED

Donald M. Lindstrom has been appointed to the position of Industrial Engineer. Don, formerly from Lombard, Illinois, graduated from Millikin University with a B.S.I.E. degree.

DAVID STEWART PROMOTED

David Stewart, formerly programmer trainee, has been promoted to the position of programmer.

sist in making the 57 MM projectile (displayed on table before them).

In May, 1943, the Army-Navy "E" production award was presented to the Decatur Plant. May 5, 1945, the Decatur Plant was awarded the first star to "E" flag.

SERVICE AWARDS

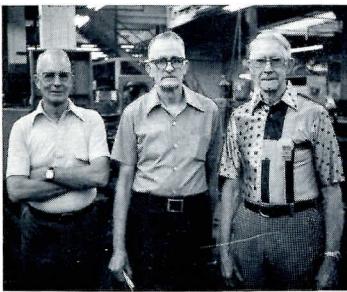
Decatur

- | | |
|-----------|---|
| 10 years: | Gerald A. Stanley
Tommie A. Bridges
Byron J. Beavers
Edwin J. Hemrich
Wayne L. Dorch
James Nicholson
William A. Niebuhr
Larry C. Bruns
Everette J. Bailey
Thomas M. Reid
Melvin D. Trimmer
David L. Jones
Kathryn McQueen |
| 20 years: | Arnold Jones
William L. Hauffe
Lavern S. Ramsey
Shirley D. Catron
Dale Capshaw
William Lawyer
Thomas E. Little
David Younger
Gary L. Six
Thomas W. Durbin
Fred A. Pierce
Martin L. Trolia
Lloyd Moeller
Floyd E. Isome
Robert McQuality
George Grandon |
| 30 years: | |

RETIREES HAVE HAPPY MOMENTS



Robert Armstrong, right, shows Terry McCoy his gift from the Department 70 employees.



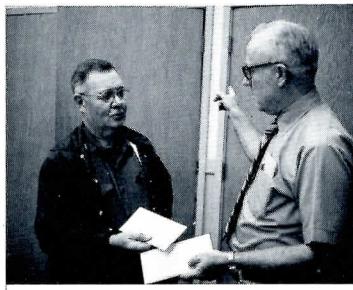
To make the day one to remember, Robert was joined by his brothers Kenneth, left, and Russell, right, both being former employees retired from Mueller Co.



Lloyd Smith, left, was presented a fishing pole by Derle Smith on behalf of his fellow workers.



Frank Grider has his bag of money and ready to go as the fellows from the Iron Foundry join in for his farewell.



Alvin Ely displays a big smile and then meets C. H. Ashmore with a gift and who seems to be giving some final instructions.



Leo Kramer stopped by personnel to pick up his retirement papers and bid a farewell.

CAPS AND JACKETS



Carolyn Carnahan and Walter Morganthaler model samples of new jackets and caps.

A great many people have suggested that Mueller Co. have a jacket and cap program similar to that offered by other companies.

We now have this program ready to go. The jackets are bright red nylon with white flannel lining. They have snap closings and elastic wrists as well as a bottom drawstring. The caps are available in two styles, one has all red polyester panels and the other has two back panels of white nylon mesh. Jackets are available in adult sizes, S, M, L, XL and XXL and youth sizes S, M, L and XL. The caps are adjustable and one size fits all.

50TH ANNIVERSARY

Ken Tohill, outside sales, and his wife celebrated their 50th wedding anniversary on October 15, 1978. Hosted by their children at the Legion Hall in Valley, Nebraska, the gala affair was topped off, beginning at 3:00 P.M., with refreshments, band and dancing until midnight.

Both jackets and caps will have the Mueller emblem embroidered in gold, red and black on a white panel. This panel will be sewn on the front of both jackets and caps.

Prices are as follows:
Cap with emblem* \$ 2.76 each
Jacket with emblem*
adult size 11.27 each
Jacket with emblem*
youth size 10.22 each
(Includes Tax)

Jackets and caps will be paid for by the payroll deduction method only.

See Herb Ashmore in the Personnel Department to order your jackets and caps. Mr. Ashmore has jackets available to try on to determine the proper size to order.

*Caps and jackets are not available without the emblem.

RETIREES Decatur

Lloyd Leon Smith, checker, 31 years, 10 months and 15 days, July 24, 1978 (Rule of 80).

Frank R. Grider, ladleman, 37 years, 11 months and 9 days, July 28, 1978.

Warren Sexson, stop grinder set-up man, 45 years, August 3, 1978 (Rule of 80).

Robert F. Armstrong, brazier and grinder, 40 years, 4 months and 9 days, October 12, 1978.

Alvin A. Ely, janitor, 17 years, 7 months and 11 days, October 15, 1978.

Leo M. Kramer, #5 turret lathe operator, 30 years and 27 days, October 29, 1978.

Sarnia

George Shaw, shell core machine operator, 15 years, 11 months, June 14, 1978.

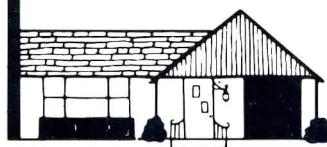
40 years: **Carl W. Schuman**
Sarnia

10 years: **Jim Smith**
30 years: **Maurice Simard**
Alex Bogaart

Dick James, tool and plant engineer, 32 years, 6 month July 1, 1978.

Roy Blacklock, regulator tester, 35 years, 4 months, September 7, 1978

The Housing Scene



Expense of Buying a Home



(Costs . . . up, up and away!)

Housing prices, mortgage-interest rates, the costs of utilities and home repairs have skyrocketed in the past five years. The result is that the costs of buying and running a home has grown at a much faster rate than have family incomes, according to *U.S. News & World Report*.

In fact, as the accompanying chart indicates, the average price of a new house increased 75 percent from \$35,100 to \$61,500 during the past five years. (Part of this increase is for larger homes with fireplaces, more bathrooms, air conditioning and other "extras" that have also increased in cost.) Whereas, the average family income has increased only 41 percent during that time, from \$12,151 to \$17,000.

House prices aren't the only increase homeowners have had to face. During the past five years, fuel oil costs for the average home have risen 131 percent. Natural gas is up 104 percent and electricity rates have increased 59 percent. Telephone rates have increased 15 percent and water rates are up 54 per-

cent. Home repair bills have increased at least 50 percent. And furnishings are up, too. (See chart).

What can be done about these rising costs? Earlier this summer, the U.S. Department of Housing and Urban Development came up with more than 150 recommendations to curb the spiraling home costs. They were aimed at reduction of government regulations on financing, land development and construction that boost home prices.

Buying goes on

Still these escalating costs have not scared away buyers. Sales of both new and existing homes continue to be strong, according to *U.S. News*. The magazine cites the reason as — "Families decide to shell out a bigger slice of their income for shelter before prices jump even higher."

Rising costs have led to a renewed interest in condominium construction. Estimates show that condominium starts this year could break 1973's record of 350,000 units.

Expense of Running a Home — Price Changes in Five Years

Finances

Mortgage-interest rate **UP 21%**
Property taxes **UP 26%**
Property insurance **UP 28%**

Utilities

Electricity **UP 59%**
Gas **UP 104%**
Fuel oil **UP 131%**
Telephone **UP 15%**
Water, sewer **UP 54%**

Services

Household worker's pay **UP 68%**
Washing-machine repair **UP 47%**
Furnace repair **UP 48%**
Repainting a room **UP 52%**
Replacing a sink **UP 53%**
Reshingling roof **UP 67%**
Re-siding a house **UP 69%**

Furnishings

Vacuum cleaner **UP 21%**
Sofa bed **UP 22%**
Broadloom carpeting **UP 29%**
Portable air conditioner **UP 30%**
Sheets **UP 31%**
Refrigerator **UP 33%**
Bedroom furniture **UP 35%**
Curtains **UP 36%**
Electric clothes dryer **UP 39%**
Power lawn mower **UP 45%**

SOURCE: U.S. DEPTS. OF LABOR, COMMERCE

How does the 'Housing Scene' affect us?

Even though housing costs are up, it looks like starts for single and multiple family housing will remain at near 1978 levels next year. That's good news for us, because demand for our products should remain at near present levels, too.

There's another way these costs affect our business. We're all aware of the costs of buying a home, furnishing it, protecting it and maintaining it. And we're aware of the steps we've taken to keep these costs

in check. Well, it's similar at work.

Here we are maintaining a "home", too. In fact several of them, only we call them factories. We have to "furnish" them with equipment. We have to protect them with insurance, and we have to maintain them. The same kinds of costs are involved, only on a larger scale.

Just like at home, we must do all we can to keep costs in check by preventing waste and improving efficiency. □

Brrrrrrrrrrrr!

How about some hot tips on how to save some cold cash on energy bills this winter?

By completely weatherproofing the average home, you could save up to \$500 a year in energy bills, according to Division of Energy, U.S. Department of Housing and Urban Development calculations. This savings could be as much as 30 percent of your annual energy bill.

But complete weatherproofing could cost a lot. According to the Johns-Manville Insulation Center in Denver, Colorado, it could easily add up to \$2,000. Of course, this figure depends on the type of home and the climate.

Say that you did weatherproof your home for \$1,500. By figuring 30 percent of your yearly energy costs, you will come up with a figure of \$500. So it would take your weatherproofing investment only three years to pay for itself. After that, the profit is yours.

Here are some tips on how to weatherproof your home. (Since insulation materials, costs and requirements vary for different regions of the country, insulation will not be discussed.)

Caulking

Caulking can save a homeowner up to \$50 a year, estimates United Gilsonite Laboratories, Scranton, Pennsylvania. Sealing off air leaks with caulk is a relatively inexpensive job that can be done in a short time with a minimum of effort.

When should you caulk? Now, during the early fall before the temperatures drop below the 40°F mark. Caulk does not cure properly in colder weather because condensation of moisture can prevent a solid bond.

Where should you begin? Look anywhere that air may be leaking into your home: between masonry and wood or metal door and window frames, between walls and woodwork or baseboards and around pipes. Feel your electrical outlets. If they are cold or drafty, caulk around them.

Make sure the surfaces you caulk are properly prepared. Use a brush to clean away any loose material from the area.

Mineral spirit can remove any oil or grease. Unpainted metal surfaces should be primed to prevent rust.

If a crack is more than $\frac{1}{4}$ " wide or $\frac{1}{4}$ " deep, pack the crevice with oakum before caulking.

Replacing windows and doors

A properly installed storm window which gives you two layers of glass with a dead air space between them has 51.9 percent less heat loss than a single glazing, according to the *Handyman* magazine.

Triple glazing saves 68.4 percent of heat loss through windows. Triple glazing may be achieved by installing plastic storm windows inside, in addition to the outer storm windows. Even a window shade can reduce outward heat flow about 25 percent.

Depending upon the condition of your home and windows, total fuel savings could run between 5° to \$1 daily. That could add up to as much as \$350 a year.

Weatherstripping and other helpful hints

If you find moisture or ice on the inner surfaces of your storm windows in cold weather, the windows are loose and are permitting warm air to pass out and condense on the cold window surface. It also means that cold air is sneaking in. You need to weatherstrip.

Weatherstripping is also effective in preventing heat loss around doors.

Something else to keep in mind this winter and save yourself energy cost is to keep the fireplace damper closed when the fireplace is not in use.

But your fireplace can work for you, too. It can be made more efficient in distributing heated air into the room by installing a circulating device.

Another energy saver that is sometimes overlooked is carpeting. Carpeting and pads provide insulation and prevent drafts, reducing heat loss 54 percent over bare floors. □

How does your home score?

Answer these questions and see where your home stands as far as being weatherproofed. Give your home one point for each yes answer, zero points for each no.

1) Does your home have proper attic insulation for your region of the country? (Check with your local home improvement center to see how much insulation you need for your area.) _____

2) Does your home have storm windows and doors? _____

3) Is there caulking and weatherstripping around windows and doors? _____

4) Does your home have proper insulation in sidewalls for your region? _____

5) Are your home's basement walls insulated? _____

6) Does your attic have adequate ventilation? _____

7) Does your home have a light colored roof (for warm climates?) _____

8) Is your home on a shaded lot? _____

9) Do you have insulation in floors over unheated crawlspaces? _____

10) Is your home's heating and cooling equipment properly adjusted and maintained? _____

Total _____

If your home scores 10 points, your fuel bills are well under control. A score of 5 - 9 points means your home may benefit from further weatherproofing measures. Scores below 5 points mean heating and cooling dollars are being wasted.

**Competitive products
meet many of the same
industry standards
as ours...**

**But WE have the
Mueller Margin.**

**Our customers buy IT...
You make IT.**

In an industry like ours, the products are all basically alike. We all try to meet the same standards. So Mueller Co. needs something that makes our products a little better than everyone else's. And we have it—the Mueller Margin. Our customers buy it because it makes our products better than our competitors. And the reason we have it is because you make it. You are the Mueller Margin. □

MUELLER CO.

DECATUR, ILL. 62525

Factories at Decatur, Ill., Chattanooga, Tenn., Albertville, Ala.
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serving the water and gas industries since 1857