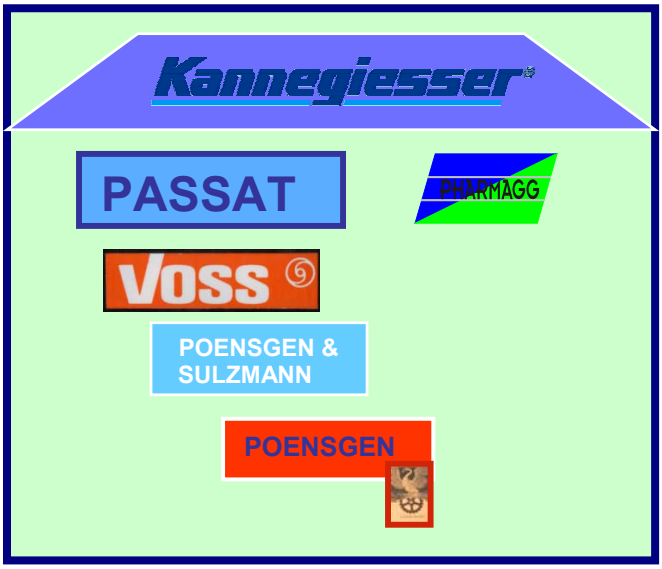
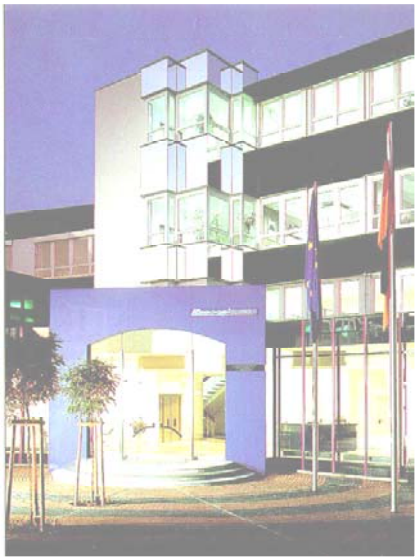
The Wetside Story

- Success has a History -

It was a long way from the wooden wash tub to the robot-welded Kannegiesser PowerTrans of our times.
For decades flatwork and garment equipment has been the Kannegiesser core business. But today, future-oriented companies must be capable of providing complete solutions to the complex and manifold tasks of their customers.

To comply with these new challenges of our industry, we decided in the late 90's the take-over of such renowned laundry machinery manufacturers as Passat and Pharmagg, with the aim to extend our competence also to the so-called "Wetside" field. Valuable tunnel washer knowhow and an experienced group of specialists in batch washer technology was taken on board.

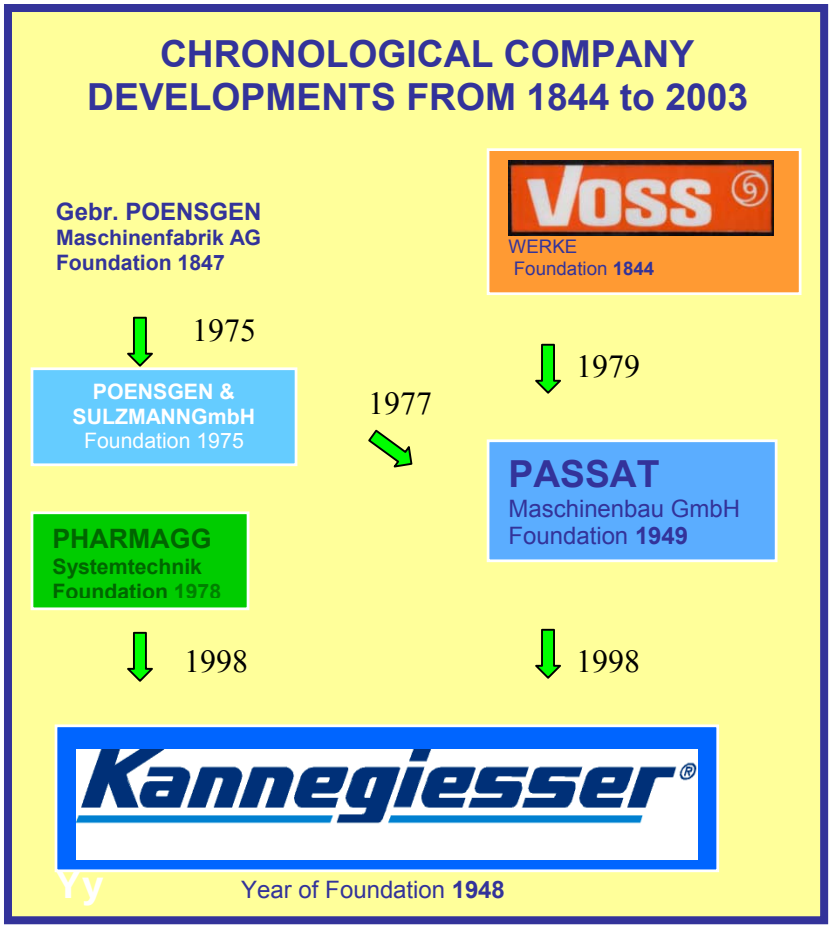




Kannegiesser Vlotho

Passat was founded in 1949 and is deemed as a pioneer of modern drying and water extracting technology. In the 70's Passat took over the successful tunnel washer manufacturers Poensgen and Voss. No other manufacturer in the world installed more batch washer systems than Passat. The history of both companies, Poensgen and Voss leads us far back to the very roots of the early developments in laundry machines around the middle of the 19th century. In the second half of the last century, both companies plaid an important role as major pioneers in the invention and development of tunnel washers. So, a direct line leads from those early days to the modern PowerTrans of our times.

Here comes the story how this all developed:



Gebr. Poensgen GmbH. – Düsseldorf

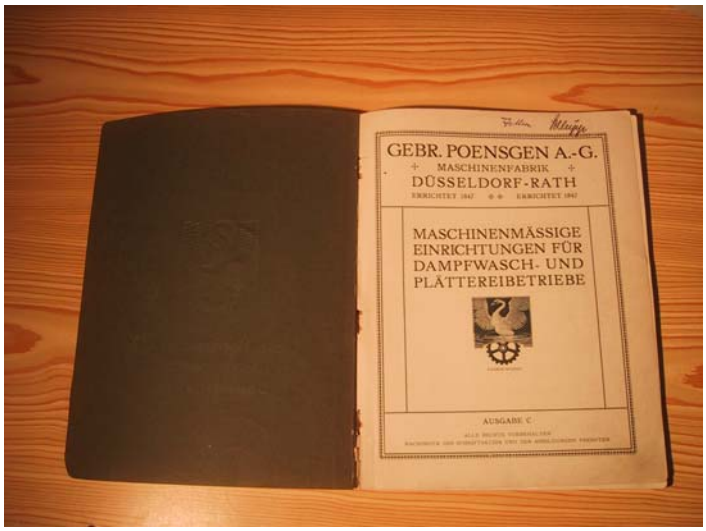
The roots of the Poensgen dynasty of industrial entrepreneurs begin with Alfred Poensgen and the production of iron and lead pipes at Gemünd/Eifel, followed by Gustav, Rudolf, Carl and Ernst Poensgen who profiled with steel mills in Gemünd and Düsseldorf.

1847

The company Gebr. Poensgen Aktiengesellschaft at Duesseldorf-Rath was founded in the year 1847. Even before 1900 Poensgen had already been building a great variety of washing equipment. Whereas in the beginning the washers were made of wood, machines with inner drums made of copper and with coal-firing were to follow. Only many years later, the washers were manufactured of stainless steel sheet.

Siegfried Poensgen
Pastell-Portrait 1915

1917



The Poensgen product catalog of the year 1917 depicts on 90 pages an incredibly vast array of machines covering over 180 different models and sizes.

wooden tub for rinsing of linen

The comprehensive product line comprised transmission-driven washers, centrifuges, drying cabinets, calanders and ironing presses of an immense variety.

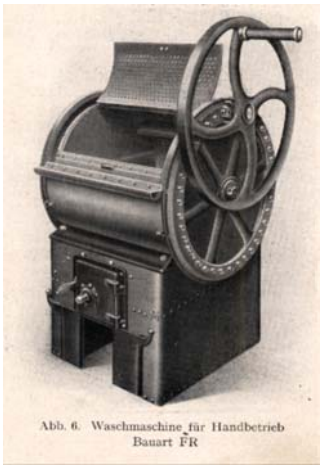
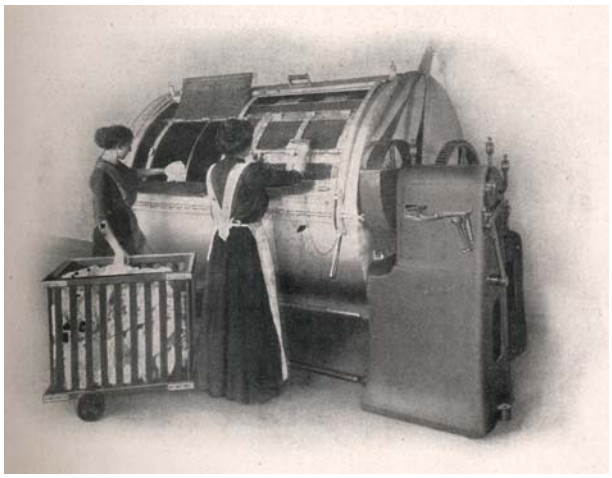
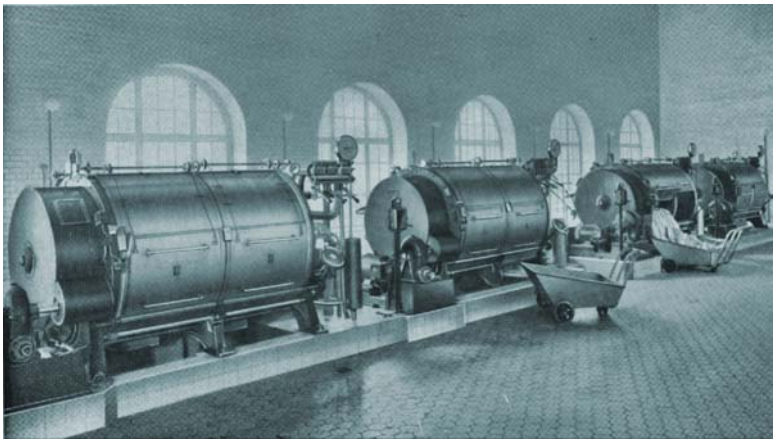


Abb. 6. Waschmaschine für Handbetrieb Bauart FR

manually operated washer



side-loader washer with built-in water scooping pockets to improve the wash and rinse efficiency



hospital laundry installation with large side-loader washers

Among those products, for example, washers with triangular-shaped inner cylinder to increase the mechanical wash action compared with ordinary models of round cylinders.

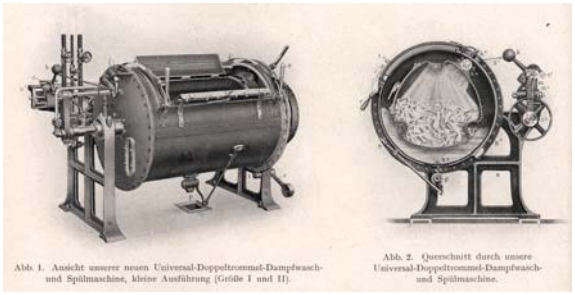
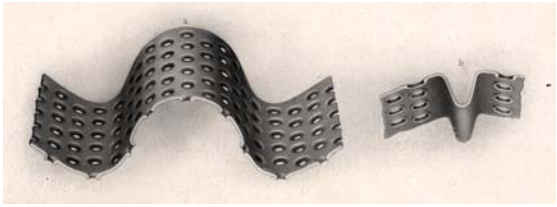


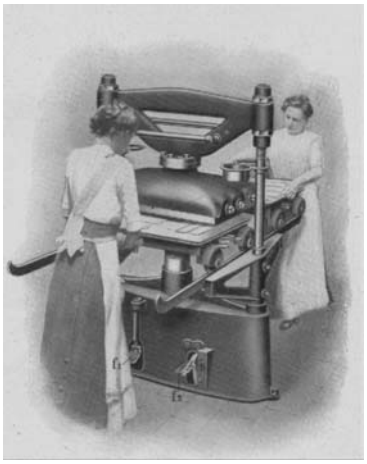
Abb. 1. Ansicht unserer neuen Universal-Doppeltrommel-Dampfwasch- und Spülmaschine, kleine Ausführung (Größe I und II).

Abb. 2. Querschnitt durch unsere Universal-Doppeltrommel-Dampfwasch- und Spülmaschine.



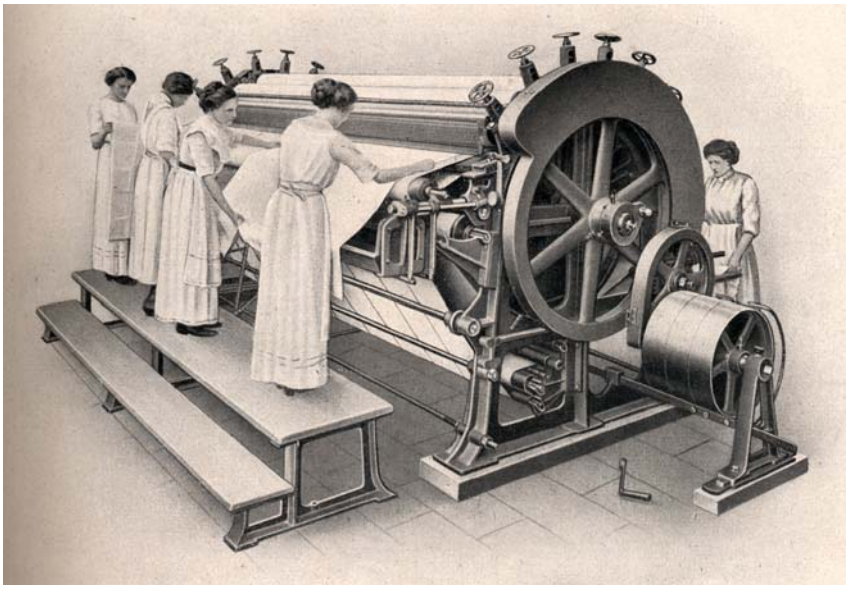
Even at that time the inner cylinders had already embossed perforations to reduce the chafing effect and prolong the life of the textiles.

Especially interesting for us today are the various types of ironing presses for articles of clothing typical in those times like stand-up collars, cuffs, “dickey” front-shirts and, of course, the indispensable starching facilities.



2-operator stand-up collars and cuff press

“dickey” front-shirt rotary press



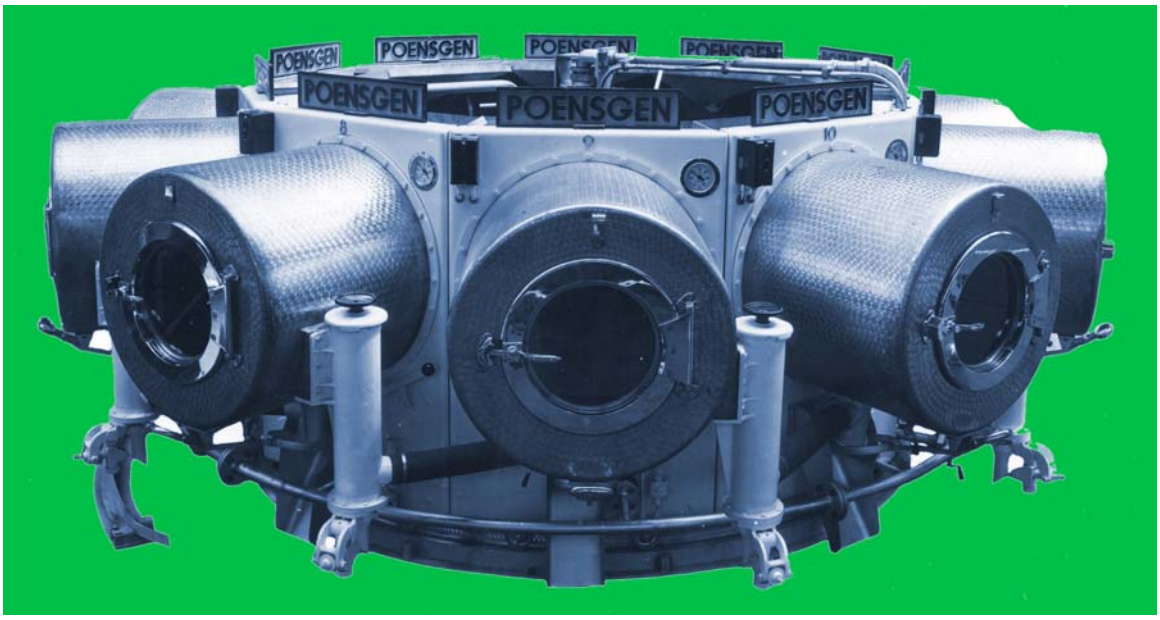
flatwork ironer with 1 m roll diameter and 3,5 m working width

During the World War II the production plant was widely destroyed. But shortly after the war, the factories were re-built and new developments came to light. Aside from laundry equipment, the company produced ironing presses for the garment industry, dish washing machines and de-oiling centrifuges.

1950

Long before topics like pollution of the environment, energy cost and sewage water criteria became crucial problems of our industrial society, Poensgen engineers laid particular emphasis on the design of water and energy saving washers, as the shortage of all kinds of resourses during the time after the war had been the mother of invention.

The years of dynamic reconstruction after the World War II soon led to the so-called German economical miracle the "Wirtschaftswunder" and as a consequence to full employment and subsequently to a severe shortage of manpower. This pressure on the labour market inspired Poensgen to look for adequate solutions. Under the leadership of chief designer Karl Schwamm, Poensgen developed the first carrousel washing system. From four to twelve individual Open-Pocket washers, interconnected by pipes and overflow valves, were installed on a circular rail. The carrousel rotated at programmable intervals in clockwise direction, whereas the water was flowing in counter-clockwise direction from the first machine through all units to the last one. During the cycle-controlled rotation the washers passed automatically through all steps of the wash formula like soaking, pre-wash, main wash, rinse and starching.

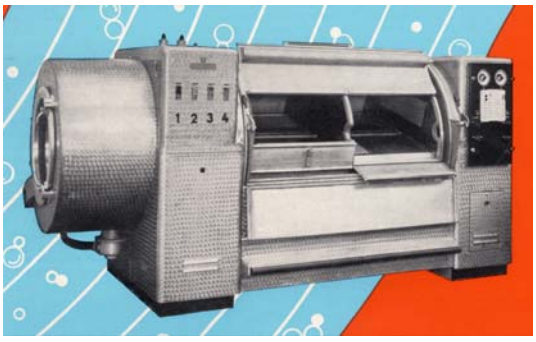


Poensgen counter-flow wash Carrousel type WSK with 10 open-pocket units

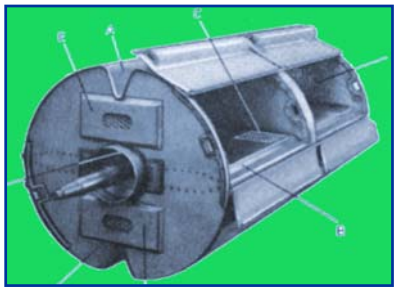
Although a 12 unit wash wheel reached an hourly output of 700 kg, only one operator was needed for loading and unloading of the carrousel. The fundamental breakthrough in laundry technology, however, was the ingenious counter-flow principle, invented by the chemical engineer Erich Sulzmann. The flow of linen and the flow of water were opposite to each other. The carrousel employing the counter-flow concept reduced the water consumption to around 15 litres per kg of linen. The economy in steam and wash chemicals was likewise astounding.
The carrousel was displayed for the first time at the exhibition "Alle sollen besser leben" (better life for everybody), which took place at Düsseldorf in the early 50's.

1955

The next step of development was the adaptation of the water-saving continuous bath-flow concept also for the use in single washer units. This continuous water flow concept was also developed by Erich Sulzmann and featured exactly controlled water intake and overflow quantities with already amazing savings of all wash media in those early days.
This so-called “Clear-flow” Pullman washers already achieved a water consumption of only 20-25 liters per kg of linen. For washing of heavily soiled items, these machines offered a special feature.
The water of the main wash unit, which handled white linen, was re-used in the adjacent



Poensgen “Clear-Flow” Pullman side-loader washer with lateral open-pocket unit for heavy soil handling with recovered water from the main wash section



double wall-inner cylinder of “Clear-Flow” washer for continuous water flow. Water exits at the shaft ends.

open-pocket section of the same machine, to process heavily soiled items or coloured work. The savings in water, energy and wash chemicals in this second washer section were significant thanks to this simple but efficient water re-use concept.

This so-called “Clear-Flow” Pullman washers already achieved a water consumption of only 20-25 liters per kg of linen. For washing of heavily soiled items, these machines offered a special feature. The water of the main wash unit, which handled white linen, was re-used in the adjacent open-pocket section of the same machine, to process heavily soiled items or coloured work. The savings in water, energy and wash chemicals in this second washer section were significant thanks to this simple but efficient water re-use concept.

1956

The water, energy and chemicals saving “clear-flow” concept was such a great success, so that in the early 60’s also a series of Open-Pocket washers was developed providing the same economical merits. The standard water consumption of conventional washers at that time was still around 35 to 40 liters per kg of linen.

Today, everybody in our industry is familiar with the word <counterflow> or continuous flow. But how was this system developed?

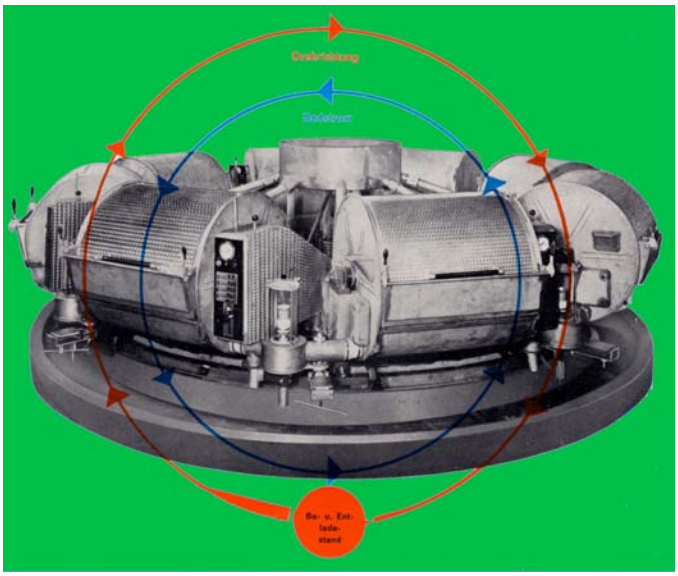
It is reported that one morning, when the chemical engineer Erich Sulzmann took a walk on the Rhine river, he saw two women washing linen down on the river bank. He notices that the soap water from the first woman drifted slowly to the second laundress sitting two meters downstream. Being a chemical engineer and a man known for his decided parsimony, he said to himself that the used soap water drifting downstream, must still hold wash-active

substances, which may be well used again by the second women. This was the natal hour of the counter-flow principle. Sulzmann offered the counter-flow patent to the companies Engelhard + Foerster in Bremen and to Gebr. Poensgen at Düsseldorf. The laundry equipment manufacturer Engelhard + Foerster capitalized on the patent by the design of their Counter-Flow Serial Wash System. Poensgen utilized the patent to develop the revolutionary Carrousel Wash Wheel.

Engelhardt + Foerster / Bremen
Counter-Flow Serial Washer

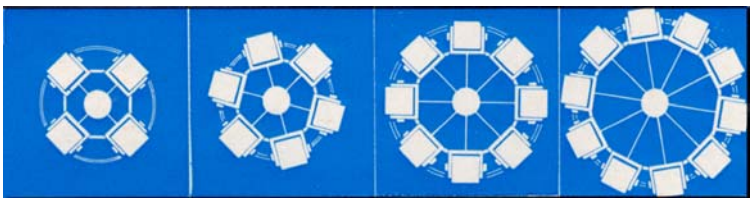
1957

Chemical engineer Erich Sulzmann - inventor of the counter-flow system

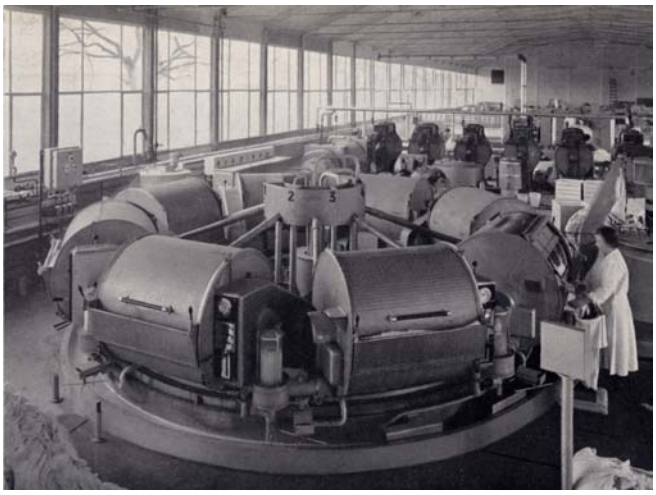


Poensgen Counter-Flow Pullman Carrousel System

The successful Poensgen Carrousel composed of Front-Loader washers was soon followed by a larger Carrousel concept consisting of Pullman Side-Loader washers. To cope with



increasing work capacities in the laundry plant, the Carrousel could be extended from an initial 4 washers carrousel step by step to maximum 10 washers of 90 kg loading capacity each. Such 90/10 carrousel had an hourly output of around 1.350 kg of linen.



Central Laundry at Vienna / Austria

The peak development in carrousel design featured a first-floor top-loaded, fully automatic Carrousel of barrier-wall type with automatically loaded and unloaded hydro-extractors. The linen slided automatically from the Pullman washers into bi-partite baskets, which were lifted by hoists into Centrifugal Extractors. These fully automatic high-performance Carrousels linked to the hydraulically operated Centrifugal Extractors were real master pieces in machinery building of that time. The numerous operations and machine functions had to be controlled by conventional control cabinets available in those days. Depending on the size of the Carrousel the water consump-tion per kg of linen was as low as 12 to 15 litres.

These high-performance counter-flow wash systems required also special detergents and wash chemicals for industrial application. Especially the excessive building up of foam created a lot of problems in the beginning. This carrousel here seems to be flying high up into the clouds. But it is only an exorbitant formation of foam since the deter-gent components were not yet suitable for the industrial use in high-capacity mechanical counter-flow wash systems.

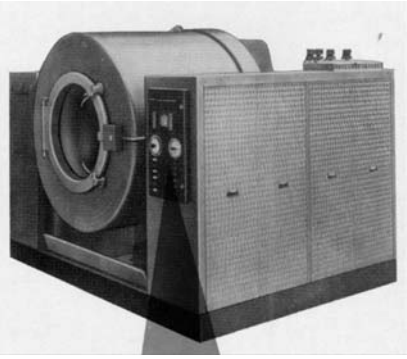
The Poensgen Counter-Flow Carrousels was a worldwide success with hundreds of installa-tions in nearly all industrialized countries in Western Europe, but also many laundries in South-Africa, Australia, New Zealand, South East Asia and Latin America appreciated the unique economic advantages and the high output of their Carrousels.

1960

Already in 1960 Poensgen manufactured barrier-wall washers for hygienic application in hospital laundries with provision of soiled and clean side. The awareness of cross-infection hazards in the laundry and the danger of hospital acquired infections caused by re-infected linen led to the construction of barrier-wall laundry plants. Even today, cross-infections in laundries processing hospital work are still ubiquitous problems. Today, we manufacture 16 types and sizes of modern barrier-wall washer extractors from 25 kg to 270 kg loading capacity.

1965

An interesting Poensgen design was the washer extractor called “Pilot” with a horizontal wash position, a vertical extract position and 950 rpm pinning speed, and automatic tilt-unloading. A very challenging construction with regard to the technical possibilities in the 1970.



Poensgen “Pilot” washer extractor horizontal washing position

“Pilot” washer extractor in vertical extraction position

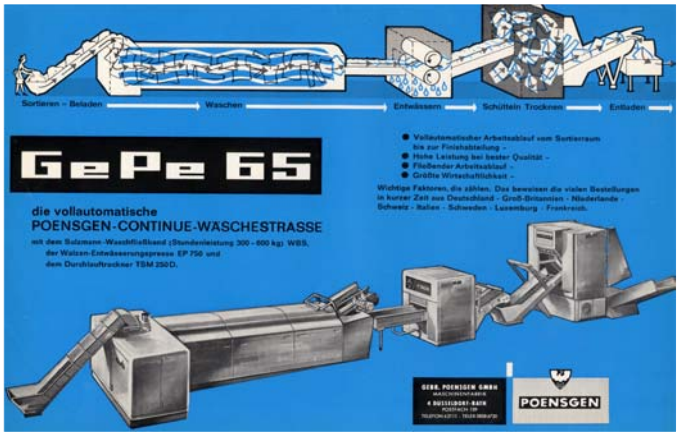
In consequence of the uninterrupted and ongoing economical impetus, manpower in West-Germany was not only hard to find but labour cost was rising to extreme heights. The industry was looking for ways out of this bottleneck and further automatisation was one of the most promising remedies.

1965

THE INVENTION OF THE FIRST TUNNEL WASHER

And once again it was Erich Sulzmann, whose ingenious design of the first tunnel washer brought a breakthrough in laundry equipment technology. Great inventions often are very simple. The Tunnel Washer or Flowline consisted of an open, tubular inner and outer drum between 4 to 7 metres in length. The inner cylinder was not compartmentalized. From the loading side to the unloading end the cylinder had an inclination of 3°, thus automatically providing a higher water level in the rinse section than in the wash zone. A transport conveyor fed the soiled items continuously into the Flowline. By the reversing cylinder movements and the permanent pushing of incoming linen, the goods automatically and continuously progressed through all the steps of the wash cycle from soaking through to the final rinse.

Erich Sulzmann



The freshly laundered linen was discharged and transferred to and through a Roller Press Extractor to exqueeze the excess water. The Roller Press Extractor was composed of a solid steel roller and a water-filled Boing air-craft tyre. The exqueezed water was recovered and fed back into the rinse section of the Flowline. From the Roller Press Extractor a linking transport conveyor delivered the linen into a Continuous Pass-Through Tumbler from where the conditioned linen dropped out onto a sorting table piece by piece more or less in the same sequence as the soiled linen had entered the Flowline system.

Here we see first Flowline Tunnel Washers installed in a laundry at Krefeld starting production in the year 1965.

The first Poensgen Flowline Washer at test in a laundry at Krefeld / Germany –

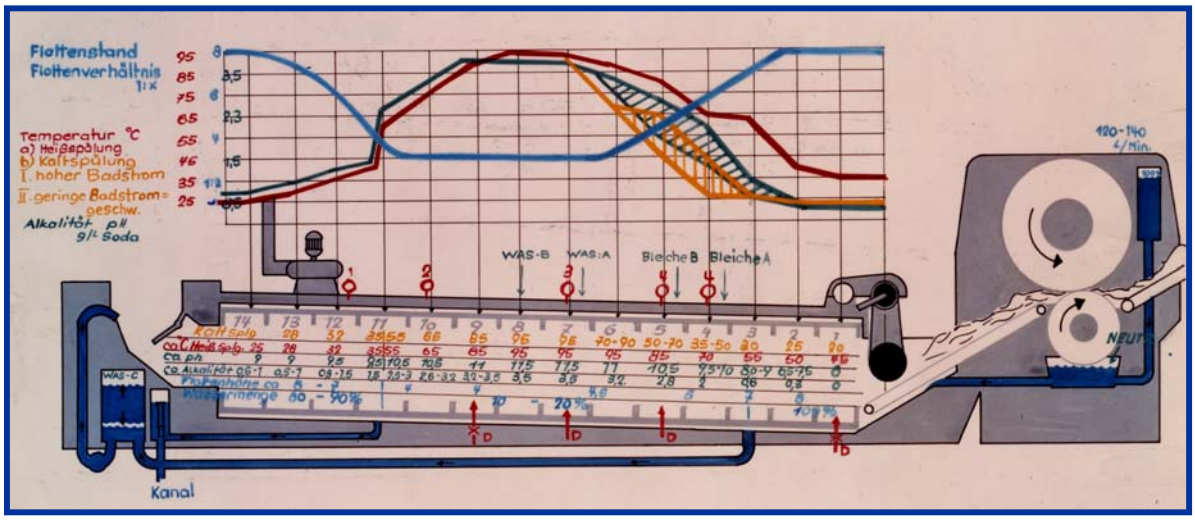
The Flowline Tunnel Washer was the first wash system, which transported the linen automatically and without any manpower from the soiled linen sorting area right into the finishing department, whilst the laundry was washed, extracted and conditioned. The invention of the Flowline brought dramatic changes to the laundry world and initiated the era of industrialization for all linen care services. The setting up of a Poensgen Flowline Tunnel Washer automatically implanted a continuous work- flow and efficient organization from sorting to finishing for each laundry. Unprecedented low consumption rates and a drastic reduction of labour cost were the other overwhelming virtues. Over the following years the Flowline Tunnel Washer concept gained an ever stronger foothold in laundries processing large linen quantities of uniform classifications.

one of the early Flowline Washers installed in a hospital laundry at Karlsruhe

As the inner cylinder of the continuous Flowline Tunnel Washer was undivided the pass-through time of the goods from the feeding side to the discharge end not too seldom differed. Often smaller pieces of linen moved faster through the Tunnel than large items since the cylinder was not divided into individual compart-ments. Also clogging of linen was experienced from time to time. Here we see Bodo Icken, chemical and laundry process engineer at Poensgen, standing on top of the discharge end of the Flowline, waiting impatiently for some wash-test pieces to come out.

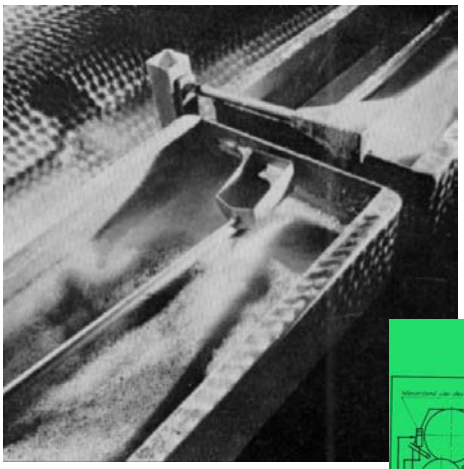
Chemical Engineer Bodo Icken waiting for some wash-test pieces to come out of the Tunnel

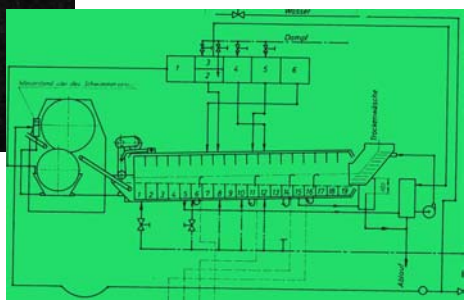
Bodo Icken gained a vast experience with running-in of hundreds of Carrousel and Flowline Tunnel installations in all parts of the world, where he was confronted with particular local wash philosophies, varying textile qualities and different types and degrees of soiling. He succeeded to considerably improve the wash results of the Flowline Tunnel Washer by walking away from the classical Sulzmann counter-flow priciple and adopting a more efficient water flow splitting technique, which allowed an individual and very precise control of water quantities, chemical concentrations and temperatures in the pre-wash, main wash and rinse zones of the Tunnel. Icken paved the way for all following philosophies of water flow diagrams.



Flowline diagram of the Icken water flow splitting counter flow technique

Another convincing proof of simple technical solutions with which Erich Sulzmann repeatedly surprised the laundry world, was his scooping system for dosing and feeding of wash chemicals into the Flowline. The system consisted of various tanks arranged alongside the Tunnel, holding the liquid wash chemicals. Movable arms with scooping cups dipped into the tanks, filled with the product and during the upward movement injected the detergents automatically, precisely and time controlled into the respective wash zones by gravity, without the need of pumps.





The triumphant advance of Carrousels and Flowlines made the counter-flow principle known all over the world as the ideal working concept to handle large quantities of linen at favoura- bly low process cost. Although the counter-flow patent over the years blessed Erich Sulzmann with prosperity and wealth, he impressed his closest colleagues and assistants sometimes when he spent the night in his “Volkswagen” car rather than spending the money on expen-sive hotel bills, when he travelled to a more distant customer’s place for a meeting the next morning. Maybe it is only a story but it pictures Sulzmann’s strong sense to economize. From 1965 to 1988 around 580 Poensgen Flowline Tunnels were installed.

The central laundry at Eskilstuna in Sweden installed 11 Flowline Tunnels side by side. With an output of around 7 to 8 t of linen per hour, this plant ranked among the largest central laundries at that time.

11 Tunnel Washers in the central laundry at Eskistuna in Sweden standing side by side.

Hourly output around 7 to 8 tons of linen.

1970

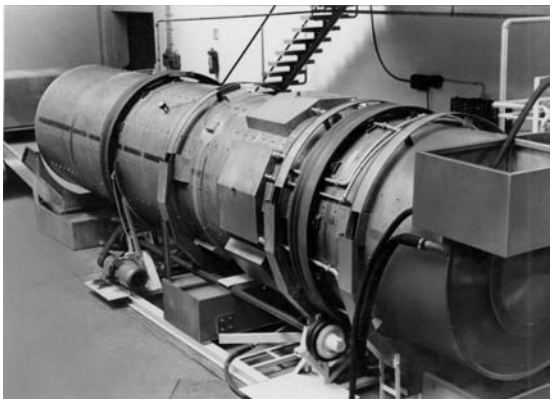
The Voss Archimedia Single Cylinder Batch Washer

In 1970 the market introduction of the Archimedia Batch Washer by the company Voss at Sarstedt was one of the major events in the history of tunnel washer developments. This single cylinder batch washer featured an Archimedean screw with separation of batches throughout all phases of the wash process. For the wash operation the cylinder performed a rocking action of 300 degree. With a complete 360 degree rotation all batches progressed one compartment forward. Wash chemicals were injected through a center shaft precisely dosed into the various wash zones.

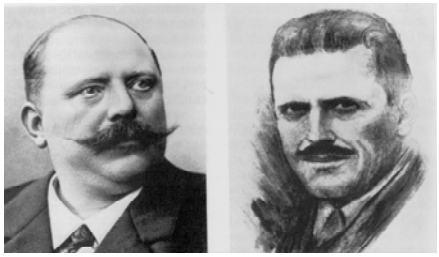
the prototype of the Voss Archimedia at Sarstedt

August Voss

1844



Like Poensgen, also the company Voss had a long tradition in manufacturing of laundry equipment. In the year 1844, the locksmith August Voss squeezed a little mechanical workshop in a corner of the humble wood working turnery of his father, by which he laid the foundation stone for the Voss company at Sarstedt, a little Royal Hanoverian village of 3200 inhabitants at that time. He started manufacturing domestic stoves and cooking equipment. In 1880 his two sons Fritz and Louis joint the factory, as the range was increased by the production of heavy iron ovens.



Fritz and Louis Voss

Sarstedt - a little Royal Hanoverian village around 1880

In 1905 the Voss company had already 700 workers on their payroll and produced over 70.000 stoves and ovens per year.

Voss Werke / Sarstedt 1905

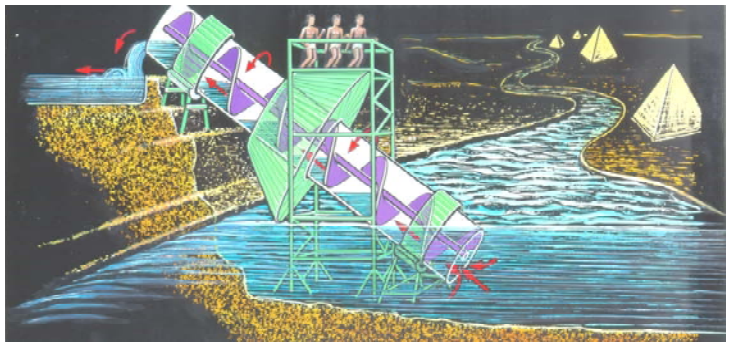
Voss hotel kitchen

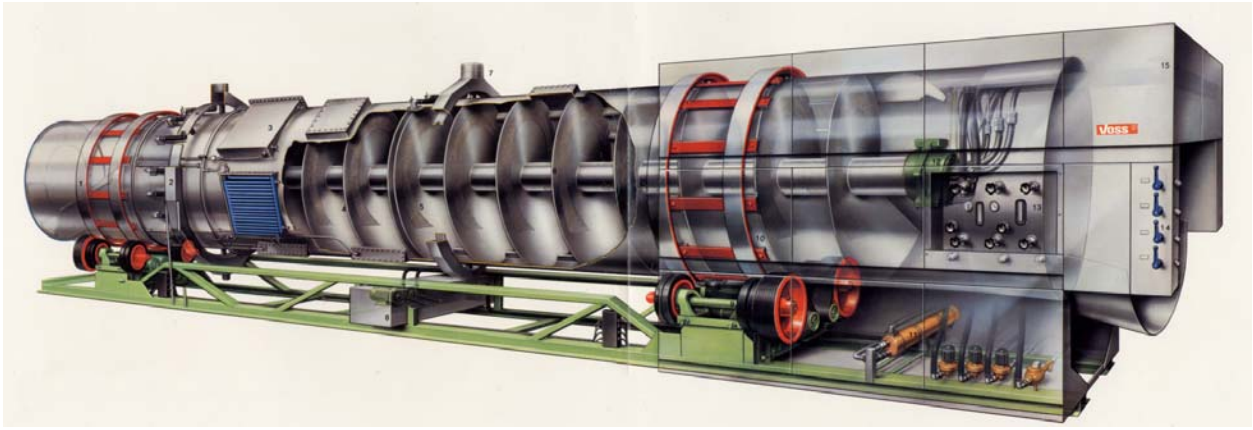
1929

It was in the year 1929 when the Voss Aktiengesellschaft started the production of washers, centrifuges, ironers and ironing presses.

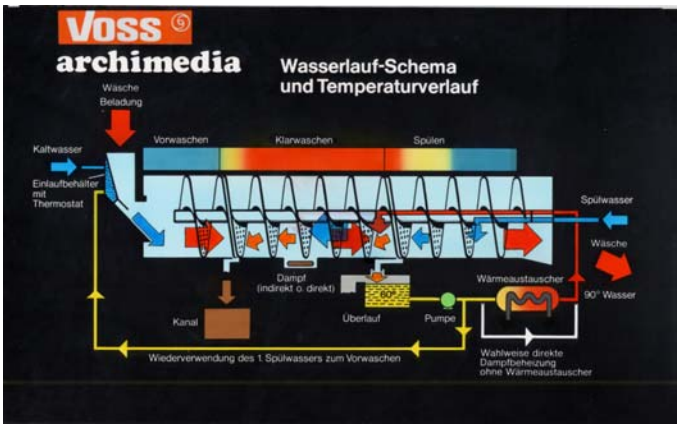
Voss Werke at Sarstedt

But back to the Archimedia. The idea for the construction is based on the revolving Archimedean spiral. The history tells us that the ingeni- ous Archimedes improved the irrigation of the arable lands by pumping up the Nile water by a revolving spiral tube, which he had invented for that purpose.





Voss Archimedia single cylinder batch washe



The Archimedia, unsurpassed in implicity and reliability, enjoyed a great worldwide success.
The life line of this outstanding design began in 1970 and spanned over more than three decades without major changes to the construction concept of the machine.
The Voss Archimedia represents doubtlessly one of the greatest contributions in the development of single drum tunnel washers.

In 2001, the last unit of around 1200 Archimedia Batch Washers left the assembly line in our factory.

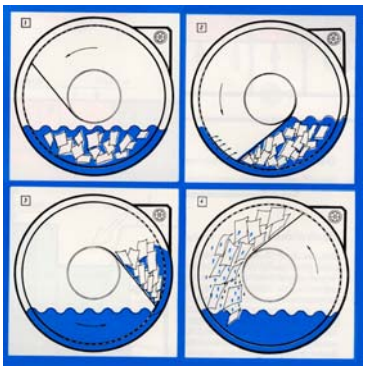
In Japan, the Archimedia is still produced by one of the leading Japanese laundry machinery manufacturers. They installed over 200 Archimedias in the Land of the Rising Sun.

rotary head for
injection of wash media

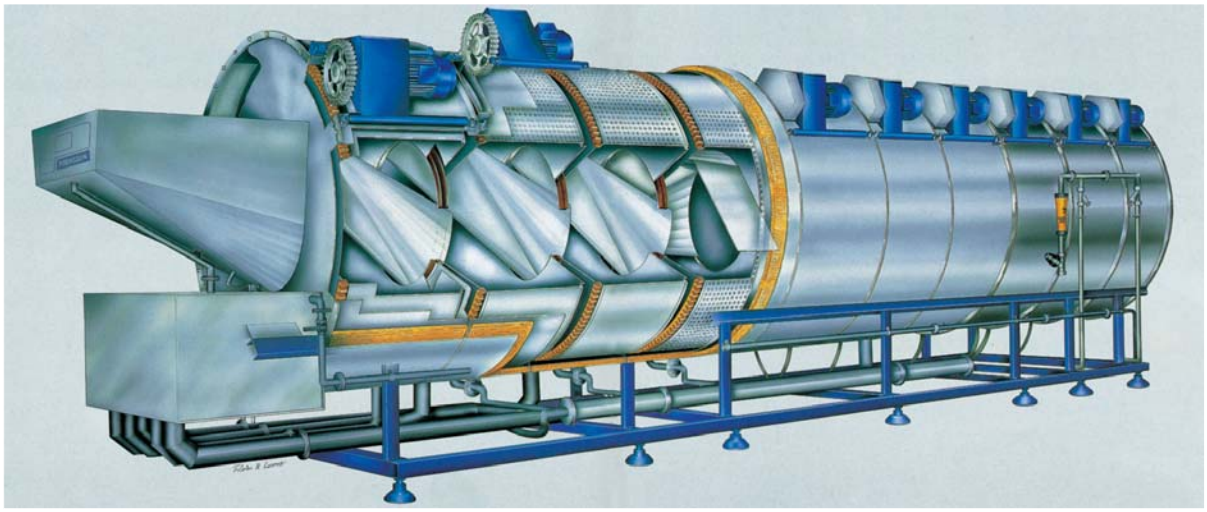
1975

The Poensgen Modular Batch Washer

It was then early 1975 when the company Poensgen + Sulzmann at Steinheim launched a modular type Batch Washer on the market, called PWZ. The characteristic design features were the complete 360 degree cylinder rotations for washing and a full cylinder rotation in the opposite direction for batch top-transfer. Water was scooped up and forced to penetrate through the batch of linen with each wash movement of the cylinder, which made the PWZ Batch Washer synonymous to excellent washing at lowest tensile strength loss results.

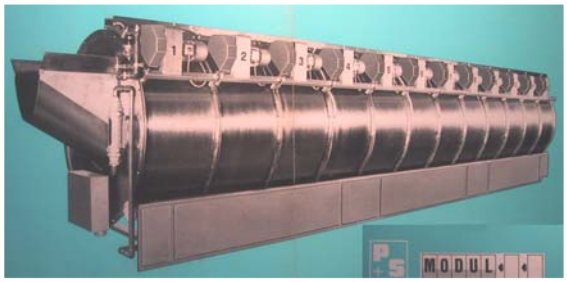


For batch transfer, the linen was lifted up to drain the free water before making a top transfer into the next compartment, carrying just a minimum of the bath forward. This pre-eminant concept supports a fast dilution of soiling in the wash zone and quick reduction of alcalinity in the rinse area.



Poensgen Modular Batch Washer PWZ

Over 960 PWZ Batch Washers are a testimony to the high performance and nearly unlimited flexibility of this modular double drum tunnel washer. In Japan around 300 machines are in operation.



There has been given a lot of thought about the optimum concept for a tunnel washer. Is the double drum principle the best solution, which is said to offer the greatest flexibility, or shall the single drum concept be favoured because of the unrivalled simplicity?
Is bottom transfer or top transfer better? The Passat Group had the right answers for both laundry philosophies, the PWZ double drum tunnel washer with top-transfer and the single cylinder Archimedia with bottom transfer.

1990

Ultratandem Batch Washer

The Poensgen PWZ double-drum batch washer was followed by a new development of Boewe-Passat in 1990, the Ultratandem Batch Washer. The Ultratandem, of which around 270 machines have been manufactured, was the aswer to the market demand for a tunnel system with high mechanical wash action and a fair price/performance relation.

Since the introduction of the Poensgen Flowline Washer WBS in 1965, to the Voss Archimedia, the Poensgen & Sulzmann PWZ and the Poewe-Passat Ultratandem, Passat had been manufacturing complementory 2-stage hydro-extraction presses, single-stage hydraulic presses, lift-shuttle conveyors, compound controls and pass-through drying tumblers. Passat established a name as one of the market-leading manufacturers of these industrial laundry machinery segments.

2000

PowerTrans – the new Batch Washer Generation

Also the laundry industry did not stay unaffected by the ongoing trend of globalization. Under the roof of the Kannegiesser Group, the legendary and pace-making tunnel washers Poensgen Flowline, Voss Archimedia, Poensgen & Sulzmann PWZ and Boewe-Passat Ultratandem with a total number of around 3.000 installations, find the consequent continuation in the development of the new batch washer generation PowerTrans and the market introduction in the year 2000. The Kannegiesser PowerTrans is the latest design in modern batch washer technology with the broad background of 38 years experience in tunnel washers manufacturing.

The great success of the Kannegiesser PowerTrans with over 140 installations in 22 countries, only 2 years since the introduction of the first machine, is the result of a professional design work, most advanced manufacturing techniques including robot welding, and last not least the knowhow and tradition of four decades in tunnel washer marketing.

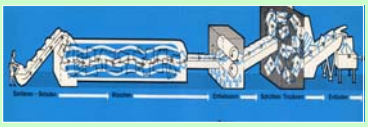
The PowerTrans is available as bottom transfer, or top transfer batch washer. But what is unique, the top transfer PowerTrans can operate with a rocking action or complete 360 degree cylinder rotations, depending on what type of linen has to be processed. Whether in FlexLine or FlowLine version, plus the striking DryTransfer concept, the PowerTrans excels in highest flexibility and unprecedented economy. Water consumption rates with hotel work of 5 litres, hospital goods 7 litres, workwear 8 litres and dust mats 3 litres have become a reality.

Thirty-eight years non-stop research and development in tunnel washer design and technology, an unparalleled laundry chronicle and story of success from the very roots to the high-tech product level of our times. We are proud of this tradition, which we understand as a challenge and motivation.

Success has a history. Each of these companies has written an important chapter in the research and development book of tunnel washers. The total number of 3000 tunnels would equal a production of 2.700.000 kg of linen per hour. We continue this tradition with the development of the PowerTrans. The Kannegiesser team of engineers is daily working on the refinement of the PowerTrans to make it a product of perfection.

38 YEARS NON-STOP DEVELOPMENT

from Invention of the First Tunnel Washer
to the PowerTrans of our Times



1965 - 1988
FLOWLINES **580 units**

1979 - 2001
ARCHIMEDIA **1200 units**

1975 - 1982
MODULAR PWZ **960 units**

1990 – 2003
ULTRATANDEM **270 units**

over 3000 Tunnels

The Kannegiesser portfolio now covers the whole scope of machinery from soiled linen sorting to delivery of the finished goods. We see our rôle today as a partner in laundry technology to develop entire system solutions for our customers.

Kannegiesser Works at Vlotho

The last decade has brought a wide range of basic changes to the laundry industry. Many of the leading industrial laundry companies in Europe have reached their limits concerning logistics, opportunities for rationalization measures and the adjustment of their technical facilities and work place layout to the new challenges of professional textile services. In many cases entirely new complete systems including modern premises are required to achieve optimized conditions at the production location. The realization of such projects often overtasks the management capacities even of large linen care groups.

In compliance with such new market requirements we have established the joint-venture company KanGo Laundry Constructor, which has the knowhow and professional capability of planning, constructing and equipping of complete turn-key laundries including plant start-up, complementary maintenance schedules and customized service contracts.

The Kannegiesser Group has developed from a manufacturer of laundry equipment to a profiled service provider for the linen care industry.