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The LUFKIN Line

SUMMER • 1975



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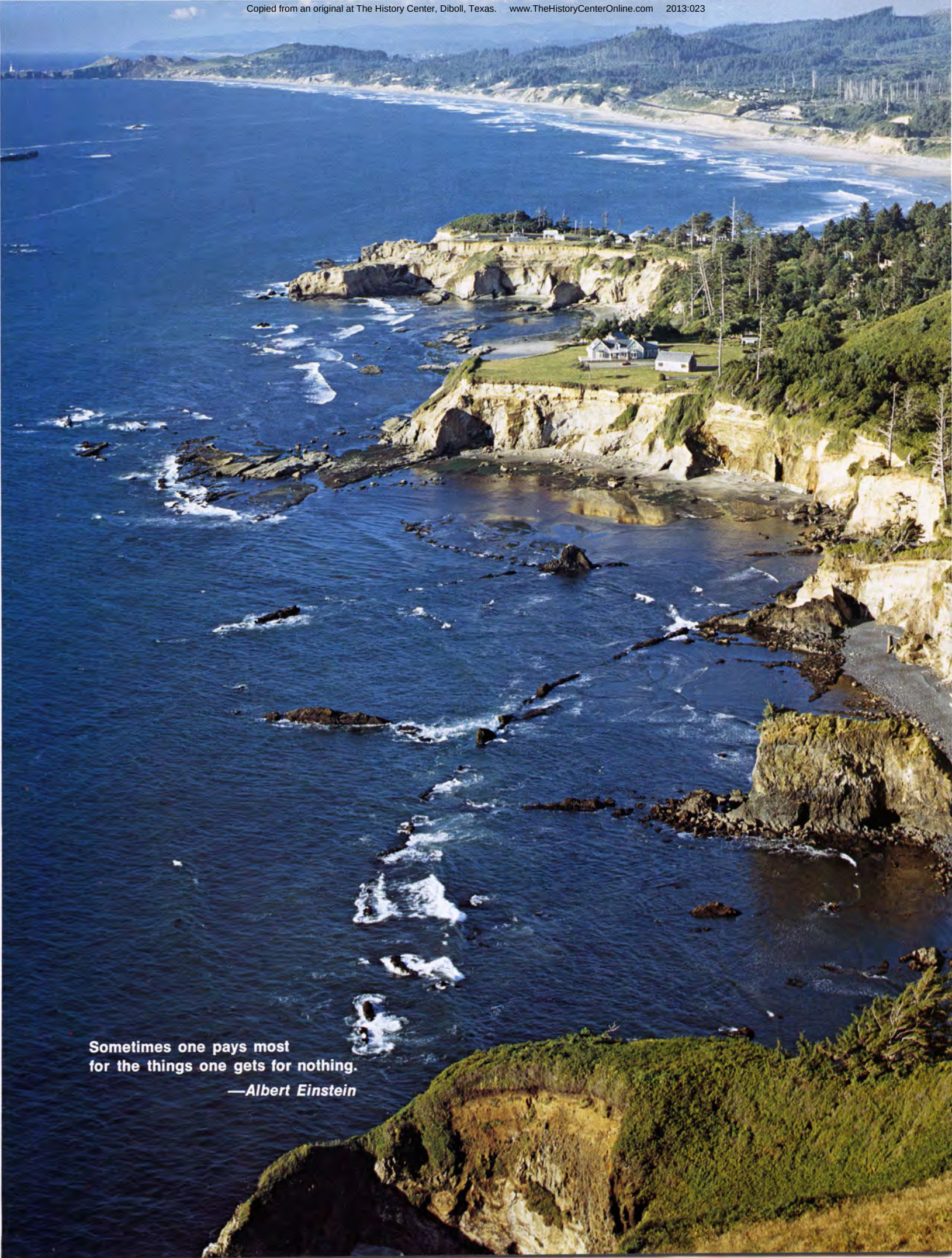

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Phone: 201-549-1023

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Phone: 915-563-0363

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P. O. Box 95205
Phone: 405-677-0567

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201 Penn Center Blvd.
Phone: 412-241-5131

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Phone: 415-793-3911

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10703 Durland Ave., N.E.
Phone: 206-362-7373

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3025 E. Skelly Drive
Suite 446
Phone: 918-749-6846

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P. O. Box 849
Phone: 713-634-2211

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and Sales Manager

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403-435-8572

CALGARY, ALBERTA, CANADA
5112 Varsclife Road N.W.
Phone: 403-288-3073

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Phone: 713-781-0600
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The LUFKIN Line

SUMMER, 1975 • Volume 51 • Number 2

Editor
Virginia R. Allen
Staff Writers
Barbara C. White
Liz Norman



AIR BALANCED

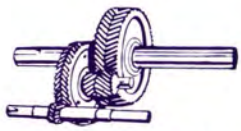


CONVENTIONAL

OIL FIELD PUMPING UNITS



MARK II



GEARS FOR INDUSTRY
AND SHIP PROPULSION

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COVER: Transparency by Rick Quedens
Harbor City, California

OPPOSITE PAGE: Oregon Coast near Newport
Transparency by Gene Ahrens
New Milford, New Jersey

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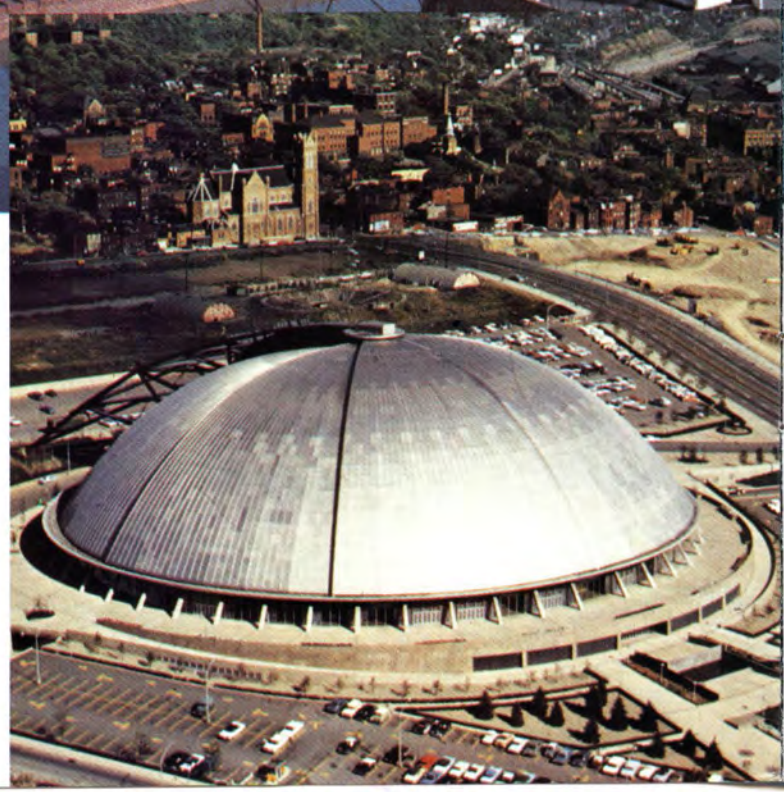
The city of Pittsburgh is the backdrop as Ohio Barge Lines' M/V Steel Express comes out of the Monongahela into the Ohio River. The vessel is powered through two LUFKIN Gear Reducers





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Pittsburgh

Ugly Duckling Emerges A Swan

by BARBARA WHITE

A shabby little fort at the mouth of the Ohio River in 1758 was the embryo that grew to be a responsible adult—a complex metropolis, an industrial giant and eventually the steel capital of the world.

However, adolescent growing pains marked Pittsburgh's years of growth from a fort settlement to a manufacturing center. First, General John Forbes captured the French-controlled Fort Duquesne and changed the name to Fort Pitt. Located at the union of the Monongahela, Allegheny and Ohio rivers, this fort gave English settlers an entrance to the interior of the continent.

As a gateway to the rich lands of the west, Pittsburgh reached for maturity. As the years passed, her goods were transported eastward over the mountains, her resources were necessary to the American Revolution, and later her supplies outfitted westward travelers.

In 1791, Pittsburgh was designated the county seat as a major manufacturing center and was well on her way to becoming the steel capital of the world.

The Civil War gave the city an early ascendency in the iron and steel industry. Her local deposits of coal and iron ore supplied the material for steel armaments during the Civil War and again in later years during the two world wars. Due to her war efforts, Pittsburgh retained her position during the late nineteenth and early twentieth century industrial revolution.

These efforts, however, left the industrial giant an exhausted, dirty, post-war casualty. The glamorous city became a crippled, deformed invalid. Although in a weakened condition, she mustered the strength to fight back. After a long, difficult struggle, the ugly duckling emerged a beautiful, full-grown swan.

She continued spreading her wings with extensive renovative efforts. Pittsburgh, in her renaissance spirit, became a free soul. Through a bold alliance between city government and industry, she launched the nation's first comprehensive urban redevelopment program.

The results? Pittsburgh became the first city in the country to clear her skies. A series of 10 dams in the headwaters flood-proofed her rivers. The first comprehensive stream purification law in the nation protected her waters. Pittsburgh also improved the eyesores of the town, transforming them into tourist attractions.

In short, the city became a model to other cities across the nation with her beautiful parks, clean waterways, dramatic skylines, cliffside panoramas and some of the nation's largest heavy industry facilities.

Since the early days of the Pittsburgh Renaissance, the great renovative efforts have leveled off, but there

Far left, Fort Pitt Blockhouse

Center, Civic Arena

At left, United States Steel building

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Pittsburgh...

is a constant vigil to maintain the city that required such monumental effort to build.

At present, the Renaissance City of America is important for its concentration of corporation headquarters offices. Most of the mills that made Pittsburgh an industrial giant have gone elsewhere. But the power that runs them still exists. There are coal miners, steel workers, truckers, and many blue collars in Pittsburgh. There is also one of the largest concentrations of engineers and scientists in the world operating out of a growing complex of more than 170 laboratories. Pittsburgh's fame now rests on technology and knowledge.

The rich metropolitan Pittsburgh industrial and consumer market has some 2,300 manufacturing plants. Her strategic accessibility of eastern and midwestern markets is the reason many companies have located or opened branch offices in the Pittsburgh region.

Today, diversification is the theme for Pittsburgh. Her valuable location at the point where the Ohio river is formed provides an excellent water transportation system. More river tonnage is moved in the Pittsburgh area than in any other inland river area in the nation.

New bridges are being thrown across the rivers, new interstate links are being completed. Hotels, motels, shopping centers and schools are mushrooming in the suburbs. The airport has gone international and is in a semi-constant state of expansion. Also, plans for a new convention center have been finalized and construction will begin soon.

A new bridge and tunnel system has made the Golden Triangle more inviting. The "Bridge to Nowhere," which previously stopped abruptly some 80 feet in the air, now will take you somewhere—to the Three Rivers Stadium, home of the Pittsburgh Steelers and Pittsburgh Pirates. The riverbank beside the stadium has been turned into an attractive park named for the Pirates' immortal right fielder, Roberto Clemente.

The city also boasts about the retractable steel dome-sheltered civic arena, home of the Pittsburgh Penquins hockey and Pittsburgh Condors professional basketball teams. It is the world's first public auditorium of its type.

Pittsburgh is the home of the world's first full-scale nuclear power plant enabling her to be the first city lighted by atomic power.

In the metropolitan Pittsburgh consumer market, there are 10,258 retail establishments. The main shopping district is the downtown Pittsburgh area known as the Golden Triangle, where the major office buildings, banks, large department stores and specialty shops are located.

Since 1950, more than 70 new suburban shopping centers have sprung up within a 25-mile radius of Pittsburgh and serve the metropolitan area.

A ride up the Duquesne Incline affords a view of Point State Park and its charming fountain, as well as Gateway Center complex—an office building spectacular, gracious apartments, and pleasant garden plazas.

Mellon Square is an appealing park in downtown Pittsburgh. This haven in the heart of the city is surrounded by the Alcoa office building, the United States Steel building and the William Penn Hotel.

Pittsburgh accomplished at least three important firsts in the entertainment-communications field. In 1905, the "Nickelodeon," the world's first all-motion-picture house was opened and in 1920, the first licensed radio broadcasting station began its programming with the Harding-Cox election returns. The first community-sponsored public television station was established in Pittsburgh.

There are nine four-year colleges and universities and several community colleges. The University of Pittsburgh is the largest university in Western Pennsylvania, among the three largest in the state, and in the top thirty in the nation.

Cultural attractions include the Buhl Planetarium, the Aviary, Phipps Conservatory, Arts and Crafts center, Carnegie Museum and galleries. Downtown, Heinz Hall is a perfect jewel box of gold leaf, velvet drapes, rich carpets and crystal chandeliers. It is designed ideally for performances of the Pittsburgh Symphony, the ballet, opera and the Civic Light Opera Company. The populace of Pittsburgh take pride in their city's past, are confident in its present and work with vision toward its future.

—Photos by the Greater Pittsburgh Chamber of Commerce



Mellon Square Park

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University of Pittsburgh

Three Rivers Arts Festival





Three Rivers Stadium, Point State Park, foreground

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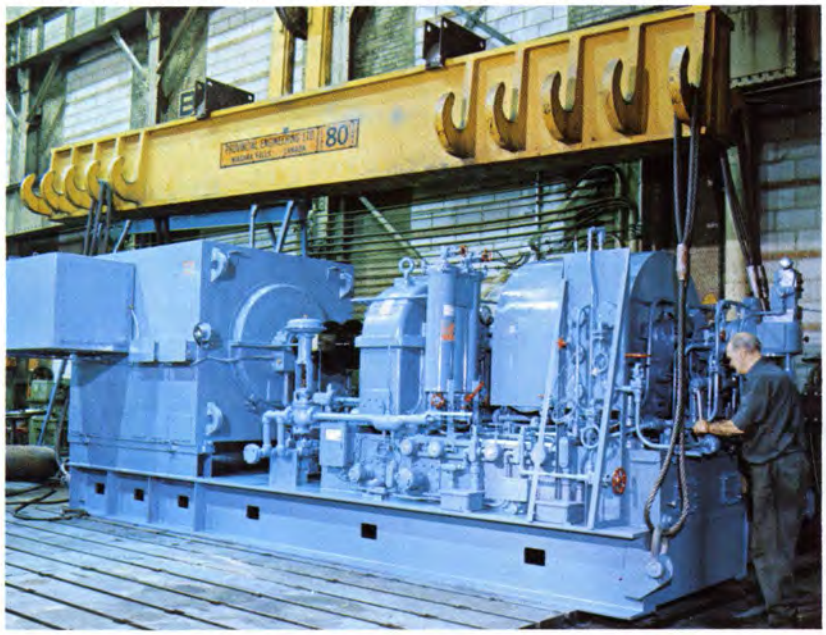
Lufkin Installations

LUFKIN N1805C Gear Reducer, below, with combined lube system for turbine and gear. Driven by a Westinghouse Canada, Ltd. steam turbine, at 6907 RPM, this gear drives a 4000 KW generator at 1800 RPM. The ultimate user is Shell Canada, Ltd., Waterton, Alberta, Canada

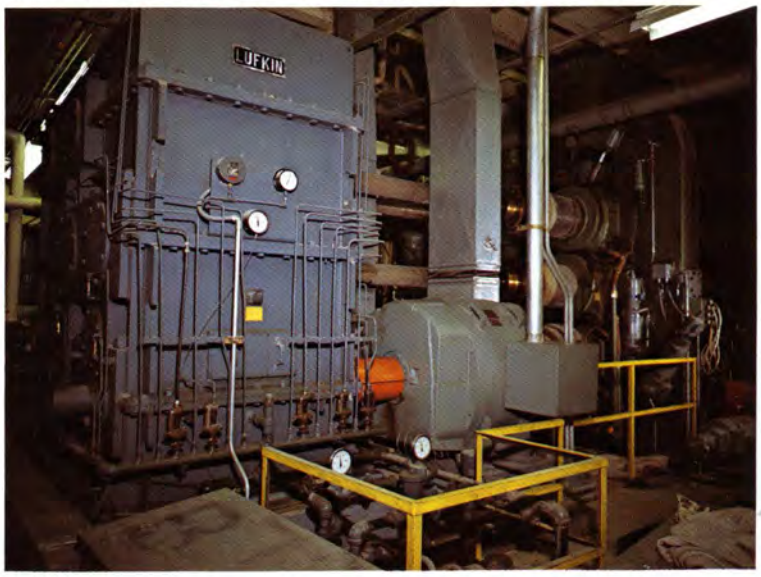


LUFKIN TM35 change Gear Reducer driving a 3.5-inch Extruder, HPM-Koehring Company, Mount Gilead, Ohio





LUFKIN N2100C Gear Reducer, above, driven by Orenda (Division of Hawker Siddeley Canada, Ltd.) OT-370 gas turbine rated at 7600 HP at 7500 RPM input speed with a gear reduction ratio of 1.977:1. The ultimate user is Creole Petroleum, Venezuela, South America



LUFKIN TF500-4L Gear Reducer, right, for four-roll inverted L calender for Wean United. This unit has four output shafts and two input shafts, driven by two electric motors—500 HP and 150 HP—at 1200 RPM input speed. The ultimate user is General Tire & Rubber Co., Jeannette, Pennsylvania

LUFKIN D390C Gear Reducer, below, for Heyl & Patterson Bucket Drive used on a coal barge unloader with capacity of 5000 tons per hour. The coal barge is owned by Pennsylvania Power Co., Shippingsport, Pennsylvania



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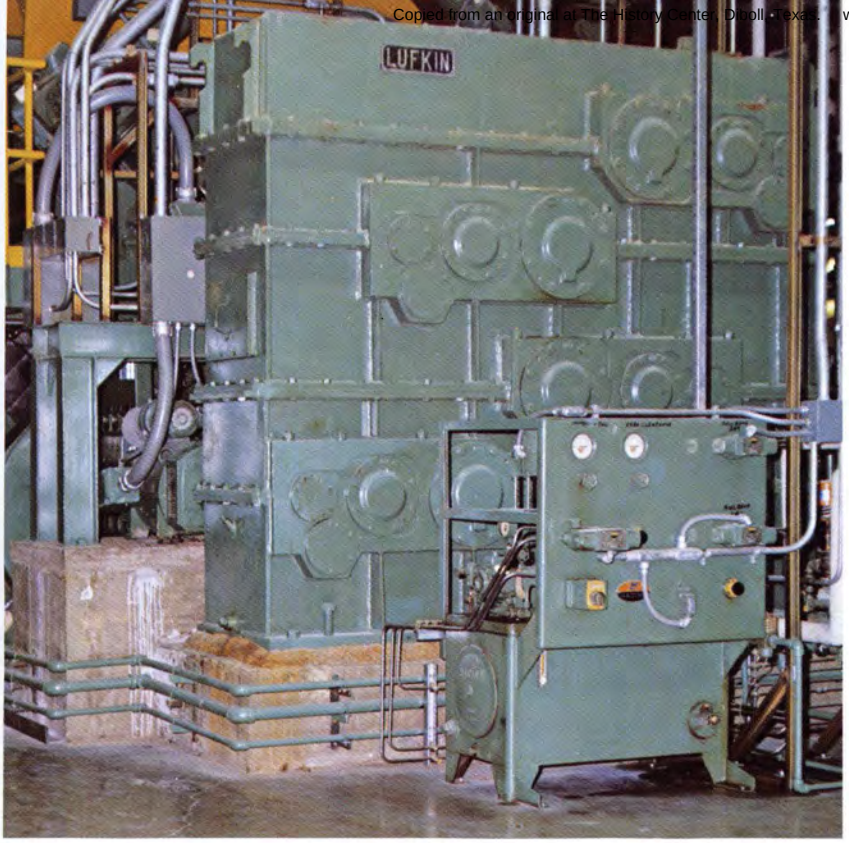
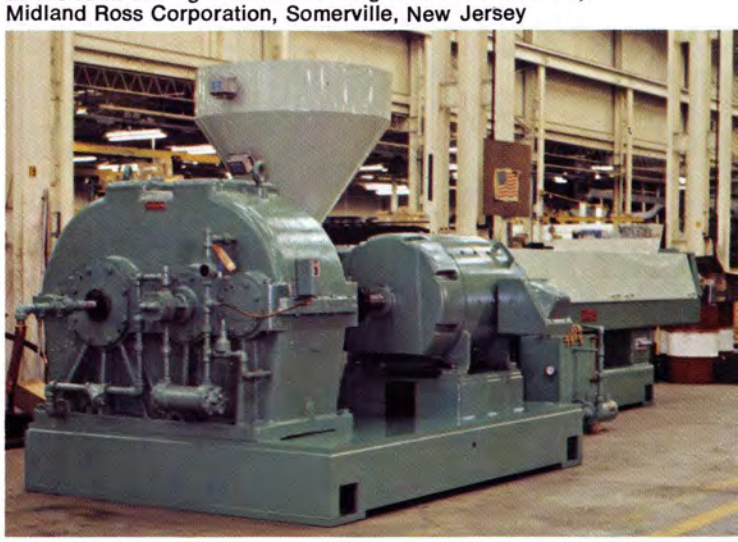
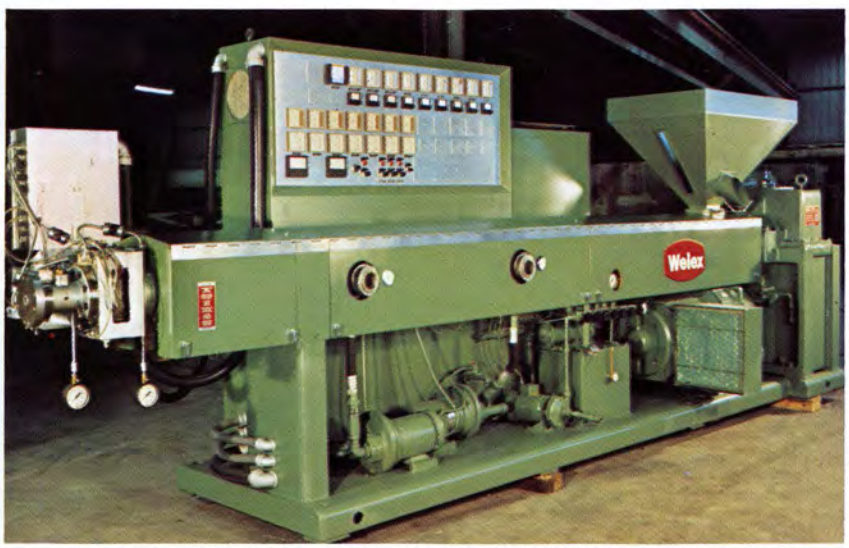


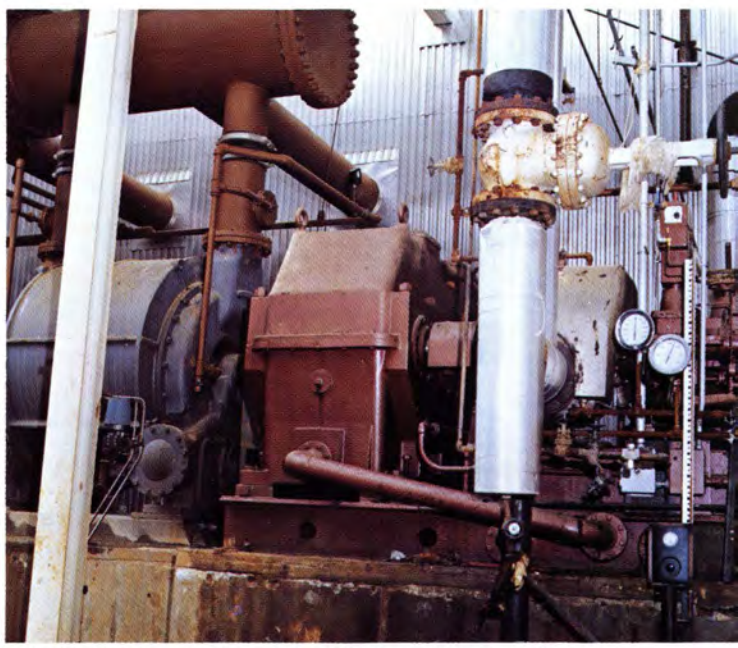
LUFKIN QT290 Gear Reducer, left, for four-roll two-calender unit for Stewart Bolling Company. This unit has four output shafts and four input shafts driven by four electric motors— two 100 HP and two 125 HP—at 1750 RPM. The ultimate user is General Tire & Rubber Company, Mt. Vernon, Illinois

LUFKIN DH660-1120 Gear Reducer rated 1013 HP at 100 RPM driving a Waldron-Hartig 80MHT32 Extruder, Midland Ross Corporation, Somerville, New Jersey

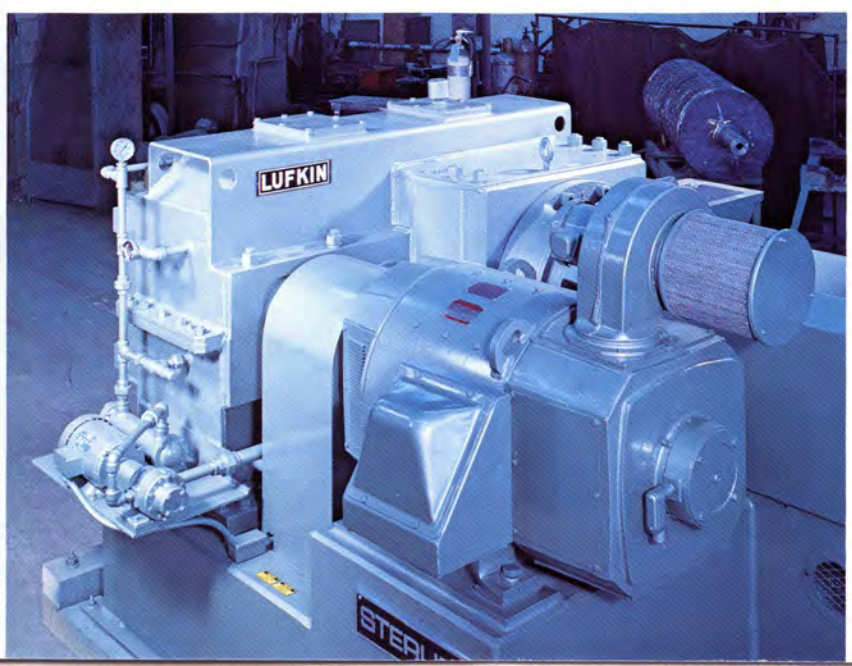




LUFKIN D165-611C change Gear Reducer driving a 4.5-inch Model 36D Double Vented Extruder, Welex Inc., Blue Bell, Pennsylvania



LUFKIN N500C Gear Reducer, above, which transmits 1950 HP from a Turbodyne turbine operating at 4857 RPM, 16.19 ratio. This equipment is driving a vacuum pump located at Mead Paper Board Corporation, Stevenson, Alabama



LUFKIN DFH440-921C Gear Reducer driving a Model 60340, 6-inch Extruder, Sterling Extruder Corp., South Plainfield, New Jersey

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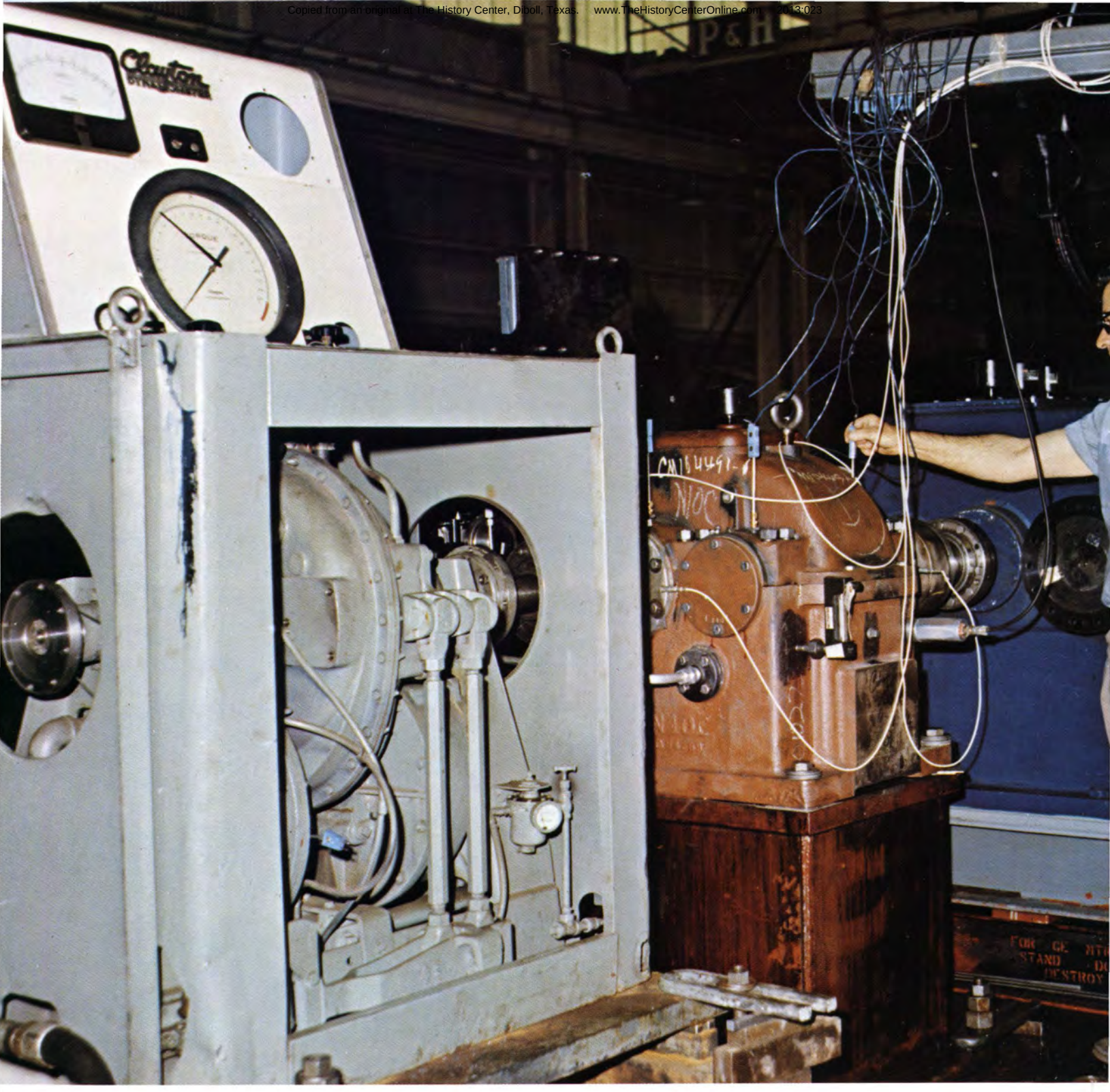

Gear Testing at LUFKIN

Gear testing at Lufkin Industries is the final quality control procedure to assure the user of minimum delay during plant start-up and long trouble-free life. Gear testing is under the supervision of the gear service manager, and all field servicemen contribute to the testing process which assures maximum feedback from field experience.

The heart of the test stand is an 880 HP SCR controlled DC motor. This motor is rated at full horsepower over the speed range of 400 to 1200 RPM and constant torque from 400 to 40 RPM. This motor drives the tested gears through a two-stage gear box with all three shafts extended. The three shafts give a speed range of 40 to 21,500 RPM depending on the shaft being used. Using this variable speed drive arrangement, the gear units can be tested throughout the operating speed range and at overspeed.

"No load" spin testing is the most common test, but load tests can be performed using either a water brake dynamometer up to 600

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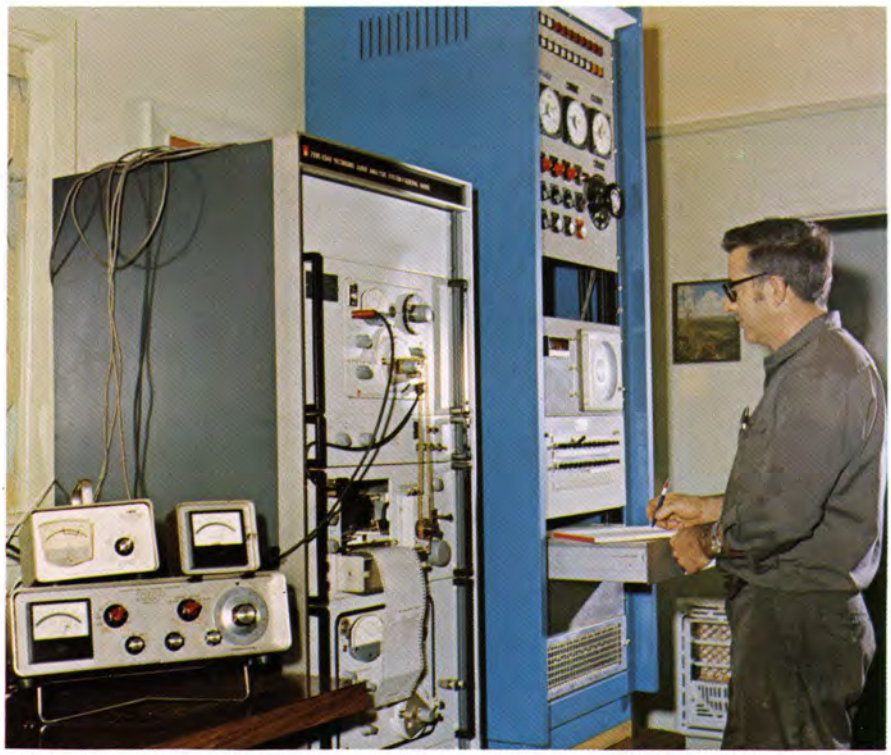
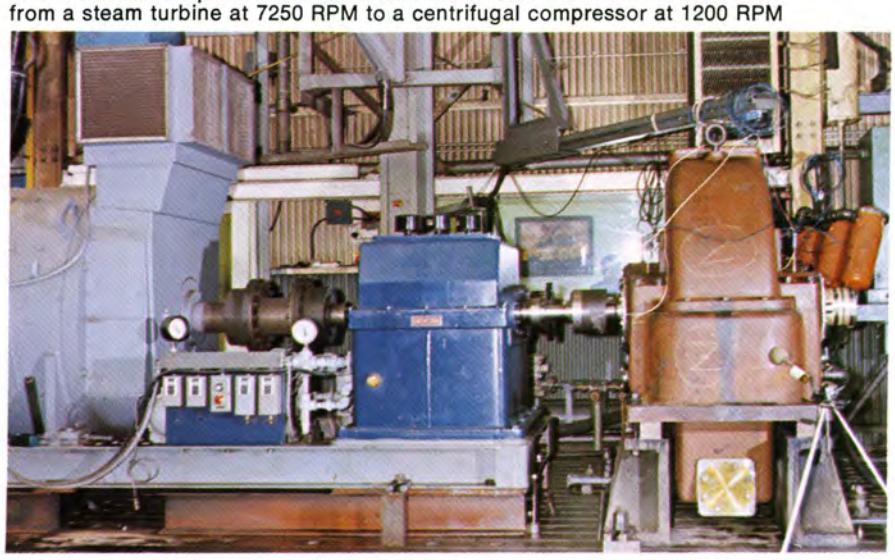


Inside view of test room showing monitoring and motor control equipment

Left: LUFKIN N1002C load test using water brake dynamometer

LUFKIN N3004C Speed Reducer on test stand. Unit is to transmit 6400 HP from a steam turbine at 7250 RPM to a centrifugal compressor at 1200 RPM



HP or using the locked torque arrangement for high horsepower loading. The locked torque (sometimes referred to as "four square") test requires two identical gear units.

During testing, unit performance is monitored in the test room. Most test procedures record the following at 15-minute intervals; oil inlet and outlet temperature, oil flow, bearing temperatures, and unfiltered shaft vibration levels. At one time during testing, housing vibration and sound levels are recorded. Also, frequency spectrum analysis is recorded for shaft vibration and sound level.

If the test data shows any abnormalities, the unit is disassembled and corrections are made. Any modifications required are recorded and complete test procedure is repeated. Many units are disassembled for inspection and when this is required, the unit is brought up to full speed to make sure reassembly was performed correctly.

When available, job coupling hub is mounted for test run. If operating speed is within 20 per cent of calculated lateral critical speed of a shaft, a simulated coupling half weight is mounted. Using this weight, actual lateral critical speed and shaft response can be determined.

Lufkin Industries spares no expense on testing so that customers are assured a speed increaser or reducer which will perform the job intended.

Snapshots



M. WILLIAMSON, left, E. E. BREAULT,
Ingersoll-Rand New York, New York



DICK BIRGLER
Chemac
Leonia, New Jersey



RICH STRAW
Terry Turbine
Cranford, New Jersey



BILL WIGTON
Wean United, Inc.
Pittsburgh, Pa.



KEN ROINOS
Terry Turbine
Cranford, New Jersey



KEN GORTON
Heyl & Patterson
Pittsburgh, Pa.



ED THOMAS
Heyl & Patterson
Pittsburgh, Pa.



TONY CEBOTAR
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Pittsburgh, Pa.



GEORGE AVERILL
Cooper-Bessemer
Mt. Vernon, Ohio



BILL DELLENBACH
Elliott Co.
Cleveland, Ohio



CHARLES G. MEUSER
EEMCO
Erie, Pennsylvania



JIM ROOT
Stewart Bolling & Co.
Cleveland, Ohio



DEE DeFERRO
Terry Turbine
Cranford, New Jersey



ERWIN BUNBURY
Terry Turbine
Cranford, New Jersey



S. J. WAINWRIGHT, left, J. R. ERICSON, center,
R. G. DUNHAM Elliott Co. Mountainside, New Jersey



J. V. MURPHY, left, MARTIN H. KRUGER
Hoffman Industries New York, New York



RAY SHOCKEY
Stewart Bolling & Co.
Cleveland, Ohio



BOB SKERBITZ
Heyl & Patterson
Pittsburgh, Pa.



E. L. PHILLIPS
Welex, Inc.
Blue Bell, Pa.



EDWARD A. ZUBLIN
Belco Petroleum Corp.
New York, New York

By Lufkin Cameramen



DON WATKINS
Wean United, Inc.
Pittsburgh, Pa.



ANDY EDNIE
Heyl & Patterson
Pittsburgh, Pa.



BOB COX
Wean United, Inc.
Pittsburgh, Pa.



STAN BALDWIN
Heyl & Patterson
Pittsburgh, Pa.



ROBERT P. ZABOROWSKI, left, RICHARD CEGELSKI Elliott Co. Mountainside, New Jersey.



CARL NELSON
Wilson-Snyder Pumps
Oilwell Div., U.S. Steel
Pittsburgh, Pa.



DON BERGMARK
Heyl & Patterson
Pittsburgh, Pa.



FRANK LEONE
Marine Consultants
Cleveland, Ohio



DOROTHY KAPLER
Marine Consultants
Cleveland, Ohio



IAN SHARP
Marine Consultants
Cleveland, Ohio



HARRY BICKART
Heyl & Patterson
Pittsburgh, Pa.



DENNIS WHITING
Skinner Engine Co.
Erie, Pennsylvania



J. M. KELLY
Mobil Oil Corp.
New York, New York



E. L. COLE
Asiatic Petroleum Corp.
New York, New York



PAUL TALAGO
Fuller Co.
Allentown, Pa.



TOM PARKER
Heyl & Patterson
Pittsburgh, Pa.



BILL WATHEN
Terry Steam Turbine Corp.
Windsor, Conn.



DICK NISSLEY
Ohio Barge Lines
Pittsburgh, Pa.



BILL MALONEY
EEMCO
Erie, Pennsylvania



FRED W. EARL, left, STEPHEN J. ROONEY
Caltex Petroleum Corp. New York, New York

...More Snapshots



N. BALDO, JR., left, P. M. BARRETT, center, JOHN J. GAWLOWSKI United Centrifugal Pumps Westfield, New Jersey



A. V. McKENNA
Mobil Oil Corp.
New York, New York



JOHN GORON
Waldron-Hartig Div.
Midland-Ross Corp.
Somerset, New Jersey



DICK GOODWIN
Stewart Bolling & Co.
Cleveland, Ohio



NICHOLAS VINK
Geveke & Co.
International
New York, New York



CHARLES FLEISHMAN
Fuller Co.
Allentown, Pa.



STERLING BUSS
Fuller Co.
Allentown, Pa.



RICHARD E. SHORT
Alco Engines Div.
White Industrial Power
Auburn, New York



R.P.VAN VALKENBURG
Alco Engines Div.
White Industrial Power
Auburn, New York



JACK SWENNEY, JR.
Fuller Co.
Allentown, Pa.



PAUL SCHREFFLER
Fuller Co.
Allentown, Pa.



ARNOLD DEILY
Fuller Co.
Allentown, Pa.



JOE PLASTOW
Asiatic Petroleum Corp.
New York, New York



DON AFFLERBACH
Fuller Co.
Allentown, Pa.



LEN GUTMAN
Fuller Co.
Allentown, Pa.



J. H. THOMAS, left, J. W. BATES, Mobil Oil
New York, New York



H. J. RODDIN
Sterling Extruder Corp.
South Plainfield,
New Jersey



WARREN BECK
HPM-Koehring Co.
Mt. Gilead, Ohio



CHARLES SPANOS
McDowell-Wellman
Cleveland, Ohio



L. H. FLESHER
Alco Engines Div.
White Industrial Power
Auburn, New York



VERNON E. VARNO
Alco Engines Div.
White Industrial Power
Auburn, New York



R. PETER SPOCK
Alco Engines Div.
White Industrial Power
Auburn, New York

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LUFKIN'S AIChE Vistors



DONALD C. HEWITT
Elliott Co.
Jeannette, Pa.



JEFF DAVIS
Elliott Co.
Jeannette, Pa.



DICK McCOY
Union Carbide
South Charleston,
W. Virginia



DOUGLAS BOYCE
Elliott Co.
Houston, Texas



RICHARD A. LEWIS, left, Elliott Co., Jeannette, Pennsylvania, JAMES HONEFENGER, Elliott Co., Houston, Texas



W. L. THOMAS, left, GENE MITCHELL, Worthington Compressors, Inc., Houston, Texas



DON STAFFORD
B. F. Goodrich
Chemical
Cleveland, Ohio



HENRY SIMPSON, left, JOHN W. REITER, Fluor Engineers & Constructors, Inc., Houston, Texas



J. C. UPCHURCH, left, Union Carbide, Houston, Texas VINSON C. SMITH, Union Carbide, Tonawand, New York



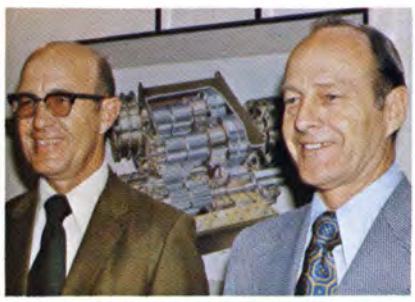
MATTHEW VAN WINKLE, left, University of Texas, Austin, Texas, HUGH McWILLIAMS, LUFKIN, Bel Air, Maryland



JOHN MASSIE, left, BOB GRONA, Terry Southwest, Houston, Texas



GAY JOHNSON, left, HOWARD McCAMANT, A. G. McKee & Co., Cleveland, Ohio



J. H. DEGARMO, left, JOE FARLEY, Exxon Chemical Co., Baytown, Texas



CHARLES JACKSON
Monsanto
Texas City, Texas



TOM E. WILL
Rohm & Haas
Bristol, Pa.



JIM BRYANT, left, PRESTON RICHARDSON, Fluor Engineers & Constructors, Inc., Houston Texas



C. W. LUDWIGSEN, left, Ingersoll-Rand, Houston, Texas, JIM PARTRIDGE, LUFKIN, Lufkin, Texas



JOHN FINNEY, left, LUFKIN, Pittsburgh, Pennsylvania, FRANK COLLURA, Ethyl Corp., Baton Rouge, Louisiana

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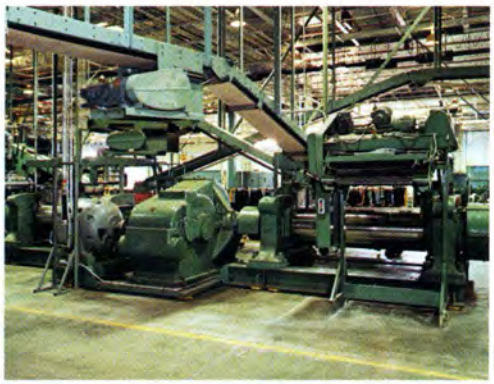
LUFKIN GEARS





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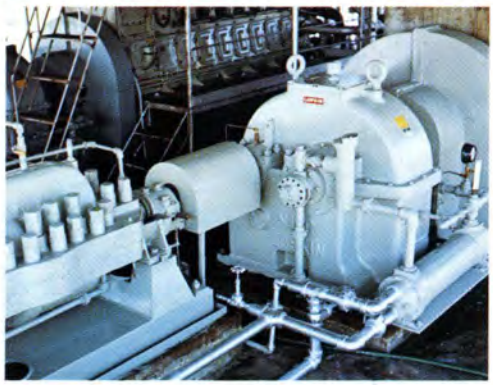


RUBBER MILLS

SUGAR MILLS

MARINE PROPULSION

PIPE LINES

PLASTIC INDUSTRY

CHEMICAL PLANTS

CEMENT PLANTS

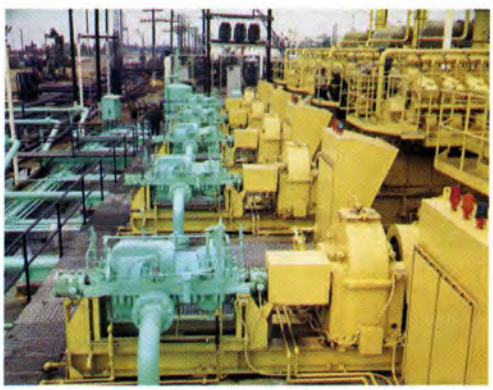
STEEL MILLS

PAPER MILLS

AIR CONDITION SYSTEMS









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