MEMOREX

Open House Sept.17, 1977
Creative Excellence on Display

Company History

"Is it live or is it Memorex?" is a question familiar to tape recording buffs across America. In a relatively short period of 16 years, the company has grown from a single product firm with about 50 employees to an international corporation with more than 7,800 employees.

While most people recognize Memorex from its "shattering glass" advertising campaign, audio tape is but one of a rapidly expanding group of products marketed by the firm throughout the world. Incorporated in 1961 to produce computer tape, Memorex now offers a wide range of high technology products which store, retrieve, and communicate information. The products are used in business, government, scientific and educational institutions, the entertainment industry, and in the home.

The company set a fast pace for itself from the very beginning. Before its initial year ended, it purchased five acres of land on Shulman Avenue (now Memorex Drive). During the next 12 months a plant was built, an innovative production line was put into operation, a sales organization was established, and the first Memorex product—computer tape—was launched on the market.

Within the next two years, Memorex expanded its tape product line and began producing video tape for closed circuit and broadcast television.

As the company grew to 400 employees in 1965, it began to concentrate on new product development. Marketing was expanded, and sales and service offices were established throughout North America and in Western Europe, Japan and Australia. By the end of 1965, sales had grown more than 50 percent in one year, to $13 million.

With the introduction of higher speed computers came the need for faster access to stored data. In response to this demand for new and extremely complex technology, Memorex's research and development staff went to work developing both disc drives, the equipment used to store and retrieve computer data, and disc packs, the medium that data is stored on. In 1967, the company introduced its first disc packs and a few months later, its first disc drives.

To illustrate the technology of these products, one disc pack can store the equivalent of 2,500 novels and a disc drive can retrieve any segment of them faster than the eye can blink.

Diversification was important, as it provided the base for the successful transition from a single-product company to a producer of information handling systems. By the end of 1968, the company's annual sales had surpassed the $50 million mark and employment had reached 1,900.

The next few years were pivotal for Memorex. The company introduced its 1600 Computer Output to Microfilm (COM) system, which enables computers to generate data directly onto microfilm at speeds up to 10,000 lines per minute.

The company also introduced a line of communication terminals and quickly became a large-scale manufacturer of telecommunications equipment. These terminals, used in such applications as airline reservation systems, physically resemble typewriters, and provide another means of entering or retrieving computer information.

Another important step in Memorex's diversified growth during its first decade was its entrance into the consumer market. In 1970, the company began offering high fidelity audio tape for cassette and reel-to-reel recorders. Three years after its introduction, Memorex audio tape was one of the two leading brands in the country. And, with the advertising help of Ella Fitzgerald and Count Basie, Memorex became a household word throughout America.

The company also entered the word processing market at this time with a number of products for business use. This line now includes typewriter ribbons, toners and developers for copier machines and magnetic cards for automatic typewriters.

At the end of its first 10 years in 1971, Memorex had grown to $120 million in revenue, with more than 5,000 employees in 60 locations across the U.S. and 34 cities abroad.

Memorex reached another milestone in May, 1971, when it dedicated a new world headquarters in Santa Clara. Located between San Tomas and Central Expressways, this facility has become a model for proper land use in the community. The attractive, campus-like complex, which occupies 54 acres, received national recognition in 1971 as one of the ten best designed industrial facilities in the U.S.

The company also has manufacturing facilities in Irvine, Anaheim, and Santa Ana, California; Eau Claire, Wisconsin; Nogales, Mexico; and Liege, Belgium.

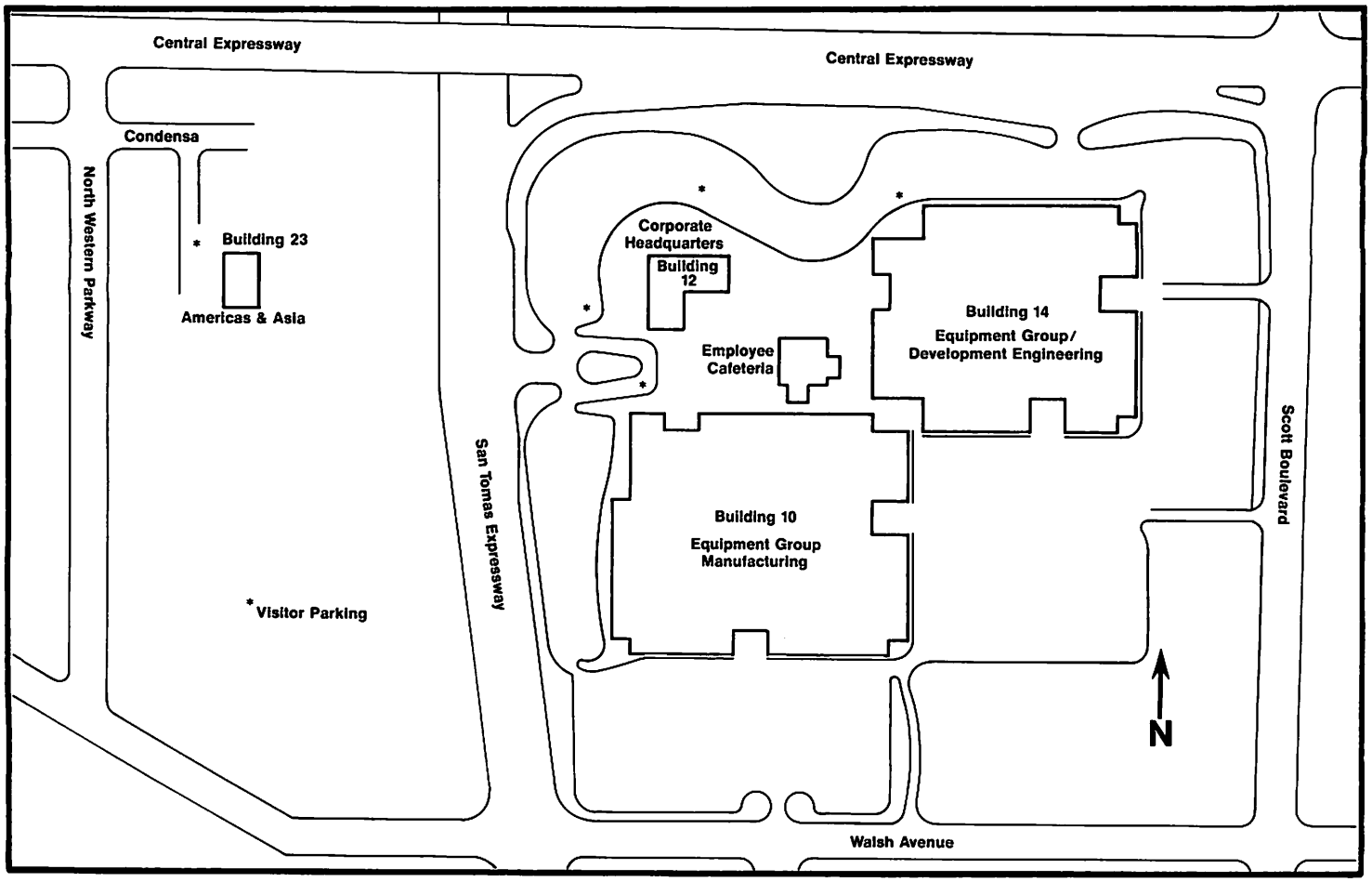
Also in 1971, encouraged by its decade of impressive growth, the firm decided to enter the mainframe computer business. However, the company was unable to finance the expensive program and abandoned it in 1973.

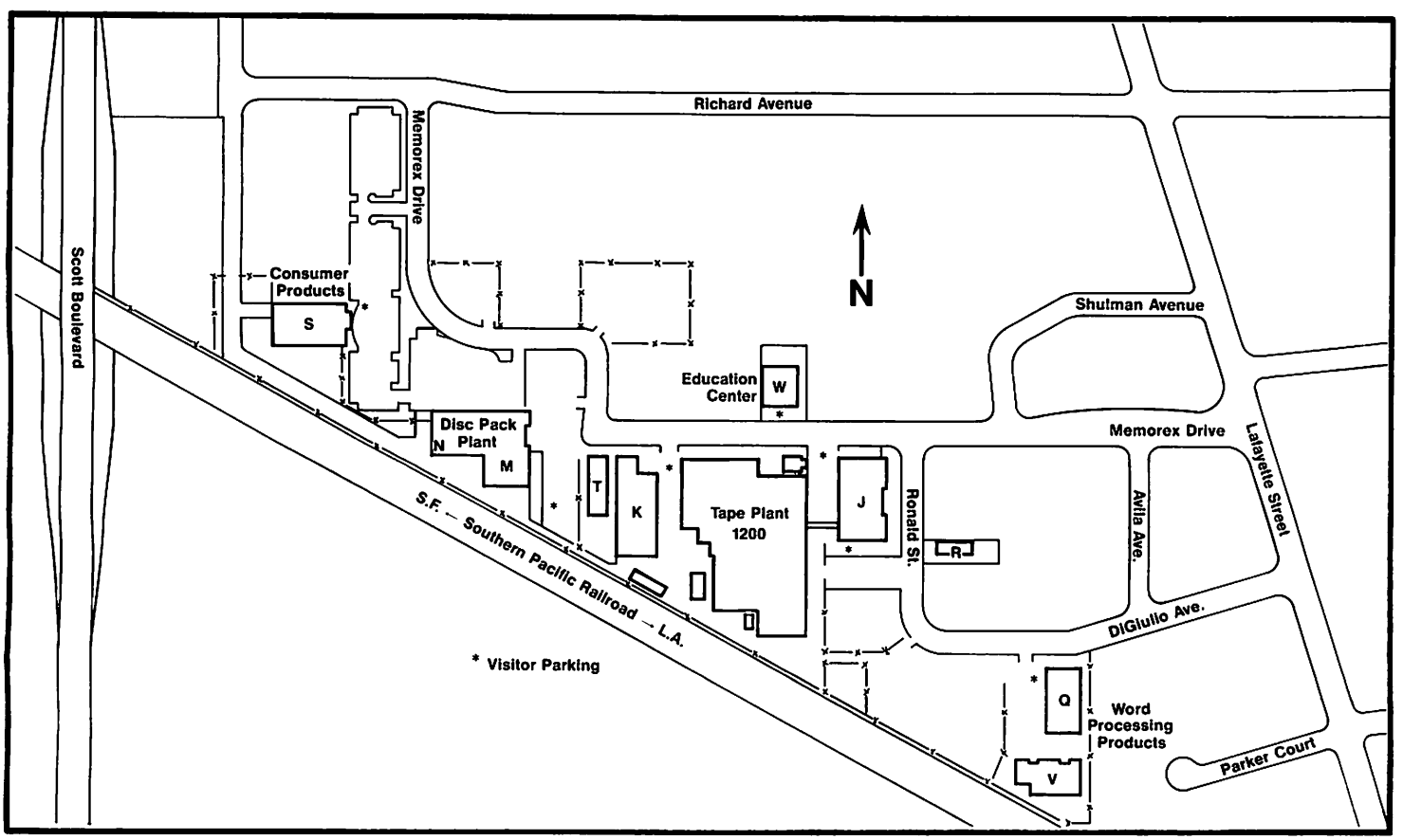
The beginning of 1974 saw a change in Memorex's top management. Robert C. Wilson, former president of Collins Radio—a subsidiary of Rockwell International—took over as president on May 15, after Lawrence L. Spitters, founder and president since 1961, resigned to run for Congress.

Known as a "master turnaround man" from his work at Collins Radio, Mr. Wilson had his work cut out for him. Under his guidance, and with the dedicated teamwork of all Memorex employees, the company began the process of returning to profitability. 1974 became the "year of the turnaround" at Memorex, and by the end of 1975, despite the worldwide recession, the company reported its best year to date. Net income was $18 million on record sales of $264 million.

Today, with a universal reputation for quality products and services, Memorex has built a strong base for continued growth. As all its markets are growing, prospects for the future are good. For 1976, the company reported record net income of $40 million, on revenue of $344 million, an increase of 31 percent over 1975 revenue. This trend continued in 1977 as net income for the first six months was $26.5 million on revenue of $204.9 million.

This remarkable performance resulted in two significant events in 1977. In May, the company became one of Fortune Magazine's 500 largest U.S. industrial corporations, and early this month, Memorex was relisted on the New York Stock Exchange. In just 16 years, the company had come a long way, thanks to the ability and commitment of Memorex people everywhere.


Central Expressway
Central Expressway
Condensa
North Western Parkway
Building 23
Americas & Asia
Corporate Headquarters
Building 12
Employee Cafeteria
Building 14
Equipment Group/
Development Engineering
Scott Boulevard
San Tomas Expressway
Building 10
Equipment Group
Manufacturing
* Visitor Parking
N
Walsh Avenue


Richard Avenue
Memorex Drive
Scott Boulevard
Consumer Products
S
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Shulman Avenue
Education Center
W
Memorex Drive
Lafayette Street
Disc Pack Plant
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Tape Plant
1200
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Ronald St.
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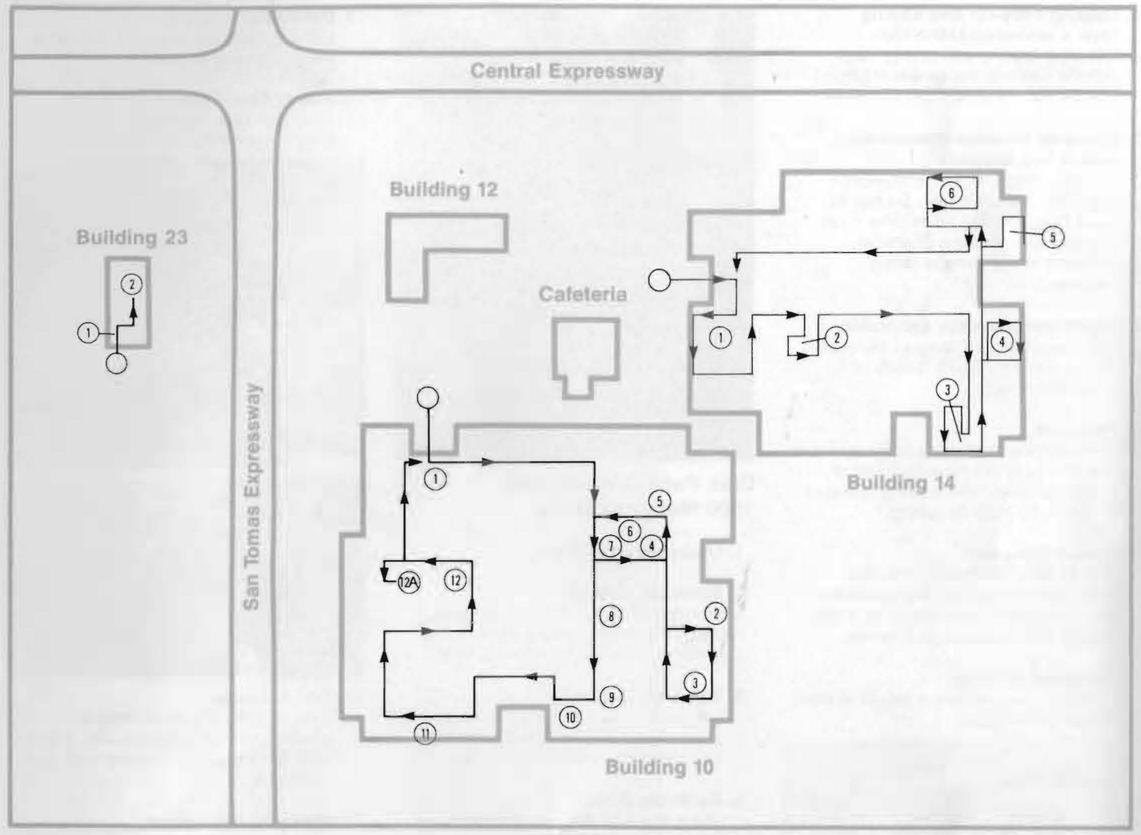
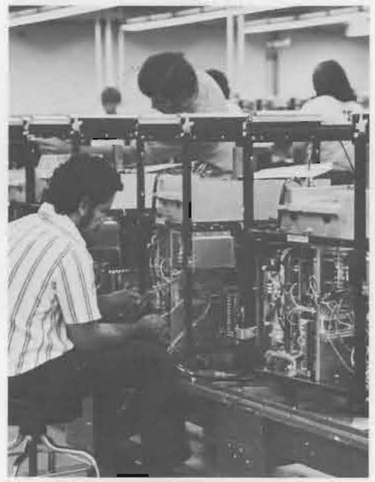
Avila Ave.
DiGiulio Ave.
S.F. — Southern Pacific Railroad — L.A.
* Visitor Parking
Q
Word Processing Products
V
Parker Court



Building 10—
Equipment Products Group

1. Plant Display
Building 10 = 250,000 sq. ft. or 23,225 mtr² (total). 170,000 sq. ft. or 15,793 mtr² used for manufacturing.
Building 14 = 140,000 sq. ft. or 13,006 mtr² used for manufacturing.

2. Small Systems Division
- 601 Fixed Disc Drive
  Memorex is first in the marketplace with this medium-capacity, small packaged drive that requires zero maintenance.
  It is nicknamed "Maverick" because of its many departures from typical disc drive design.
  The 601 Drive will be a major contributor to the future success of Memorex.



- 651 Flex Disc Drives
  The Flexible Disc Drive is manufactured for small systems users. Memorex has now shipped approximately 30,000 of these units.

3. Special Production Operations
Contigures and tests the 3640 product family that Memorex purchases from N.P.L. Used equipment products are reprocessed and tested making them "equivalent to new." Other special projects:
- Assembly of in-house sophisticated test equipment.
- Rebuild of sub-assemblies of P.C.B.'s.
- Prototype assembly and engineering evaluations.

4. Shipping
Unit and the customer order merge. The unit is packaged using a shrink process and then shipped to the customer.

5. Head Assembly Display
Display shows the total head process from powder to finished head.

6. Drive And Controller Test
All Drives are tested statically and dynamically and are given a 48 hour burn-in operational sequencing cycle to verify performance specifications. Controllers are tested under Static and Dynamic conditions.
Internal Units are staged and run for an additional 24 to 48 hours of operational sequencing.

7. Q.A. Test
Each unit submitted by Manufacturing is inspected for visual, mechanical defects prior to a functional test.

8. Final Assembly And Mechanical Sub-Assembly
In this area all purchased and internally built hardware are assembled into the final machine configuration and delivered to Final Test.

9. 1377 Area
Self-contained assembly and test area for video terminals.
Two (2) burn-in rooms for monitors.
Burn-in time is 72 hours.
High volume product:
- Two (2) shift operation.
- Approaching 2000 terminals/month.

10. Electrical Sub-Assembly
Electrical Sub-Assembly performs three processing functions: Building of Power System, Logic Wire Wrap and Cable & Harnesses.
Our Nogales, Mexico, plant is an extension of this department, also building Sub-Power Units and Cable & Harnesses.
Cable and Harness work is done in Nogales, with the exception of Special Cables and Engineering Changes.
All Power System Units are individually tested to specifications prior to going into the final machine.

11. P.C.B. Assembly Display
P.C.B.'s are photo masked and etched in our Eau Claire, Wisconsin, plant.
The blank boards and components are staged and released to manufacturing in kits. The Kit is audited and routed into the process.
- Components are preformed.
- Boards are stuffed with preformed components.
- Stuffed P.C.B.'s are then oven baked to eliminate moisture that affects the solder quality.
- The next step is wave soldering components to the board.
- Each board goes through touch-up to verify and correct solder joints for maximum reliability.
- After touch-up, the P.C.B. goes to:
  · Sub-Assembly and/or
  · Engineering Change or to
  · P.C.B. Test.
- P.C.B. Test performs a specified test on all P.C.B.'s.
- Tested P.C.B.'s are then given final Q.C. Acceptance. From here they go to a finished goods cage where they are issued for Production, Spares, FFO's, FBM's, and to our Liege, Belgium, Plant.

12. Machine Shop Display
Machine Shop is utilized for production of proprietary parts and for close tolerance machining to 50 millionths of an inch.
Parts built here are established by the make or buy analysis process for economics.
Tape and electronically controlled machines are in operation at tour point **12A.**

Building 14

1. Communications Division Headquarters
The World Headquarters of the Communications Division is the focal point for the Engineering, Finance, Marketing, Manufacturing, and Quality Assurance for the Computer Peripheral Market.

2. Communications Division Engineering
Communications product development test facility. This validation lab is used in designing communication products. Current communication products are on display here.

3. Communications Product Development Test Facilities

4. Engineering Computer Center
Display shows Memorex equipment working on an IBM 148. Plus computer games for the children.

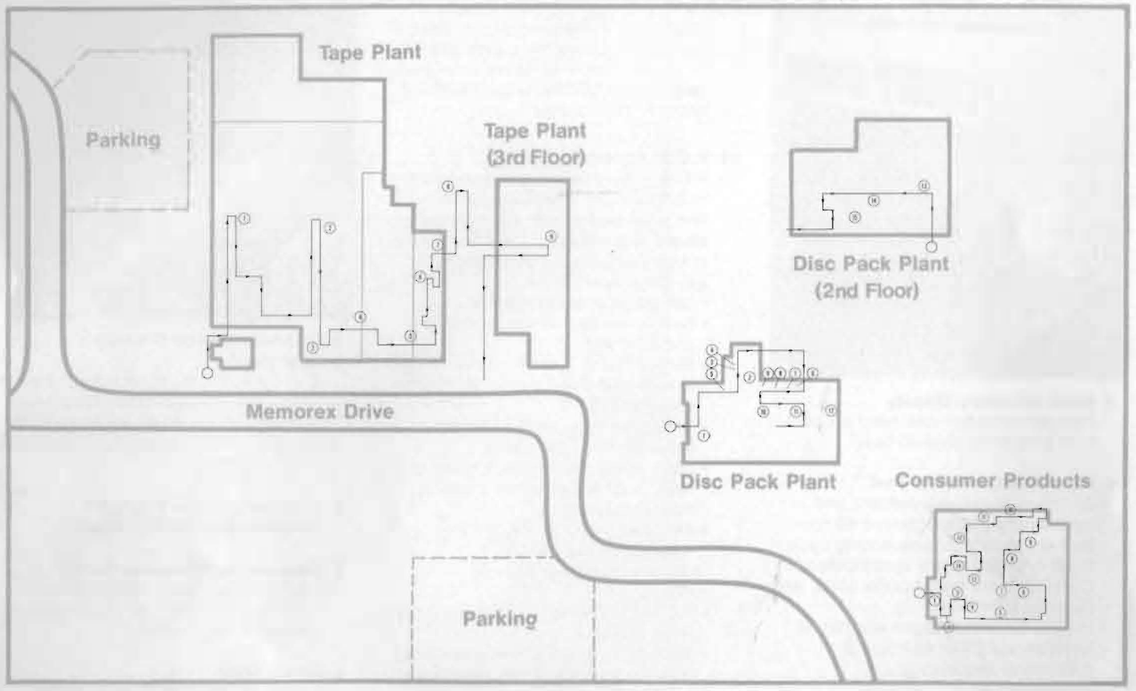
5. Model Shop
Display of typical and unusual parts made by the model shop.

6. Drafting Area
Display of Drafting and PCB design capability.

Building 23

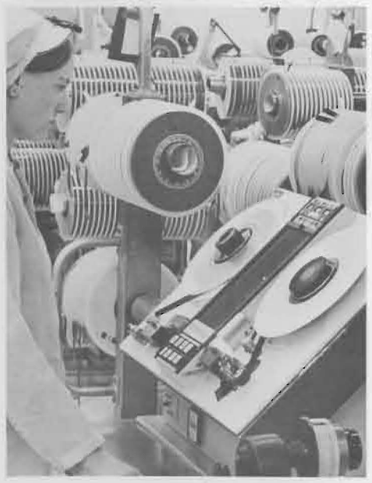
1. Display Flexible Disc Products
Flexible Disc Products are shown as they would appear at our customer facilities.

2. Flexible Disc Manufacturing
Discs are punched from rolls of media. They are then surface treated, tested and placed in preassembled jackets.



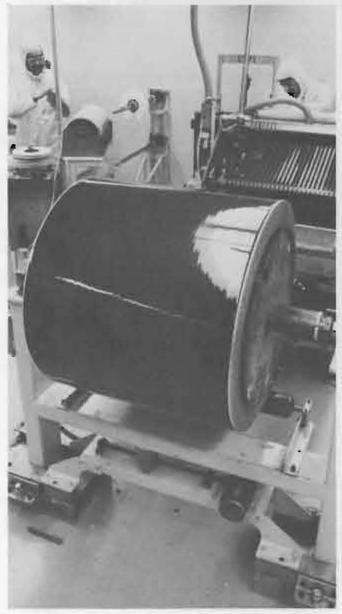
Tape Plant

1. Packaging And Clean Room Test Areas
Computer and video tape is tested, labeled and packaged in plastic bags.



2. Computer Tape Test Laboratory
Extensive testing is done to assure that Memorex products meet and exceed the high standards expected by our customers. Customers also use this laboratory as analytical support on highly complex problems.

3. Display
Computer and video tape products are shown along with a video tape demonstration.



4. Coating Take-Up And Slitting
Tape is wound on jumbo reels following coating and drying. After surface treating, the tape is slit from jumbos into pancakes or onto reels.

5. Scanning Electron Microscope With X-Ray Analyses
The Scanning Electron Microscope magnifies materials from 5 times to more than 100,000 times. The X-ray analyzer identifies the chemical elements in the material being magnified.

6. Analytical Chemistry Laboratory
Raw materials and process samples are analyzed to insure quality of finished products.

7. Pilot Line
Modifications to existing processes and new products are manufactured in small quantities before being released for full-scale manufacturing.

8. Solvent Recovery
This $1.5 million facility removes solvents from coating oven exhausts for conservation and recycling. It also acts as a pollution control device.

9. Maintenance Shop
Production equipment is rebuilt to meet exacting standards.

Disc Pack Division Tour 1500 Memorex Drive

1. Lobby—Start of Tour

2. Substrate Cutting
All substrates are cut on especially designed lathes to ensure surface uniformity at the raw material level.

3. Substrate Baking
The substrates are then put in compressed stacks and baked to relieve any stress that may be in the disc.

4. Substrate Polish
The substrates are then put in our six-step polisher which polishes each disc to super fine tolerances.

5. Substrate Test
Each substrate is then tested for surface uniformity on test equipment which is set to exacting parameters.

6. Pre-Sand
The surface finish of each disc is changed to enhance the adherence of the coating to the disc.

7. Cleaning
Each disc then goes through an acid bath and is fully oxidized before the coating is applied to the disc.

8. Coating
A magnetic iron oxide coating is applied to the spinning disc on both sides simultaneously to produce a uniform coating wedge.

9. Bake After Coating
Each coated disc is cured through a second baking process.

10. Polish After Coating
After the discs are baked, they are then polished to a mirror-like finish.

11. Test Assembly
Extensive testing of the magnetic qualities of each polished disc is done prior to its insertion into the disc pack or module.

12. New HDA Cleanroom

13. Upstairs And Proceed Down Hallway

14. Product Display
Memorex full line of disc products is shown.

15. Computer Center
Test equipment is used to check the quality and performance of the assembled disc packs in a computer room environment before the pack is shipped to the customer.

16. Downstairs To Lobby

Consumer Products

1. Display
Memorex offers a complete line of quality recording products and accessories.

2. Customer Clinic
A continuous sound demonstration and tape user information center staffed with audio recording experts.

3. Tape Cassette Finishing—New!
Recording tape is wound into empty cassettes. Eighteen machines were added this year to keep up with the increasing market demand.

4. Cassette Assembly I
This machine fully automatically assembles empty cassettes at a rate of 51 per minute.

5. Cassette Assembly II—New!
A second Rockford machine, 52 feet long, was added this year to double the production capability of the assembly area.

6. Cassette Packaging
The final step in the process prepares cassettes for the store shelf.

7. Display
A video monitor with continuous running Memorex commercials.

8. Coating Line I
Clear 12-inch wide Mylar is unwound, coated, and routed through the ceiling through a series of ovens for drying. The tape travels at speeds of up to 520 feet per minute and floats through the drying ovens on a bed of air.

9. Coating Line II—New!
The very latest in coating technology has been incorporated into this new coating line.

10. Solvent Recovery—New!
Up to 98% of the solvent used in the coating process is removed from the air going out our stacks. Not only does this make Memorex a better neighbor but the system will pay for itself in a few months by recycling the solvent.

11. Tape Slitting—New!
Three tape slitting machines cut tape for cassettes and open reels at speeds of up to 600 feet per minutes. A fourth machine is scheduled for delivery on November 1st of this year.

12. Maintenance Shop—New!
The maintenance area has been expanded also to provide the additional support required to keep the entire plant running 24 hours a day, 7 days a week.

13. 8-Track Assembly—New!
Blank 8-track cartridges are loaded and assembled here for another growing segment of the recording market.

14. Quality Control
The quality of cassettes, cartridges, reels, and all steps of the processes are monitored here 24 hours a day.

Memorex Corporation
San Tomas at Central Expressway
Santa Clara, California 95052

Four Events

- **Tours and product displays.**
- **Employees craft fair and sale.**
- **Free helium balloons.**
- **Sale of Memorex T-shirts and belt buckles.**