

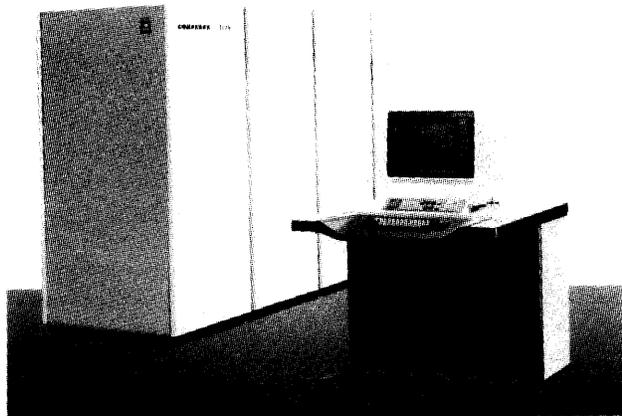
COMPAREX EDP Systems

MANAGEMENT SUMMARY

COMPAREX Informationssysteme GmbH began operations on January 1, 1987 and is a joint venture between Siemens and BASF, each of which owns half of the new Mannheim-based firm. The COMPAREX product range combines the plug-compatible mainframe businesses from each company and includes peripheral devices such as disk and magnetic tape drives and printers, and hardware and software support and service, as well as mainframes. Both Siemens and BASF consider their product ranges to be complementary; historically BASF derived its sales from medium systems, while Siemens amassed its sales from top-end systems. The new venture encompasses the entire PCM lines of both companies, except in two cases; because of its affinity with BASF's chemical line, its magnetic media business remains part of BASF AG, while Siemens' independent operating system, MSP, remains with Siemens AG.

COMPAREX EDP systems comprise the following systems: the 7/90-X Series is designed for large businesses and operates primarily under IBM's MVS/XA Operating System, but can also run under VM/HPO or MVS/370; the 7/7X, designed for growing organizations, permits stepped upgrades offering a fivefold increase; the 7/6X for small- to medium-sized companies features low-cost operation and modular upgrading for users with power requirements of between one and three MIPS; the 8/8X compact, based on Hitachi processors, fits between the 7/6X and the 7/9X.

The mainstay of COMPAREX is selling IBM plug-compatible mainframes sourced from Japan, and the stated purpose of the merger is to improve the competitive positions of both companies in the PCM marketplace. This goal has produced a company that is capitalized at DM 80m and expects to surpass DM 1,000m in sales during 1987, with more than half of that total originating outside West Germany. The realization of these sales projections would make COMPAREX the largest PCM supplier in Europe. ➤



The 7/75 offers main storage capacities ranging from 16MB to 64MB.

COMPAREX EDP Systems consist of a range of plug-compatible models, based upon Hitachi-manufactured processors.

MODELS: COMPAREX 7/6X Series (7/63, 7/65, 7/68, 7/69); COMPAREX 7/7X Series (7/71, 7/72, 7/73, 7/75, 7/78, 7/78MP); COMPAREX 7/90-X Series (7/90-1, 7/90-2, 7/90-3, 7/90-4, 7/90-6, 7/90-8); COMPAREX 8/8X Series (8/83, 8/85).

CONFIGURATIONS: 7/6X—4MB to 16MB main memory, from 8 to 12 channels; 7/7X—16 MB to 128MB main memory, from 24 to 32 channels; 7/90-X—128MB to 2048MB, 64 to 128 channels; 8/8X—32MB to 128MB, 24 channels.

COMPETITION: IBM 3090-150, IBM 3090/200; PCM vendors selling Hitachi-based systems such as NAS and Nixdorf.

PRICE: Contact vendor.

CHARACTERISTICS

VENDOR: COMPAREX Informationssysteme GmbH, Gottlieb-Daimler-Strasse 10, D-6800, Mannheim, West Germany. Telephone 0621-6044706.

COMPANY LOCATIONS: *Argentina:* BASF Argentina S.A., Casilla de Correo 4800, Correo Central, 1000 Buenos Aires; *Austria:* COMPAREX Informationssysteme Ges.mmbH, Postfach 10 00, A-1131, Vienna; 916; *Belgium:* COMPAREX Information Systems S.A., N.V., Avenue Hamoir-laan 14, B-1180 Brussels; *Brazil:* BASF Brasileira S.A., Caixa Postal 51 87, 01000 São Paulo - SP; *England:* COMPAREX Information Systems Ltd., 151 Wembley Park Drive, GB-Wembley, Middlesex HA9 8JG; *Finland:* O.Y. Mercantile A.B., Postfach 1 29, SF-00701, Helsinki; *France:* COMPAREX Information Systems S.A., 140, rue Jules Guesde, F-92303 Levallois; *Italy:* Siemens Data SpA, Servizio Documentazione e Informatzione, Viale Monza 347, I-20126, Milan; *Kuwait:* Kuwait Computer Company S.A.K.C., P.O. Box 5 61 40, 15252 Sharq al Aaqool; *The Netherlands:* COMPAREX Information Systems B.V., Postbus 10 19, NL-6801 MC Arnhem; *Norway:* Mainframe System Services, EDB Senteret, WDM, Thranesgate 77, N-0175 Oslo 1; *Saudi Arabia:* Saudi National Information Systems, P.O. Box 87 21, Riyadh 11492; *Spain:* COMPAREX Sistemas Informaticos S.A., Apartado 762, E-08080, Barcelona; *Sweden:* COMPAREX Information Systems AB, Vretenvägen 10, S-17154 Solna; *Switzerland:* COMPAREX Informationssysteme AG, Postfach, CH-8820 Wädenswil/Au.

MODELS: COMPAREX 7/6X Series (7/63, 7/65, 7/68, 7/69); COMPAREX 7/7X Series (7/71, 7/72, 7/73, 7/75, 7/78, 7/78MP); COMPAREX 7/90-X Series (7/90-1, 7/90-2, 7/90-3, 7/90-4, 7/90-6, 7/90-8); COMPAREX 8/8X Series (8/83, 8/85). ➤

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TABLE 1. COMPAREX 7/6X SERIES CHARACTERISTICS

MODEL	7/63	7/65	7/68	7/69
Main storage (MB)	4-16	4-16	4-16	8-16
MIPS	1.5	1.8	2.5*	2.8
MAXIMUM NUMBER OF CHANNELS	8	8	10	12
MAXIMUM AGGREGATE DATA RATE (MBs)	12	13	16	22

*With High-Speed Arithmetic (HSA)

The agreement by the two firms to merge occurred late in 1986 after approval by the West German Cartel Office. Prior to the joint venture, BASF's PCM business totaled approximately \$320m, reflecting a 25 percent growth rate, while Siemens' PCM sales added up to \$250m, representing a 15 percent growth rate. BASF and Siemens differed in the sourcing of their equipment: BASF bought mainly from Hitachi; Siemens purchased Fujitsu processors and OEM 3380 drives. In the area of sales, the paths of the two firms also diverged: BASF had notable export sales while Siemens sold mostly to its home market. On the surface, Siemens seems to have fared slightly better in the deal by bringing a smaller slice of business into the 50/50 joint venture and retaining its own 4381-class machine, the Siemens 7.500, under its own brand name.

In observing any alliance of this kind, it takes some time to sort out the respective contributions of the partners as they deal with the complex situations arising from a merger. These problems, however, are not so pronounced in the PCM business as in a manufacturing enterprise, and fewer jobs are likely to be affected. COMPAREX has staffed top management positions with personnel from BASF, and Siemens and has relocated employees from both companies in Mannheim.

The unique problem faced by COMPAREX stems from the nature of a PCM business, which inherently centers more around trading operations than design and development endeavors. COMPAREX must now interact with two great Japanese rivals, Hitachi and Fujitsu, both of whom have had run-ins with IBM—Hitachi over industrial espionage, and Fujitsu over its OSIV/F4 rewrite of MVS/XA.

To sidestep this problem, COMPAREX offers only IBM operating systems. It is worth noting that Hitachi can now offer Unix, sourced from Interactive Systems Corporation of Santa Monica, CA, and that Fujitsu is also moving in this direction.

After COMPAREX honors the contracts inherited from Siemens and BASF, industry analysts expect the new firm to offer either Hitachi or Fujitsu equipment in an equitable manner. Attaining this goal, however, will take some time: Siemens has made a commitment to take 150 to 200 of

CENTRAL PROCESSORS

COMPAREX 7/6X processor is designed primarily for small-to-medium users whose power requirements reach one and three MIPS. Offering modular upgrading, the 7/6X runs mostly under DOS/VSE in /370 or 4300 modes, or VM/SP with DOS guests. COMPAREX supplies micro-code assists for MVS/370 for users intending to migrate to MVS. The larger 7/6X processors can support up to 16MB and 12 channels. All block multiplexer channels feature data streaming as standard. An optional high-speed arithmetic function provides extra performance for users who have floating point-intensive workloads.

The technology and compact packaging techniques incorporated into the 7/6X Series enables the central processor, channels, and service processors to be fitted on a standard Euro-palette. The 7/6X processor is air-cooled for economy and reliability.

Table 1 offers additional details on the 7/6X processors.

COMPAREX 7/7X processor is designed for medium systems users who will experience significant growth and dependence on data processing. The COMPAREX 7/7X Series supports upgrading in steps that offer a fivefold increase in performance, while supporting current and previous operating systems. Within the series, there are up to 32 channels, all capable of simultaneous 3MB per second transfer, up to 128MB main storage, and two instruction processors, all of which can be supported under VM, VM/XA, MVS, or MVS/XA. The 7/7X processor is fully configured, requiring no additional peripherals or terminals for operation. All models are air-cooled.

Table 2 lists additional details about the 7/7X processor.

COMPAREX 7/90-X Processors: The COMPAREX 7/90 Series, compatible with IBM's Sierra range, is designed for users requiring high-performance processing and flexibility in upgrading. COMPAREX achieves the high system performance of the 7/90 Series via the most current semiconductor technology in the series' memory and logic functions, which incorporates packaging in a compact, three-dimensional arrangement on newly developed ceramic carriers. An innovative, three-stage storage hierarchy, which is transparent to software and peripherals, increases the effective speed of main storage and enables Expanded Storage to be implemented with the same performance as main storage. The 7/90 Series runs primarily under IBM's MVS/XA operating systems, but can also run under VM/HPO or MVS/370.

COMPAREX has enhanced the 7/90 Series, which competes against the IBM 3090, with the 7/90-3, which incorporates a dyadic CPU (two input/output processors).

TABLE 2. COMPAREX 7/7X SERIES CHARACTERISTICS

MODEL	7/71	7/72	7/73	7/75	7/78	7/78 MP
Main storage (MB)	16-64	16-64	16-64	16-64	16-64	32-128
MIPS	3.4	4.3	5.5	7.5	9.5	17.0
MAXIMUM NUMBER OF CHANNELS	24	24	24	24	24	32
MAXIMUM AGGREGATE DATA RATE (MBs)	56	56	56	56	60	80

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TABLE 3. COMPAREX 7/90-X SERIES CHARACTERISTICS

MODEL	7/90-1	7/90-2	7/90-3	7/90-4	7/90-6	7/90-8
MAIN STORAGE (MB)	128 to 1024	128 to 1024	128 to 1024	128 to 1024	256 to 2048	256 to 2048
WORKING STORAGE (KB)	512	1024	512	1024	2 x 1024	2 x 1024
BUFFER STORAGE (KB)	128	256	2 x 128	2 x 256	3 x 256	4 x 256
NUMBER OF PROCESSORS	1	1	2	2	3	4
INTERNAL PERFORMANCE RATE	1	1.4 to 1.7	1.7 to 1.9	2.5 to 3.1	3 to 4.5	4.2 to 5.6
MAXIMUM NUMBER OF CHANNELS	64	64	64	64	128	128
MAXIMUM AGGREGATE DATA RATE (MBs)	288	288	288	288	576	576

➤ Fujitsu's top-end M780s over a three-year period, which, according to industry sources, the firm might not be able to sell solely out of its own line. In practice, it appears COMPAREX would prefer to sell the Hitachi product. Eventually, the Japanese will be required to bid against each other at particular price performance points.

COMPETITIVE POSITION

COMPAREX has the notable advantage of starting with a new structure and an existing customer base, though it may initially be hampered by inheriting some of the partners' previous commitments. It is lean: only around 1,000 people are on payroll, over half of them in service and support. At the time of announcing the deal, COMPAREX stated that it had around 3,000 customers in 10 European countries, representing an installed base of 650 processors and 30,000 screens.

After West Germany, the new company's markets are: the U.K., France, and Italy. Marketing outside West Germany falls under the aegis of newly established subsidiaries of the joint company. In Italy, those responsibilities remain with Siemens Data, a subsidiary of Siemens and STET. In Argentina and Brazil, BASF subsidiaries will perform marketing tasks. The company also markets in South Africa, Kuwait, and Saudi Arabia and might possibly start marketing in the USA in 1988.

Competitors in the PCM market selling much of the same Hitachi product range are National Advanced Systems (NAS), Olivetti, and Nixdorf. Amdahl, too, is likely to be bidding for the same business.

ADVANTAGES AND RESTRICTIONS

The pros and cons of buying from PCMs, such as COMPAREX, are sufficiently well-rehearsed arguments among data processing managers not to require much further elaboration here. Briefly, PCM price/performance ratio tends to be more competitive than IBM's, while service and support are less comprehensive.

Doubtless, PCM vendors would refute the contention that their service and support are less comprehensive than IBM's. Firms competing in the mainframe market, however, are not undercapitalized or lacking in properly trained personnel. COMPAREX like NAS, Olivetti, and Nixdorf, is a stable international operation that maintains a support staff for wide geographic coverage. None of these firms can, of course, match IBM's might, but COMPAREX, as Europe's Number Two, may try harder.

➤ According to COMPAREX, the 7/90-3 offers a 10 percent higher performance than that of the IBM 3090/200.

Table 3 supplies additional details about the 7/90-X processors.

COMPAREX 8/8X Processors: From Hitachi, the new series 8/8X fits between the 7/6X and the 7/9X. The entry model, the 8/83, offers a performance of 6.5 MIPS, which is claimed to be 15 percent superior to that of the IBM 4381, Model 14. It's targeted to users of the 7/69 who want to migrate to XA. The 8/83 can be upgraded on site. The performance of the Model 8/85 corresponds to that of the IBM 3090-150 in achieving the power of 9.5 MIPS.

The 8/8X line draws from technologies that were previously used only on the 7/9X Series, especially in the use of 1MB chips. According to COMPAREX, the 8/85 requires five times less floor space than the IBM 3090, Model 150. The 8/85 offers an overall throughput of 3MB per second. An option enables the machine to attain an overall throughput of 6MB per second.

With a central memory of 32MB expandable to 128MB and a working memory of 256KB (Model 8/83) or 512KB (Model 8/85), the models of the 8/8X line are apparently entirely compatible with IBM's corresponding products. They run under VM and MVS in 370 or XA modes.

For details of the 8/8X, please refer to Table 4.

PERIPHERALS

All COMPAREX storage products are compatible with the IBM 3380.

COMPAREX 6085-S/6580/6581 Semiconductor Storage Subsystems: To avoid limitations incurred by seek time and rotational delay, the COMPAREX 6580 improves performance by the replacement of all mechanical components with semiconductor components. The elimination of mechanical delays and the incorporation of a high-speed controller produces a storage device of high speed for all operations is 0.3 milliseconds plus data transfer. When the device is attached to the COMPAREX 7/90 processor, this transfer occurs at a rate of 6MB per second.

A quad port facility can raise the total throughput to 12MB per second on normal systems and to 24MB per second on normal systems. COMPAREX has added an integrated hard-disk facility to the storage system to provide true non-volatility in a semiconductor storage device. According to COMPAREX, solid state storage, previously reserved for volatile applications such as paging, can be employed for the first time for critical operating system data or application data with the same assurance as conventional magnetic disks offered, but with improved performance.

Since the COMPAREX 6580 is a peripheral and not bundled into the processor, it offers a less expensive alternative to Expanded Storage or main storage upgrading. The 6580 can be shared, thus benefiting installations that have differ-

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TABLE 4. COMPAREX 8/8X SERIES CHARACTERISTICS

MODEL	8/83	8/85
Main memory (MB)	32 to 128	32 to 128
MIPS	6.5	9.5
MAXIMUM NUMBER OF CHANNELS	24	24
CHANNEL THROUGHPUT (MB)	3 to 6	3 to 6
WORKING MEMORY (MB)	256	512
CACHE MEMORY (KB)	32	64

Specific comparisons of the COMPAREX range with IBM's at price performance points, though, tilt toward the Mannheim company's favor. The new 8/8X range from COMPAREX has a clear advantage over competing IBM machines in ease of installation and energy efficiency: it is smaller and lighter and consumes less power. To illustrate those features, COMPAREX has released figures comparing the 8/85 with IBM's 3090-150: COMPAREX 8/85 consumes 8.4KVa, 75 percent less than the 3090-150; it occupies 1.5 square meters of floor space, one-fifth of the space required by the 3090-150; and it weighs 840 kg, one-sixth of the weight of the 3090-150. Since office rentals in European commercial centers are so high, any savings accrued from lower floor space requirements can significantly lessen the operating expenses of a data processing department.

Models in the high end of the 7/90X range also offer advantages over IBM 3090. COMPAREX claims that the 7/90-2, field-upgradable from the 7/90-1, is the world's most powerful PCM uniprocessor. The 7/90X range extends up to the four-processor 7/90-8, giving a performance span in this range of nearly 6:1. It must be noted, however, that NAS offers identical Hitachi processors under the designation AS/XL-50, -60, -70, -80, -90 and -100. NAS also sells the advanced solid-state memory device (designated 6580 by Comparex), which accommodates a data transfer rate of 6MB/sec per channel, so any technical lead that COMPAREX claims in processing power and storage subsystems is also enjoyed by its competitors.

In the final analysis, however, the most important consideration for customers rests upon how highly they value IBM's support. Many value it so highly that the extra expenditure incurred for IBM products does not deter them. For COMPAREX, therefore, the greatest challenge is overcoming potential customers' tendencies to gravitate toward the IBM label. Buyers in markets closer to Germany, however, might possibly resist the magnetism of IBM because of their confidence in COMPAREX's ability to fulfill its promises, especially if COMPAREX keeps prices down. □

ent workload profiles across multiple systems and work shifts.

COMPAREX offers models of the 6580 with capacities as low as 128MB for users with modest requirements. The design of the 6580 allows it to fit into an existing configuration without causing disruption, such as software changes in programs or JCL. The use of the 3380 data format eliminates the necessity for data conversion and does not create software support problems.

COMPAREX 6085-7/6480/6481 and COMPAREX 6085-7/6485/6486 Disk Subsystems have a capacity per unit of 2.5GB or 5.04GB with a maximum of 20.16GB per string. These units are designed with completely independent paths to each actuator and they feature hermetically sealed head/disk assembly units (HDAs) to eliminate contamination. The COMPAREX 6480/6481 products correspond with the IBM 3380D; the COMPAREX 6485/6486 corresponds to the IBM 3380E.

Although both products are completely compatible with the previously mentioned IBM devices, they do offer significant differences. COMPAREX has constructed the 648X devices with sealed head-disk assemblies to offset pollution. The 648X supplies electronic path redundancy, which not only offers the performance of dual paths, but also offers improvements in availability. In addition, a single rotary actuator per head-disk assembly sustains the inherent reliability of the rotary actuator and isolates the actuator, thus reducing the possibility of a failure.

The COMPAREX 6085-23 Buffered Control Unit buffers the most frequently accessed data in a relatively small solid state memory, called a cache. It is fully compatible with the IBM 3380-23 and supports the new Extended Count-Key-Data architecture. This compatibility ensures that standard RMF records can be used to manage optimum use of the user's investment. The 6085-23 improves performance for certain access patterns, such as sequential reading and processing of indices, tables, and catalogs. It is less suitable for applications requiring true random access or high-write content. For these applications, COMPAREX recommends the use of the 6580 high-speed semiconductor storage device.

The 6085-23 has a buffer capacity of up to 64MB and a data transfer rate of 3MB per second. It can be equipped with a 2-, 4-, or 8-channel switch. The Buffered Control Unit is fully supported by MVS/SP, MVS/XA, VM/SP, and VM/XA without software changes.

COMPAREX 6380 Cartridge Tape Subsystem, equipped with a 4MB buffer storage, has a tape speed of 79 ips, a data transfer rate of up to 6MB per second, and a recording density of 38,000 bpi. One cartridge offers a storage capacity of 600MB. Optional features include data compression and automatic cartridge changer.

The control unit hardware contains an integrated data compression feature that enables data to be compressed by up to 75 percent before writing to the tape, thereby accelerating the reading and writing time. The data compression feature increases the storage capacity of a 200MB cartridge to 600MB without CPU intervention, significantly reducing the number of required cartridge changes. An Automatic Cartridge Changer holds a maximum of 8 cartridges, changing them without operator intervention.

COMPAREX 6070/6378 Tape Subsystem with Compression has a tape speed of 200 ips and a data transfer rate of up to 3MB per second in compression mode. Without compression, the data transfer rate is 1.25MB per second at 6250 bpi and 320KB per second at 1600 bpi. No separate control unit is necessary, and each device is slightly wider than a 2400-

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► inch tape reel. According to COMPAREX, the 6378 user obtains performance equal to that of IBM 3480 cartridge drives, using existing media. Users can select data compression, which is transparent to both operating system software and application software, on a drive-by-drive basis.

COMPAREX 6060/636X Tape Subsystem has a speed of 125 or 80 ips. It has a capacity of 780KB per second or 500KB per second at 6250 bpi and 200KB per second or 128KB per second at 1600 bpi.

COMPAREX 6890 Laser Printer can be attached to COMPAREX, IBM, or compatible systems. It is supported by all operating systems without software modifications via the 3203-5 interface. It features a paper speed of 12.5 ips, 66 pages per minute in A4 portrait mode, 88 pages per minute in landscape mode, and 6,000 lpm (8 lpi). It offers a resolution of 240 by 240 and a wide range of character set sizes. The 6890 also features storage for large electronic forms, pictures, and fonts. Software controls forms flash and font changes. The 6890 can contain and use up to eight electronic forms flashes at one time, thus supporting intermixing within one job.

COMPAREX 6603/6606 Steel Band Line Printers have a printing speed of 2,000 or 1,250 lpm, respectively using a 48-character set print band. The printers produce OCR-quality printouts from one of 147 supported fonts. They have 170 standard fonts and 132 print positions. The COMPAREX 660X require only one square meter of space and have a noise level of 65db.

COMPAREX 6044-C/D, 6044-F/G, 6044-K/L Optical Channel Extenders can serve as alternatives to electrical connections. They extend a byte or block multiplexer channel by up to 5km. They support unit record and magnetic tape devices to 1.4MB per seconds. Interference-free optical

transmission can be obtained via easy to install optical fiber. The units support a data transfer rate of up to 1.4MB per second, thereby enabling high-speed peripherals to be attached.

SERVICE AND SUPPORT

HARDWARE: COMPAREX maintains extensive hardware training facilities for updating engineers in the latest developments in its product lines; an electronic mail system extending to every country in which COMPAREX is active keeps them up to date. A database system, incorporating all data relevant to field operations, also assists engineers. The BASIS problem analysis system searches out and provides corrections for hardware problems, frequently on the first attempt. COMPAREX also maintains a logistics system for parts inventory and control. The company offers hardware service around the clock, seven days a week, every week of the year.

SOFTWARE: COMPAREX software service can support users of all IBM operating systems in the areas of both system software and applications software. The software support personnel analyze errors, advise on corrections, and work with software suppliers on error correction. They also provide assistance when users migrate from one operating system to another. The software team, which is familiar with COMPAREX products and software from other suppliers, becomes involved with the implementation of software package, the execution of benchmark tests, and the performance of project management tasks.

PRICES

For information on pricing for the models in the COMPAREX EDP Systems, please contact local offices and distributors. ■