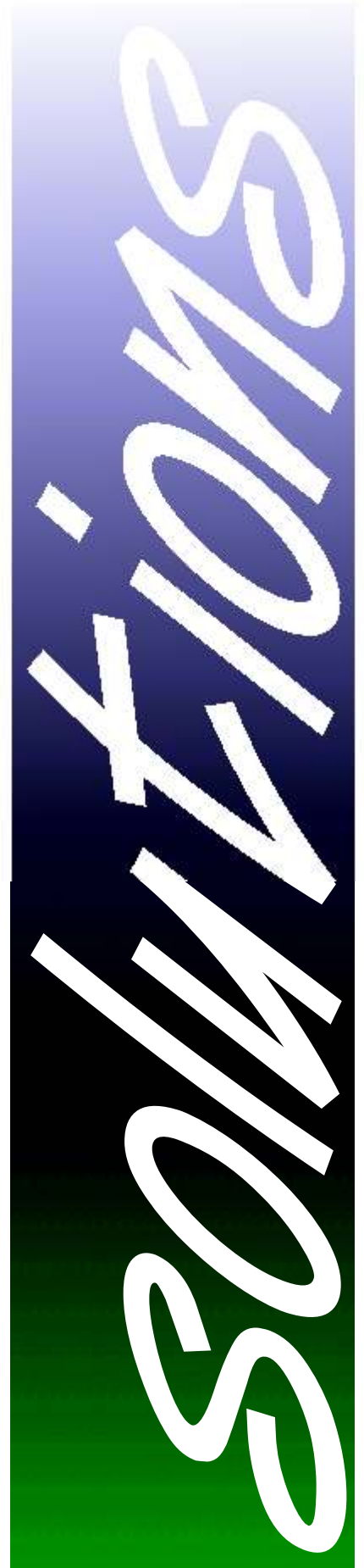


- Power Engineering
- Water Supply Management
- Waste Water Management
- Building Automation
- Chemical and Mineral Oil Industries
- Pharmaceutical Industries
- Steel Cord Production
- Wire Processing Industry
- River and Dike Management
- Tunnels



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## Universal Systems- for Specific Problems

Time and again rapid developments in microelectronics have put a new and revolutionary emphasis on all fields of technology and have brought about far-reaching economic and social changes in industrialized countries.

The value and technological level of machines and plants has been judged for some time by its degree of automation and integration.

The ever increasing complexity of industrial processes and the growing necessity of top product quality and productivity - the result of tough economic competition - as well as the rising demands on plant management and logging of operational data of industrial and municipal enterprises, buildings and public utility companies called for the

development of competitive automation systems.

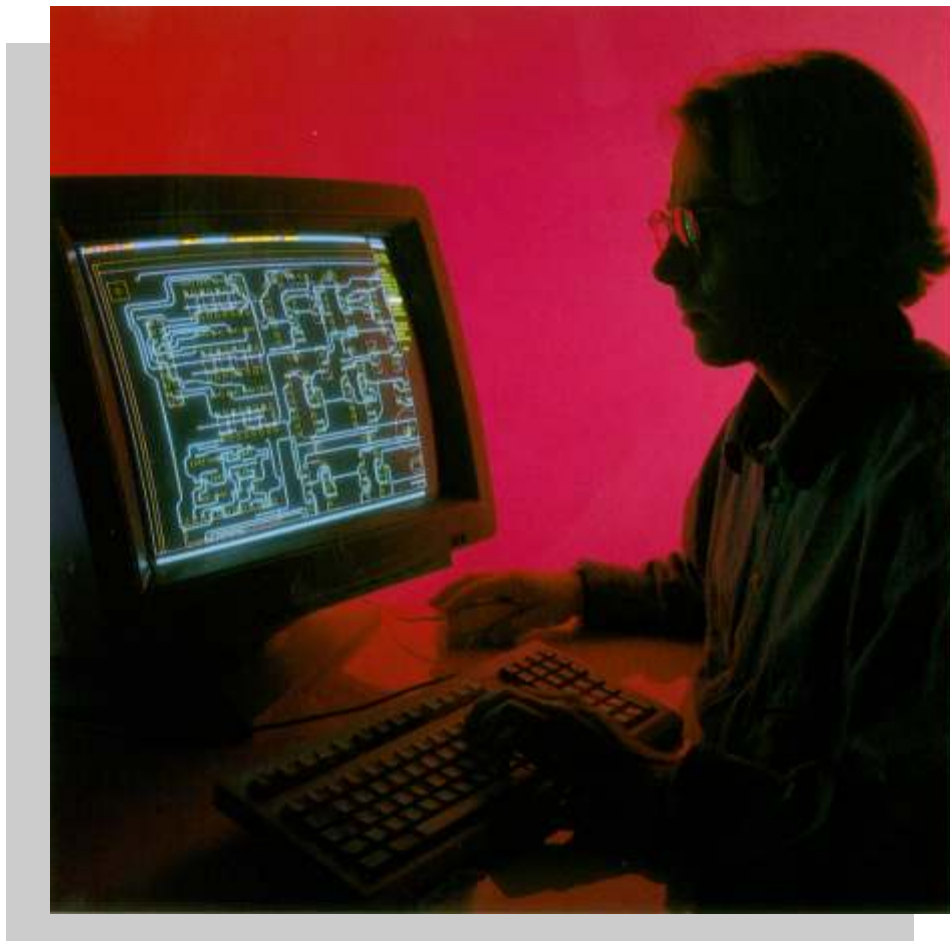
The vital safeguard of our environment against harmful substances and the shortage of resources as well as the related price increase of energy and raw materials form the economic basis for the application of highly sophisticated automation and integration systems.

It was as early as at the beginning of the 20th century that Adolf Steinklauber attended to the construction of power stations, power distribution plants and pumping stations and, in 1925, he founded with his wife, Anna Steinklauber a company active throughout the world in the field of production of pumps, water supply plants and sewage plants.

The growing importance of

control and monitoring systems gave the impetus to found in 1977 - in the early days of micro-computer technology - the "**COMPUTER PROCESS-AUTOMATION GmbH**", a division that allows a quick and flexible response to the requirements of the market. It pointed the way for a great number of developments in various fields of application and paved the way for new dimensions of technical and economic problem solutions by combining universal system components with industry-oriented and customer-oriented adaptations.

Owing to its leading role in the fields of technology, efficiency and quality **CPA** and its products and developments have acquired a good reputation in many countries.



# Power Engineering

Within an economic structure that bases on resources such as labor, capital, raw materials and energy, a cost-efficient, safe and environmentally friendly power generation has gained in importance.

The challenge CPA has to face is to pursue new ways for the improvement of operational safety, plant management, plant utilization and internal logging as an integrating solution for power generation.

CPA's task for a power station of the Deutsche Bundesbahn, the German Railways, for instance, was to provide for a control system with three networked computers that has to ensure telecontrol links to external stations and integrate cascade controls of suppliers (SPC) besides the classical requirements such as data acquisition, plant visualization and plant

management, data filing and logging.

Furthermore, it was a prerequisite to run the power station automatically with a load program that can be preset via a computer interface and to ensure plant optimization according to the given water supply and different flood situations.

**CPA** developments frequently venture also into areas for which technology did not provide any suitable problem solutions. Together with a well-known company of the electrical industry **CPA** developed a computer-assisted large generator monitoring and expert system that considerably improves plant management of major machine sets.

The idea behind was to log completely the total thermal, electric and vibrational behavior

of machine sets over long periods of time, to analyze these data by an expert system and to give the operating staff real-time tips and hints as well as forecasts on plant conditions and their chronological development.

This allows a higher degree of availability, specific audit periods and an exploitation of machine sets beyond the specification of the plant originally guaranteed by the machine manufacturer.

The resulting flood of data and the extreme demands on processing speed and operating safety demonstrate clearly the high performance and efficiency of **CPA** control system products.

Power and Performance - that's **CPA**





## Water Supply

The automation of water supply networks and pumping stations for drinking water as well as of irrigation systems for golf courses, etc. has been **CPA's** traditional field of activity ever since.

The application of control systems provided by **CPA** keeps the water supply system also fit for the future.

As a consequence, all **CPA** control systems are, with regard to hardware and software components, equipped with all features perfectly suited for water supply management.

The high degree of flexibility and modularity of **CPA's** control systems allow least-cost adaptations to the corresponding characteristics of a plant and offer cost-linear expandability.

Open system interfaces for the integration of existing SPC and telecontrol systems, a state-of-the-art operating concept, extensive visualization facilities, trend display and statistical functions are standard features.

Water is life - that's **CPA**

## Waste Water Management

Ecological damage through refuse, exhaust gasses and sewage water caused by a constant increase in population calls for additional facilities for waste and sewage water management. **CPA** is aware of its ecological responsibility and provides innovative systems to keep our environment clean.

It is one of **CPA's** main tasks to prepare

- waste water management and
- sewage treatment plants
- pumping stations
- sewage disposal stations

for the future by using leading control systems.

The main targets of **CPA** control systems in sewage works are

- energy optimization
- controlling and monitoring

- alarming
- standard logging according to ATV and OEWA, etc.

Therefore it is not really surprising to learn that the first micro-computer-based control system for sewage pumps and the first control unit for pumping stations with a flying frequency converter were developed by **CPA**.

**CPA** control systems for waste water management are characterized by a high degree of flexibility and modularity like those for water supply management, and they allow the elaboration of custom-made and low-cost solutions.

For our environment - that's **CPA**



# Building Control Engineering

Extent and complexity of technical facilities in buildings, safety requirements and the wish for a power saving service have become the main motives for the use of modern building automation systems with distributed intelligence. Besides visualization, logging and time-dependent and event-dependent switching the main optimization tasks of CPA building control systems are

- flexible switching on and off of thermal plants
- reduction of operating hours of aggregates by cyclic cutoff

- monitoring of electric maximum values including load shedding
- automatic set value adjustment of control circuits according to different parameters with limits for control units
- enthalpy-dependent controlling of mixed-air systems
- temperature control of individual rooms
- cascade control for boilers, etc.

Building automation systems by **CPA** offer the best possible degree of decentralization, optimum adaptation to project

features, quick and cost-effective installations, retrofitting options for existing buildings, easy and fast commissioning and high operating safety and availability of plants.

A modern and clear operating concept allows the trouble-free and safe operation of the plant without special knowledge even by a staff that is not exclusively in charge of control systems.

Convenient and Costsaving - that's **CPA**



# Chemical and Mineral Oil Industries

The chemical and mineral oil industries constitute a wide field of application for process automation systems.

The administration of fuels, however, has been restricted to the acquisition of level data and time-consuming calculations so far since neither any control systems nor any production planning systems nor traditional merchandise information systems made an automated tank

depot management for liquids and bulk material possible.

Therefore, **CPA** developed a solution which is tailored to suit the needs of the market and, in connection with intelligent function modules, ensures the survey, data logging and disposition of even wide spread tank depots.

A different tank geometry, sensor characteristics, the media's

changing specific gravity, requirement developments, minimum orders, economical transport quantities, free storage capacities at the times of delivery, etc. are taken into consideration, and so are comparative periods and individual or overall tank capacities per medium.

Just in time - that's **CPA**





# Pharmaceutical Industry

The high demands on process control systems in the pharmaceutical industry exceed by far those of other industrial fields when it comes to the exact keeping of process parameters, flexibility for production change-over and exact documentation.

For this trade **CPA** offers specially adapted system solutions that provide also for the integration of already existing control units of partial processes.

Process steps such as automation of autoclaves or preparation containers, etc. necessitate a precise plant management, monitoring and, in case of production program

changes, a simple and easy-to-use dispensing control.

These requirements are decisive for a constantly high quality of the products and a trouble-free and reliable production process.

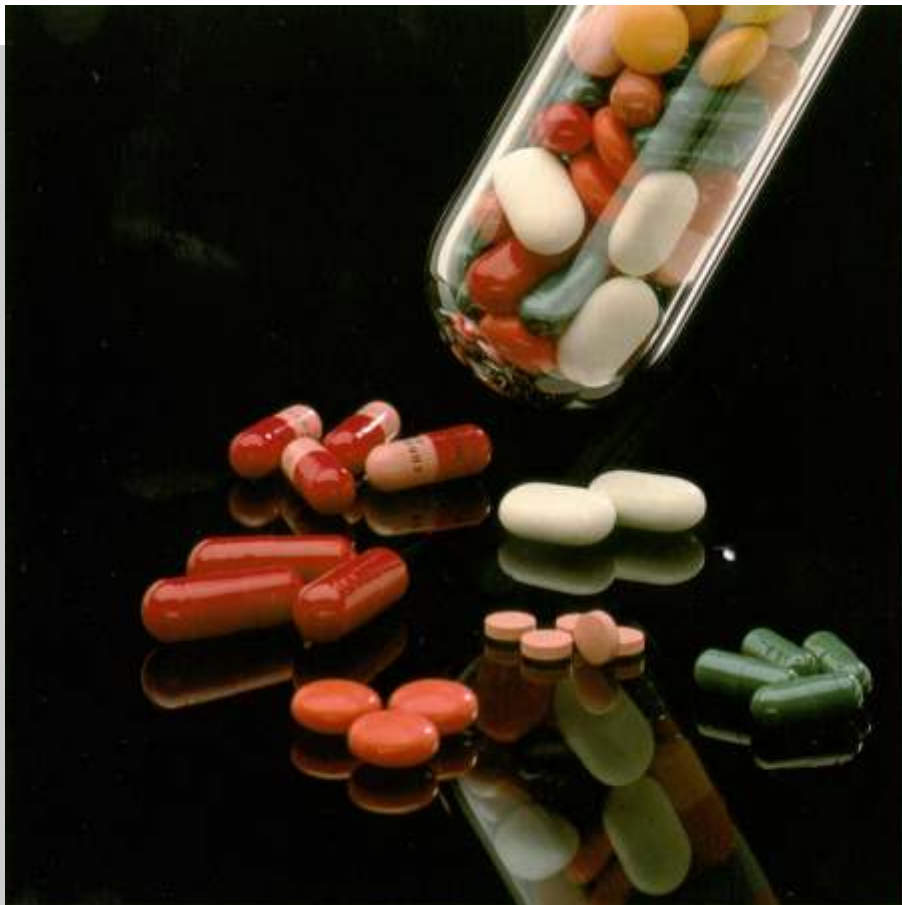
The idea behind such control systems is that the plant operators do not need to be experts in control systems and that they are not to be burdened with automation jobs.

Therefore, the production sequence is displayed clearly on the monitors of the control system and documented completely via output media such as printers or files.

For a production change-over (product changes, reaction process changes, etc.) the new dispensing defined by the chemical engineer or chemist can be translated directly into the automation program by the operating staff just by entering the corresponding data in a screen form without using any control-system-oriented symbols.

Thus the plant operators can concentrate entirely on their actual responsible job, i.e. the production of an absolutely faultless high-quality product.

Progress and Responsibility - that's **CPA**



# Steel Cord Production

Owing to high safety requirements, the production of steel cord for the manufacturing of car tires is one of the most demanding technical processes during wire production.

In addition to production data acquisition, statistical process checks and computer-assisted quality assurance **CPA** offers this industry a "Process for the Electroplating of Wires and Tapes" which is patented in many countries (European Patent No. 0032892).

In contrast to traditional plants with transformer/rectifier combi-

nations and electromagnetic influence on correcting variables, specially developed computer-controlled constant current chopper power supply units ensure a high electroplating quality that is necessary for the production of subsequently cold-worked steel wires. These meet also the high demands made on a homogenous layer structure and on an application quantity and thickness of layers that have to be kept exactly.

Apart from a new galvanic basin design that allows the separate control of the individual process

sequences despite common electrolyte processing and feeding, the corresponding processes and facilities for cleaning and diffusion were developed, as well. The adapted process control and logging system is tailored to suit every need and is capable of administrating as much as 4000 digital control modules and allows easy operation of the plant with less manpower.

Quality and safety - that's **CPA**





# Enameled Wire Production

Copper and aluminum wires coated with insulating lacquer are a basic material for a great number of technical products. Enameled wires are used in clocks, watches and chronometers, ignition coils, fittings, headphones and earphones, microphones, record players, pumps, loudspeakers, motors, washing machines, generators, refrigerators, transformers, etc. They are high-tech products with a diameter range of 5 mm to 10 micron (thinner than a woman's hair) and a coating with up to 14 layers and ensure thus a proper drive and connection.

In accordance with difficult manufacturing processes highest demands are put on machines and plants, process control and logging and quality assurance. Computers control and monitor the entire production procedure of a leading manufacturer with an output of more than 42 million kilometers per year.

Order administration, production planning and control, process management and statistical process checks, integration of all testing and checking facilities such as high-voltage error checks, tangent-delta checks,

etc. that are necessary to control quality and to issue test certificates, but also weighing, job accounting and stock management - the computer network installed by **CPA** ensures a trouble-free production sequence and the complete logging of four-shift work in connection with a powerful real-time communication and data base system.

Computer-integrated Manufacturing - that's **CPA**



# River and Dike Management

Depending on the tides, vast coastal areas lie below sea level at least for some time.

A system of channels, dikes, locks and pumping stations protects people, animals and arable land from water.

For centuries the operation and monitoring of such plants has been ensured by experienced and reliable lock keepers and masters of coastal pumping stations. Although stored program controls (SPC) have already been used for coastal pumping stations during the last few years, it was the introduction of a modern process control technology in the framework of a unique pilot project that made complex forecast and optimization algorithms possible, allowing thus for an energy-

saving fully automatic operation.

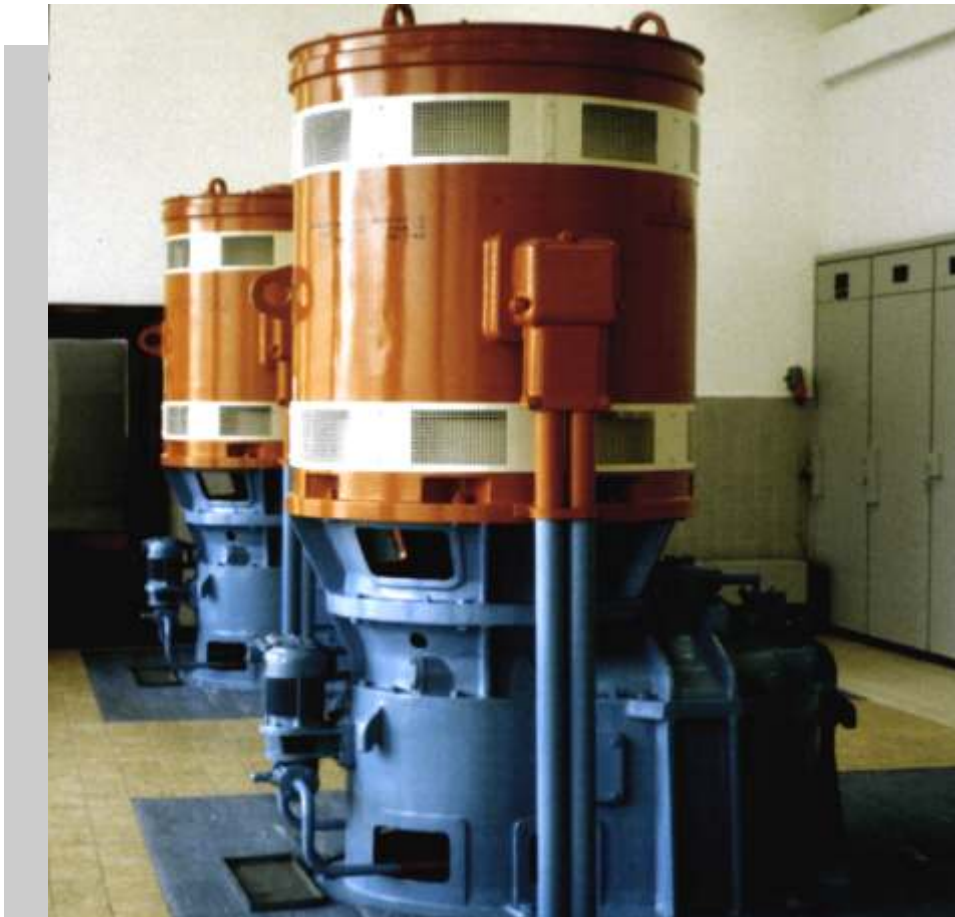
North of the Hanseatic city of Bremen, within settlements, rural areas and nature reserves lies a beautiful, some 50 km<sup>2</sup> large river, ditch and dike system without equal.

A **CPA** control system does not only keep the water levels constant to allow boating and ice-skating in this important recreational area, but ensures the safe functioning of rain reservoirs and sluices, as well. It automates, monitors and logs also the operation of vertical lift gates, rakes, tide gates, pumping stations and other technical devices and provides for telecontrol and monitoring facilities for the plant from a central control room while manpower is reduced to a minimum.

A tailor-made prognosis and optimization system calculates a forecast of dynamic developments of inland water levels and tide lines (tide-dependent water levels), deduces energy-saving measures and keeps all water levels within narrow tolerances by controlling vertical lift gates, barrages and pumping stations within a range of more than 20 km although these are considerably influenced by rain, wind and outside barrages.

Besides the considerable energy saving effect, this was an important contribution to safeguard our environment.

An intact environment - that's **CPA**.



# Tunnels

Good road and railway networks are the basis of a thriving, internationally linked economic area. Time and labor consuming jobs during the construction and upkeep of tunnels are passages underground through the mountains and cities. Besides digging, drilling and concreting jobs the major costs are allotted to the erection of electric systems including power supply and stand-by units but also ventilation systems, water supply systems, traffic control systems, fire alarm systems, monitoring systems and radio systems, public address systems, radio systems for traffic

news, pumping stations for ground water, spring water and sewage water, facilities for the protection of the environment, etc.

For instance, the total costs for one tunnel gallery of the 9,755 m long by-pass tunnel of the city of Graz, Austria, amounted to more than DM 311 m. 68 % of the costs for the tunnel's technical equipment, i.e. DM 42 m, were allotted to electric systems.

Owing to the high sums involved, the high costs arising for the upkeep and operation (in-

stalled power for the ventilation systems is 3030 kVA, for lighting 180 kVA and for general systems 400 kVA) and the high safety and ecological responsibility to be met, the highest demands are put on control system facilities and other automation and communication systems.

Within the last few years **CPA** has been supplier for several tunnel projects and has been able to acquire valuable know-how.

The Road to Future - that's **CPA**







Zertifiziert nach EN ISO 9001: 2000



## CPA Computer Process Automation GmbH

<b>Austria</b> 8055 Graz Lagergasse 322 Tel.: +43 / 316 / 4670-0 Fax: +43 / 316 / 4670-7	<b>PR. China</b> CPA Science & Technology Co., Ltd. 888 Changjiang North Road Bacheng Town, Kunshan Euroamerican Industrial Park	<b>Kunshan City, Jiangsu Province</b> Tel.: +86/512/57689566 Fax: +86/512/57689500
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