

ONLINE

DIGITAL EQUIPMENT CORPORATION

JUNE 1970

DEC Products vs. Pollution

Were you aware that DEC equipment is being used extensively in pollution control?

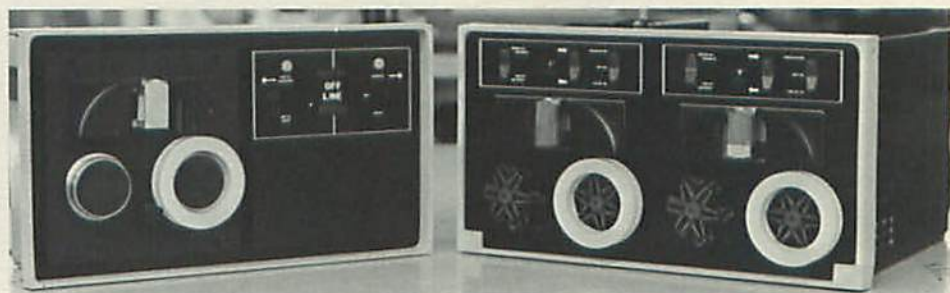
Industrial firms and national and local agencies in many locations are using DEC equipment to reduce air pollution, build quieter aircraft engines, improve vehicular exhaust emission systems, and limit pollution of waterways.

Vehicular Emissions

One of the most widely used vehicular emissions analysis systems is the Beckman Model 82 System which is controlled by a PDP-8/S computer. This system is used by automobile manufacturers to determine the amounts of pollutants in automobile exhausts.

Two British automobile manufacturers, Rolls Royce, Ltd., and Standard Triumph Motors are using PDP-8/S and PDP-8/L systems to monitor exhaust gas concentrations produced in various driving conditions.

Continued on page 5



From TU55..... To TU56

Walking through the manufacturing area, you might notice a new DECTape unit mounted on DEC's computers. It is the new TU-56 DECTape transport. For some time, the DECTape transport has been DEC's most popular single peripheral.

The new unit fits two transports in the same amount of rack space as a single TU-55 transport. It was designed by a team headed by Ernie Luttig of the magnetic tape group in the Peripheral Engineering Department. Working with him on the project, started in August, 1968, were Charlie Vaillant and Henry Dobrowolski, mechanical designers; and technicians Bob Carney, Carl Pierson, Bill Bedet, Ron Given, and Dave McCall.

The project was initiated in an effort to cut production costs on the TU-55. "But we discovered an interesting thing in our early research," Ernie said. "About 90% of all TU-55's were sold in multiples of two."

At that point, Ernie recommended that the equipment be redesigned so that two transports would be built as a single unit.

With the TU-55 you needed two bays for eight DECTape transports and a control unit. You can now fit eight of the new transports and their control on one bay.

The new unit only requires one type of motor. The TU-55 has one motor for domestic use, and another for Europe, where another power line frequency is in common use.

The TU-55 recording head has to be precisely fitted to a tolerance of 2/10,000ths of an inch. This meant that if the unit needed a new recording head, it had to be shipped back to the factory.

The TU-56 recording head is fitted on a panel built so precisely, that the recording head can be mounted by a field service technician right at the customer's installation.

The hub on which the tape is mounted on the TU-55 is a machined metal part grooved to accommodate a metal spring which grips the tape to prevent slippage. It is about six times as expensive to make as the plastic hub which replaces it. The new hub also prevents slippage, but it also makes loading and unloading tapes easier.

The TU-55 has accounted for more than 1,400 sales to date. Ernie reports that the number of orders for the new unit, have already assured its success as a product.



Beckman Vehicle Analysis System uses PDP-8/S in automobile exhaust test. Photo courtesy of Beckman Instruments, Inc.

PDP-8's Ken Pierce: School Committee Chairman



Ken, Berlin Boylston Regional School District Supt., Raymond Plotczyk, and School

Committeeman John Fellows of Boylston examine the agenda before a recent meeting.

Ken Pierce, an administrative assistant in the PDP-8 Group, joined the DEC in 1960, when the entire company was located in Building 12 and PDP-1's were being produced.

Today he fulfills a number of administrative tasks, including keeping track of the space needed for the Small Computer Product line, forecasting and coordinating service group activities, and establishing new procedures which lead to cost savings and greater efficiencies.

In his home community, Berlin, Massachusetts, Ken serves as Chairman of the Berlin-Boylston Regional School Committee. He was elected in 1966. The committee makes education policy and budgets school funds for two elementary schools and a junior/senior high school. Prior to running for public office for the first time, he had been a member of the town finance committee and served on the local Head Start Project. Since his election he has been appointed to serve on the investigating committee for an Assabet Valley regional vocational school.

Ken has found, as have many local officials, that there is much to do, and not enough money to do it. In his town, about 70% of taxes collected go to education but they are not sufficient. "If we could only get Federal money without strings attached," Ken says, "that would really help. But most Federal funds are earmarked for specific kinds of programs that may not apply to a small district like ours. We do need more money to handle

normal education programs, but it is not easy to get."

"I've learned in the past few years that progress in public education is slow," Ken says. "You have to be patient. But things do get done if you keep trying."

"It was my feeling that the rising costs of operating the schools and the growing enrollment called for school committee participation by someone with business experience," Ken says. "The education community was well represented. But in a democracy, education can no more be left to educators alone, than can war to the generals."

"A lot of people just sit around and complain when government does not serve them as they feel it should." Although he stressed in his campaign that he thought the children of the district were getting a good education, he saw room for improvement. He managed to convince the voters that he had a contribution to make.

"Since I joined the School Committee, we have added a speech therapist to the staff as well as a teacher for the perceptually handicapped. You know, a few years ago it was assumed that when a student had trouble learning to read, he probably wasn't very bright. Now we know that a physical handicap involving the eyes is responsible in a number of cases. The perceptual handicap specialist is already making great progress."

Did You Know That...?



... There are over 300 PDP-12 installations, including 220 in the U.S. and 60 in Europe.

... The PDP-12 is the most successful computer designed primarily for laboratory use.

... PDP-12's are being used "on line" to the New York and American stock exchanges to analyze trading trends.

... Through a built-in speaker, the PDP-12 can play "music", and has a repertoire of over 20 songs including well-known Christmas carols.

... Dr. Michael DeBakey, the famous Houston heart-transplant surgeon, uses PDP-12's in patient-monitoring applications.

Promotion



Angela Cossette has been named to a managerial position in the Programming Department. Her new position includes managerial responsibility for DECUS, DIGITAL's user group and the Program Tape Preparation Department. Prior to her promotion, Angela's main duties were as Executive Director of DECUS. Her new position will permit her to continue working with DECUS. Angela is a graduate of Fisher Jr. College.

Payroll Group: Always on Time...



Nancy Anders operates new machine that stuffs and seals pay check envelopes.

the necessary taxes are withheld and paid to government agencies on time; the control of all voluntary deduction payments (insurance, Community Chest, payroll savings, stock purchase plans and U.S. Bonds) relocation reimbursement and accident and sickness benefit payments and the proper distribution and control of all payroll dollars spent. Kennedy's assistant, John Hess, is primarily responsible for handling all DEC payroll taxes now paid to over 70 government agencies in over 30 states.

Automated System

In March, DEC initiated a new automated payroll system to increase the speed and efficiency of payroll processing. More versatile than the former system, the new method automates sick leave, holiday, vacation, overtime, and shift premium records, which were previously kept manually. The new system also gives the department sufficient time to insure that errors are kept at a minimum.

So employees will receive their checks on Thursday, the girls begin the previous Friday by processing the data changes supplied by Personnel to bring the master employee file up-to-date.

On Monday and Tuesday, Norm and John, together with Katy Pareago, Trudy Rasmussen, Jo Williams, Glenna Vanderhoof, Jane Ebersole, Beverly Bangs, Karen King, Nancy Anders, and Jane Roy

spend time processing and controlling approximately 5,000 documents that will be sent to E.D.P. to be key punched and processed into reports. The girls will then compare the results to previously calculated totals, to eliminate discrepancies. "Since both computers and humans occasionally make errors," Kennedy says, "we must find and correct them before processing can continue."

On Wednesday, the documents are processed further and divided into seven registers (or categories). When this enormous task has been completed, the paychecks are printed and the task of getting them to employees on time is well on its way.

Paycheck Distribution

The out-of-state payroll is completed first so that the checks may be brought to the Mail Room and sent to branch offices. That done, the girls begin the task of getting the in-plant checks in order for proper distribution. Payroll recently purchased a machine that stuffs and seals the checks into envelopes. "Formerly," Kennedy says, "this job required 24 hours of tedious work. The job was usually accomplished in overtime, because of the close timetable Payroll works on. This machine does it in 90 minutes."

With the issuance of a week's checks on Thursday, there is no halt in Payroll activities, even on holidays. The Payroll cycle must go on.

PDP-10 Featured At SJCC

This year's DEC exhibit at the Spring Joint Computer Conference (SJCC), held at the Convention Center in Atlantic City May 5 - 7, created a strong impression, according to Trade Show Manager Roy Gould.

The show drew more than 28,000 people, and many were drawn to DEC's biggest display ever, which featured a large PDP-10 system, as well as the PDP-11 and the PDP-12.

The PDP-10 system with 128,000 words of core memory included swapping drums, disk packs, card readers, DECtape transports, a lineprinter, keyboard CRT displays, many Teletypes, and a large Evans and Sutherland Computer Corporation multi-dimensional line drawing display.

Customer response, as measured by the number of inquiries about the products displayed, was impressive.



If The Walls Don't Expand...

Back to the drawing boards again for 5-2. This kind of project constantly repeats itself at DEC's Maynard complex. "The walls of these old buildings don't expand," explains Al Hanson, Plant Engineering Manager, "but our needs do."

In the case of 5-2, three major segments of DEC's operation were in need of new facilities: Small Computer Engineering and Marketing, Finance and Administration, and Training.

Planning

Tom MacDonald, who oversees construction after Ray Carlson of the design group works out the plans, explained the process. The groups involved plan what their needs will be; the Operations Committee approves the plans; and Plant Engineering finds the space, designs the actual plan, in cooperation with the managers involved; and the work force moves in.

"It is the aim of our in-plant construction group to satisfy the needs of our DEC managers at a scheduled date," Tom explained. "This requires a team effort by our tradesmen, material handlers, and the Office Services Group, which supplies telephone services. All of the work is done in close liaison with the managers we service."

Recent Projects

The 5-2 project included more than 60 new offices, work areas, and labs, as well as modifications to the existing offices and other facilities.

More than 50 DEC people are involved in meeting the construction needs of the Company. When the workload is too great for Plant Engineering to handle it all, or when other kinds of skills are needed, outside contractors are hired.

The new areas recently constructed on 5-2, now in the process of being occupied by Small Computer Marketing and Training, were designed and built almost entirely by DEC people. Carpenters, electricians, millwrights, and air conditioning specialists were involved.

The work involved office partitions, wiring, painting, new sprinklers, and new air conditioning equipment. Five telephone people are now completing work on the 700 telephone additions and changes, taking place on the floor.

"And as big as this project is," Tom said, "it's not the only construction project we have going. We have activities taking place throughout the Maynard complex, as well as in Leominster, Westfield, and Westminster."

"It has been another busy year for us," Al Hanson said. And then he went on to list a few activities.

Four floors in building 21 were prepared for occupancy when the previous tenant moved out. Paint spraying booths and silk screen facilities were constructed for printed circuit board production. The Leominster plant was activated necessitating the movement of equipment from Maynard and the creation of work areas.

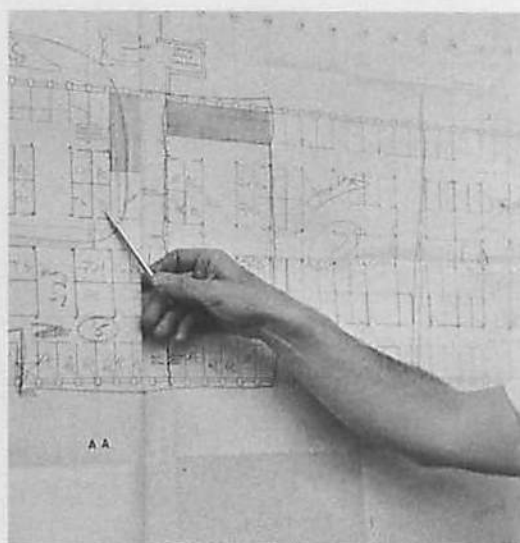
Work in Progress

Although the new Westfield plant has four of its own plant engineering people, plant engineering in Maynard has assisted in the early months whenever personnel could be spared. The work involves wiring, work benches, office partitions, and a number of other projects.

With the expansion of manufacturing in Bldg. #1, a new transformer is being installed to take care of the additional electrical load. New production facilities have been created on the first and second floors of that building as well, including thousands of feet of new wiring.

Among current projects are major additions to ventilation systems. There are also plans to renovate the Cafeteria and improve the Photo Department's facilities. More office space is to be built on 5-5. And fencing is going to be installed around parts of the Maynard complex to improve plant security.

"The resources devoted to these activities are enormous," Al Hanson said, "but we like to think that our work will make DEC a more comfortable and efficient place in which to work."



Plant



Al Vadney



Carl Loomer



Rich An

DEC Products vs. Pollution

Continued from page 1



Engineering Manager Al Hanson

Applied Dynamics of Ann Arbor, Michigan, has also designed a PDP-8/S-based system to monitor auto exhaust gases. Two such systems have been installed at the National Air Pollution Control Administration's Motor Vehicle Control at Willow Run Airport in Ypsilanti, Michigan. These systems provide a reliable means for implementing the requirements of the Federal Government's 1970 air pollution test standards for new vehicles.

Air Pollution

The Aerospace Systems Division of the Bendix Corporation has built several (PDP-8/L) computer-based pollution detection systems for the U.S. government. One of these systems is now being used by the National Air Pollution Control Administration of the U.S. Health Service.

The City of New York Department of Air Resources uses a PDP-8 to monitor air at different points over the city. The computer determines the sulfur dioxide and carbon monoxide content of the air, logs the readings, makes measurements and prints the results.

Noise & Water

A PDP-9 system is being readied for a large mid-western city to monitor the quality of water in sewers and rivers. It will help divert clean water to rivers and polluted waters to a treatment plant.

A PDP-8/I is helping the Boeing Company develop quieter engines for its giant 747 jetliners. In a concrete bunker at Boeing's Tulalip, Washington test site, performance data from a 747 turbofan engine is scanned and recorded by the computer system.

At Home

Digital's involvement in control of pollution is not limited to the product area. Fortunately, we are not in an industry which produces pollution. However, in 1967, when we installed our Plated-Through-Hole facility, where chemicals are used in the manufacture of circuit boards, we installed a large filtration system to prevent chemicals from entering the town sewage system.

DEC was recently commended by the Division of Water Pollution Control of the Massachusetts Water Resources Commission, for its pollution abatement activities. Controlling pollution is not an easy task. We have been aided by the firm of Camp, Dresser and McGee of Boston, one of the leading waste disposal consulting firms.

The company has considered installing a second PTH facility, possibly in Western Massachusetts. According to President Ken Olsen, "Good citizenship in the disposal of wastes will be a key factor in planning our second PTH facility."

PDP-8/I Shown In QE 2 Film

Now well into its second year, the DEC Film Library has added a fourth DEC-related film to its collection. The latest addition to the Film Library, which is operated as one of his projects by Steve Kallis of Public Relations, is *Tomorrow Today*. The new film describes the operation of the new luxury liner *Queen Elizabeth 2* and shows the ITT satellite navigation system that uses a PDP-8/I.

Other films in the library: *LINC WITH TOMORROW*, produced for educational television at the University of Wisconsin, shows a LINC-8 used for patient interviewing and blood serum analysis; *THE SMALL COMPUTER IN THE CHEMISTRY LABORATORY*, produced by Virginia Polytechnic Institute, describes what a small computer is and shows its uses in chemistry applications; and *GRAPHIC-2*, a Bell Labs film which shows a PDP-9 interactive display, programmed by Bell Labs. All of the films are available for borrowing. Reservations are required and ample time must be allowed.

Steve reports that he was recently presented with a film for screening. The film, which had been discovered in a cleanup drive in the DEC photo lab showed a PDP-1 apparently being used to assist in judging an international parachuting competition.



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DEC Team Helps Small Firms

Recently DEC announced its first entry into the data processing field, largely the domain of companies like IBM, UNIVAC, and the other large-computer giants.

Two new products have been announced by the Commercial Applications Group, headed by John Cohen: DIBOL, a new computer language for business data processing; and the AP-2 computer system, a computer-based accounting and management information system for distributors of office products.

"It was my belief," John said, "that small businesses need computers as much as big ones to handle jobs like billing, accounts payable and receivable, and inventory control, but the cost was prohibitive for small businessmen to have their own computer system designers and programmers. We have eliminated those problems. The new system includes hardware, programming and training. The customer can utilize his own office people to run the system.

Before the new AP-2 system was publicly announced, the first system was installed for its first customer, a Massachusetts office products dealer. "We showed him how we could supply a system that would cost him less than the one he had while doing more for him," John said.

"A lot of people have contributed to



Members of the Commercial Applications group include (left to right, standing): Bob Heyliger, computer operator; Richard Wojick, AP-2 industrial specialist; Randy Fisher, programmer; Len Slosek, junior programmer; Paul Zorfass, marketing special-

ist, and Don Boggs, marketing specialist. Seated, left to right: Martha Hill, department secretary; John Cohen, manager commercial applications; and Sue Merritt, systems analyst. Not in picture: Hank Maurer, systems analyst.

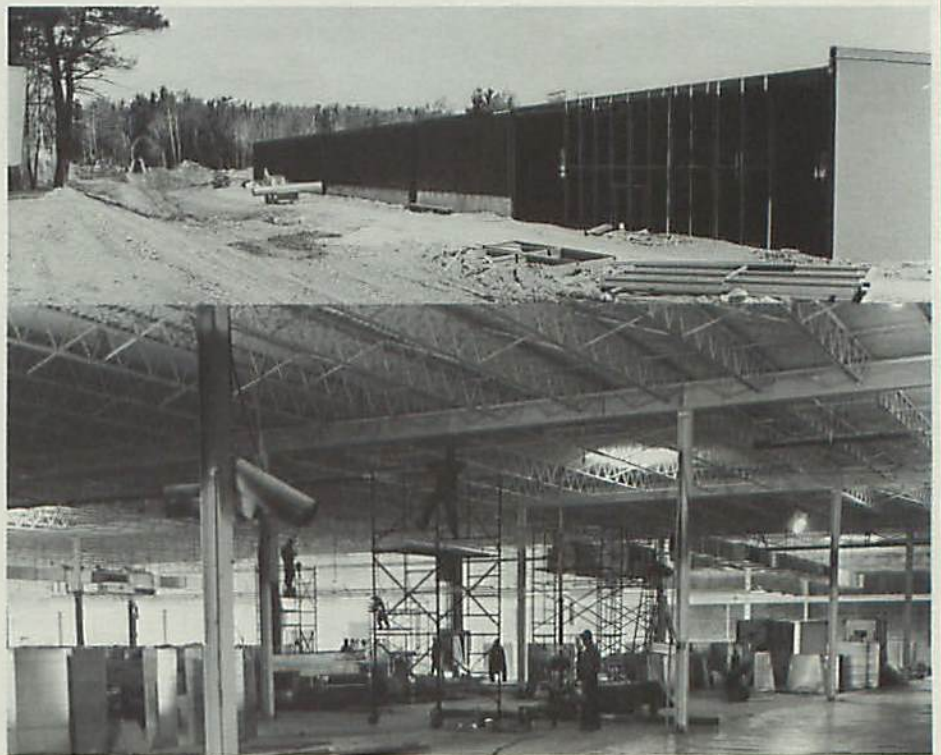
making this new system an exciting product," John said. "Paul Zorfass and Len Slosek installed the first system and helped train customer's personnel to operate it. Randy Fisher, Don Boggs and Susan Merritt wrote many of the programs for the AP-2 system. Henry Maurer wrote the DIBOL system monitor. Martha Hill, secretary to the Commercial

Applications Group, has also assisted in the marketing effort."

The future? "Our basic interest," John said, "is solving data processing problems of small to medium-sized businesses. The strength of the group is the kind of professional willingness to do whatever needs to be done to solve the small businessman's problems."

Westminster

Work In
Progress
During May



biomedicine

A revolution is underway – a determined effort on the part of hospitals, laboratories, pharmaceutical and industrial firms, and others in the medical community to relate computer technology to patient care. Together, these users make up DEC's Biomedical market. And the revolution – a biomedical revolution that will increasingly use computers directly in caring for the sick and handling the tons of information related to patient care – is making its presence felt.

Leading Digital's involvement in Biomedicine is **Bill Segal**, the manager of the Biomedical Products Department, which provides the leadership in developing and marketing products that can contribute to the coming revolution in patient care.

"Our first job," Bill comments, "was to rally the company behind a banner to support our products. In this case, the banner was the 'Biomedicine' logo." Many of the company's products now can draw strength from this banner through the support provided to them and to the sales force selling those products in the field.

"Next, we brought key people into the group who could contribute to our growth and the growth of Biomedical products," Bill notes. Today, the group consists of three product managers: **Ray Lindsay** (Clinical Lab-12), **Bill Kunkle** (LAB-K), and **John Silber** (RAD-8); and a number of marketing specialists, technical personnel and secretaries.

Product development and support needs highly motivated marketing people. In the case of Biomedicine, they are: **Aaron Janowski** (Clinical Lab-12 Marketing Manager), **Jerry Courtier** (Patient Care Systems & Product Development), **Charlie Merrill** (LAB-8 Biomedical Marketing) and **Peter Bressler** (Biomedical Applications).

Developing computer programs for Biomedical systems requires technical support and Software Development. Engineer **Tod Loebel** and programmers **Don Conroy** and **Russell Carr** provide this support.

Finally, secretarial support ties the group activities together and **Bev Stone**, **Helen Wood**, **Jeanie Post** and **Dodie Defreitas** somehow manage to keep everyone in the group going in their own direction, all at the same time.

The group works together with many internal service organizations to produce the tools our salesmen use to sell effectively against the competition. This material, much of which now bears the "Biomedicine" logo, takes the form of brochures, application notes, user handbooks, newsletters, fact sheets, flip charts and slide presentations, etc. All are necessary to show potential customers that Digital is not just a big company – but also one that is capable of developing and supporting products useful in their individual application areas.

At Biomedical trade shows, the group presents DEC's stable of products to users. Each trade show requires months of planning. Often, salesmen use a trade show as a vehicle to meet with prospective customers and demonstrate our systems to them.

From Digital's standpoint, the Biomedical products we provide for the patient care revolution, and the group which attempts to direct DEC's efforts are part of the same dynamic process – all of which is captured in the logo "BIOMEDICINE."

Equal Opportunity

In a recent memo to all managers and supervisors, President Ken Olsen reiterated the Company's commitment to Equal Employment Opportunity.

The Company's EEO policy is:

- To consider all applicants for employment without regard to their race, national origin, sex, age, religion or creed.
- To consider employees for advancement solely on their performance and abilities.

Employees who feel that the intent of the Company's non-discrimination policy is not being carried out, are urged to bring the matter to the attention of their supervisor and the Personnel Department.

2,000,000+
Handbooks



Elliot Hendrickson, Advertising Art Department, displays the first DEC handbook (left) and the most recent one.

Since 1960, when the first DEC handbook was produced, more than 2,000,000 have been circulated to customers, libraries, readers of trade publications, schools and colleges and DEC personnel.

"It's been our experience that the handbooks have been one of DEC's most successful promotional tools," said **Gabe d'Annunzio**, Marketing Communications Manager.

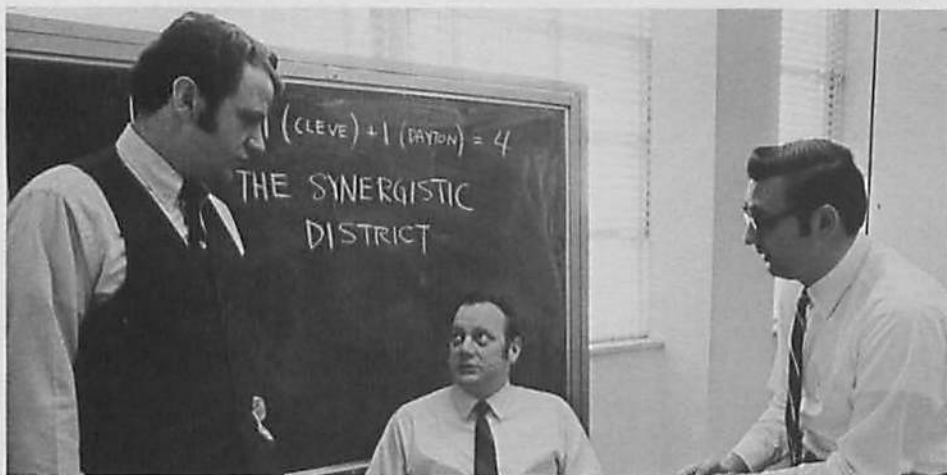
Currently the DEC handbook inventory includes the LOGIC, SMALL COMPUTER, CONTROL and PDP-11 handbooks, the LOGIC LAB and COMPUTERLAB workbooks, INTRODUCTION TO PROGRAMMING, INTRODUCTION TO DATA COMMUNICATIONS, the PDP-10 REFERENCE MANUAL, and the new PDP-10 TIMESHARING handbook.

The domestic popularity of the books, particularly the LOGIC Handbook, has led to multi-lingual editions. Recently the LOGIC Handbook was produced in French and German. Production of the handbooks has been the responsibility of the Advertising Department, with indispensable assistance from the product lines, the Advertising Art Department, the Photo Lab, and Technical Documentation.

As an indication of the demand for these handbooks, DEC shipped almost 14 tons of them to the Fall Joint Computer Conference for distribution over a three day period.

"Judging from the response up to now," Gabe said recently, "it appears that DEC is in the paperback book publishing business to stay."

Pittsburgh District: Think Big, Think PDP-10



Left to right: District Manager Gale Morgan, District Field Service Manager Joe

Monahan, and Branch Manager John Muczko.

"We are striving to make the Pittsburgh District, the PDP-10 capital of the world," states Pittsburgh District Manager Gale Morgan, "and I hope we can claim this title by the end of fiscal '71."

Gale spoke from DEC's district office at 412 Penn Center on busy William Penn Highway, about 20 minutes from the downtown section. This strategic location provides quick access to the Pennsylvania Turnpike, leading east and west.

Gale believes in a "synergistic approach" to sales and management. He believes that the whole (in this case, the District) should be more than equal to the sum of its parts (i.e., Pittsburgh, Dayton, Cleveland). While putting more than 100% of his own effort into his work, he expects his co-workers to do the same. Sales figures show that the approach is valid.

With Gale on the District staff are Joe Monahan, District Field Service Manager, and secretaries Pat Keller and Sandra Caese. In the near future they will be joined by several PDP-10 sales engineers and software specialists.



Receptionist Paula Dryden



Field Service Secretary Sandy Caese.



Bob Good, PDP-10 Software Specialist.

Nearby, at 400 Penn Center, is the Pittsburgh branch office, headed by John Muczko. The branch doubled in the past year, the number of installations it had made in its first five years of existence.

DEC installations in the branch include several for monitoring quality and/or process control in operations such as metal rolling mills and glass blowing factories. Universities in the branch, including Carnegie-Mellon University, the University of Pittsburgh, Penn State University, and the University of West Virginia, use DEC products in biomedical research, studies involving learning processes, and many other kinds of research.

A local hospital is studying brain waves in monkeys and blood transfusions between dogs, using a PDP-7, a PDP-9, and a PDP-15. A PDP-8/I system has been installed in a newly built stadium to control the scoreboard. By turning on or off thousands of 40W light bulbs, the operator can flash not only sentences and scores on the board, but also graphic displays. Working from a conventional Teletype, he can change the scores or displays in a matter of microseconds.



Pat Keller, secretary to Gale Morgan.

New Engineering Group Formed

When a customer orders a multi-processor system (more than one computer) which may, for instance, include a PDP-15 and a PDP-8/L; who is responsible? The PDP-15 product line or the PDP-8/L product line?

The answer is the recently formed Systems Engineering Group (S.E.G.) which is the focal point for all multi-processor systems. S.E.G. services include configuring, recommending, specifying and approving multi-processor systems. Customers are billed for the services.

The group is managed by Bob Hurley, assisted by Systems Applications engineer Al Peters, and Systems Coordinator Charles Green.