



GERMAN TECHNOLOGY
designed & developed in Germany



 *Kronzy* RAPIDDYE®

RAPIDDYE®
HT Piece Dyeing Machine



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KTM Krantz company history review

KRANTZ...this name represents over 135 years of industry history.

In the westernmost city of Germany, in Aachen, close to the borders of the Netherlands and Belgium, engineer Hermann Krantz founded the Maschinenfabrik H. Krantz for the production of textile machinery in 1882.

Since then, much more than 135 years of industry history are connected in Aachen/Germany with the name Krantz. After its foundation in 1882, Krantz company developed fast to a global player for the production of textile machinery for knits and woven fabrics, especially for the equipment for yarn dyeing, discontinuous piece dyeing and cross-wound bobbin dyeing.



worker welding



laser cutting machine

H. Krantz Textilmaschinen GmbH, Aachen, as an independently operating subsidiary of Babcock Textilmaschinen GmbH, has been a member of the Deutsche Babcock Group since 1992.

Till today, looking back on excellent reputation in the international textile finishing industry of manufacture of dyeing machines and with the assistance of a know-how of nearly 135 years, KTM KRANTZ company, as the following company for the wet finishing department of H. Krantz Textilmaschinen GmbH, Aachen, these days is still producing dyeing machines especially in the field of woven and knitted fabrics under strict quality standards and controls to ensure your success in the world market.





HT rope dyeing machine RAPIDDYE®

KRANTZ goes green...Strong words for a strong and successful performance!

In these times, the world of textile dyeing and finishing faces enormous environmental challenges. Tremendous increases in the cost of electricity, water and effluent treatment and also entitled pressure to conserve resources, force the textile dye houses for a rethink of efficiencies and the production steps.

The complete new developed and redesigned HT rope dyeing machine **RAPIDDYE®** is the excellent result of more than 4 decades of experience in short liquor ratio dyeing.

With its perfect running conditions, reduced process times and optimum use of inputs, the new **RAPIDDYE®** faces all benefits at once for an investment for any dye house, simultaneously ensuring minimum environmental impact and ongoing sustainability.



Krantz logo on machine



RAPIDDYE® machines in a dye house



observing window for loading

The new **RAPIDDYE®** with its increased productivity and enhanced reliability, offers complete new perspectives and possibilities for all progressive textile dyeing and finishing mills worldwide.

KRANTZ goes green...go with us and get be be inspired...



HT rope dyeing machine RAPIDDYE®



Kranz RAPIDDYE -100-2

working conditions

- ✓ max. working pressure 4bar overpressure
- ✓ water pressure 4bar overpressure
- ✓ compressed air 6-10bar overpressure
- ✓ max. operating temp. 140°C
- ✓ heating up from 20°C to 135°C in 25min
- ✓ cooling down from 130°C to 85°C in 20min
- ✓ fabric weight 50 - 450g/m²(rope & open-width)
- ✓ machine speed 20m/min - 600m/min, 20m/min - 450m/min for terry towel
- ✓ fabric loading capacity 10kg - 2.000kg
- ✓ liquor ratio 1:3.8 - 1:6; 1:8 - 1:10 for terry towel



HT rope dyeing machine RAPIDDYE®

basics

- ✓ nominal chamber capacities 100kg, 150kg, 200kg, 250 kg & 300kg
- ✓ special execution for terry towel with a nominal chamber capacity of 250kg & 300kg
- ✓ nominal chamber capacities of 10kg, 25kg & 50kg for sample dyeing machines
- ✓ stainless steel quality AISI 316L
- ✓ internal winch with frequency controlled-individual drive and maintenance platform
- ✓ teflon coated fabric chamber (3mm, Dupont) to prevent knotting and to minimize friction
- ✓ frequency-controlled pump motor
- ✓ security lock by means of pneumatic piston
- ✓ observing windows & lighting
- ✓ adjustable nozzle system **VARIOSOFT**®
- ✓ rope circulation control
- ✓ internal main body washing system
- ✓ automatic seam detector
- ✓ electro-pneumatic-operated valves
- ✓ modern touch-screen controller (Secom/Sedomat)
- ✓ electronic measurement of liquor level to control the water level inside the dye vessel
- ✓ electronic water meter
- ✓ manual filter
- ✓ easy-fabric-loading & unloading – without a lead cloth
- ✓ frequency-controlled unloading winch
- ✓ bath distribution system **BDS OCTOPUS**®

options

- + quick dosing system **RAPIDDOS**® – automatic dosing of dyes and chemicals
- + automatic self-cleaning filter **AUTOCLEAN SCF**®
- + automatic plaiter – improved fabric plaiting using enhanced plaiter movement
- + second heat exchanger and preparation tank
- + HT high temperature drain
- + quick drain
- + pH measurement system
- + smart bath control **SMABACON**®
- + fast fabric rinsing **TURBORINSE**®
- + direct drive with torque limiter for inner reel
- + additional horizontal circulation system
- + twin filter for terry towel which can be cleaned during production





machine body

All parts of the machine which are in direct contact with the liquor bath are made of acid-resistant AISI 316L stainless steel.

Depending on the capacity of the machine, the diameter of the main body is either 1800mm or 2360mm.

For machines up to 4 towers, the wall thickness of the main body is 4mm and the wall thickness of the side walls is 5mm; for machines starting from 4 towers the wall thickness of the main body is 6mm and the wall thickness of the side walls is 7mm.

For fast loading and unloading, each treatment chamber is fitted with a security lock with pneumatic piston, an observing window with stainless steel metal grid (glass resistant to high temperatures) and an external lighting.

Additionally the main body is also equipped with a internal frequency-controlled winch, the tower including adjustable nozzle, a seam detector and a rope circulation control.



fabric guiding ring



lighting



reel



observing window with security lock



pneumatic piston for security lock

The internal main body washing system is a very practical solution to clean the main body from inside and to save time.

For any case a man-hole entrance is existing in the side wall of the main body.





nozzle system

The jet flow, which strikes the fabric to 360°, can be adjusted via control panel by means of the **VARIOSOFT®** nozzle.

The mechanical movement inside the chamber allows the variation of the flow pressure in real time and allows it to adapt to the different types of fabric processed.



pneumatic for adjustment of the nozzle gaps



mechanic for adjustment of the nozzle gaps



seam detector



motor for reel



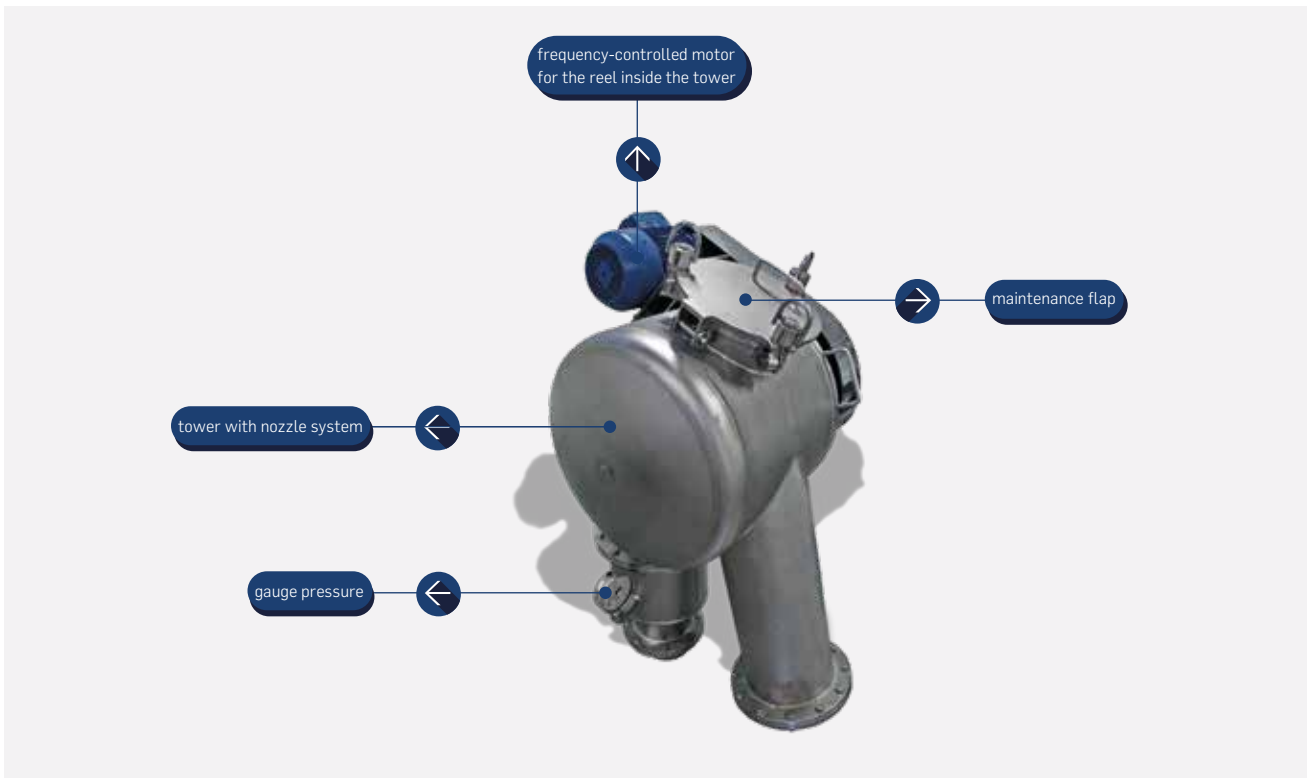
magnetic device to prevent the fabric from getting stuck

This procedure is set into the processing recipe and is automatically adjusted by means of a frequency-controlled A/C motor.

Available nozzle diameters, which can be delivered are 110mm, 140mm, 168mm and additionally a special designed version for terry towel fabrics with a diameter of 273 mm.



nozzle system

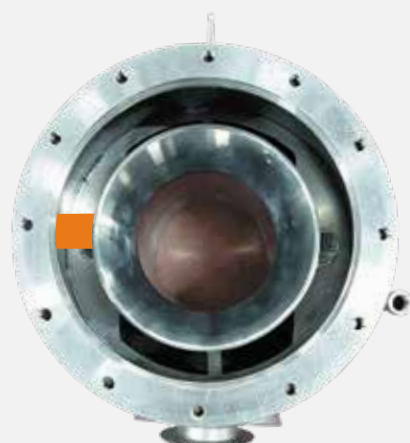


Kranz VARIOSOFT®

VARIOSOFT® nozzle minimum opened
(■ 3mm/3-12mm openable area)



VARIOSOFT® nozzle maximum opened
(■ 12mm/3-12mm openable area)



Kranz VARIOSOFT®



MACHINE DETAILS

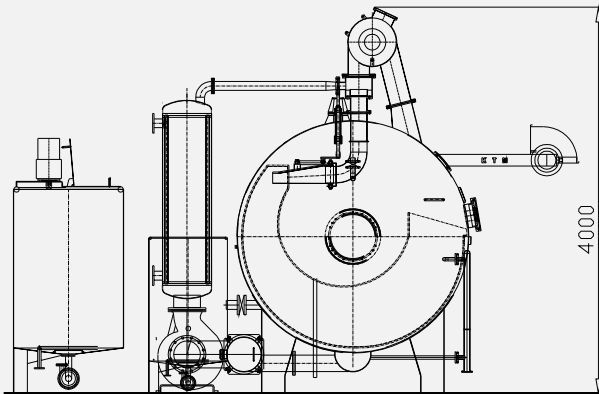
nozzle system

benefits

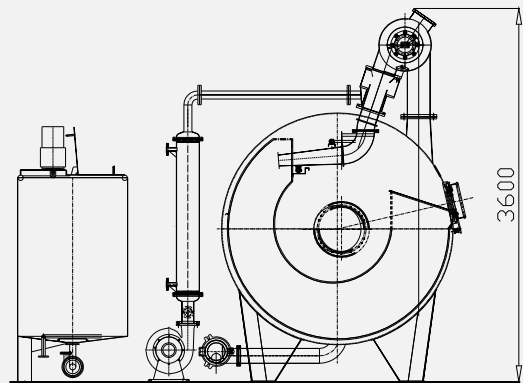
- ✔ user-friendly execution
- ✔ nozzle gap full automatically adjustable via control panel
- ✔ maintenance flap available
- ✔ available nozzle diameter 110mm, 140mm, 168mm
- ✔ for terry towel special diameter of 273mm
- ✔ pneumatic pistons by FESTO/Germany
- ✔ also fabrics with lycra in open-width form can be treated
- ✔ total control of pressure and bath delivery for all treatment chambers
- ✔ excellent penetration into the fibre core
- ✔ provides the possibility of non-abrasive and break-free dyeing with max. penetration
- ✔ reel motor frequency-controlled
- ✔ new reel design allows simple and quick replacement of the rubber stripes without disassembling the whole reel

Kanab VARIOSOFT™

tower execution



Kanab RAPIDDYE™ - tower execution for woven fabrics



Kanab RAPIDDYE™ - tower execution for knitted fabrics







treatment chamber

Each treatment chamber is equipped with a J-box. The side walls of the J-box are specially perforated to achieve an absolutely effective and homogenous jet flow of the liquor to each adjacent J-box.



perforated side wall of J-box

The bottom side of the J-box is teflon coated to ensure a minimum friction and to ensure a perfect fabric run without knotting.

The special design of the treatment chamber in combination with the integrated plaiter guarantee an excellent treatment of all kind of fabrics, either in rope or in open-width form.



perforated side wall in the treatment chamber



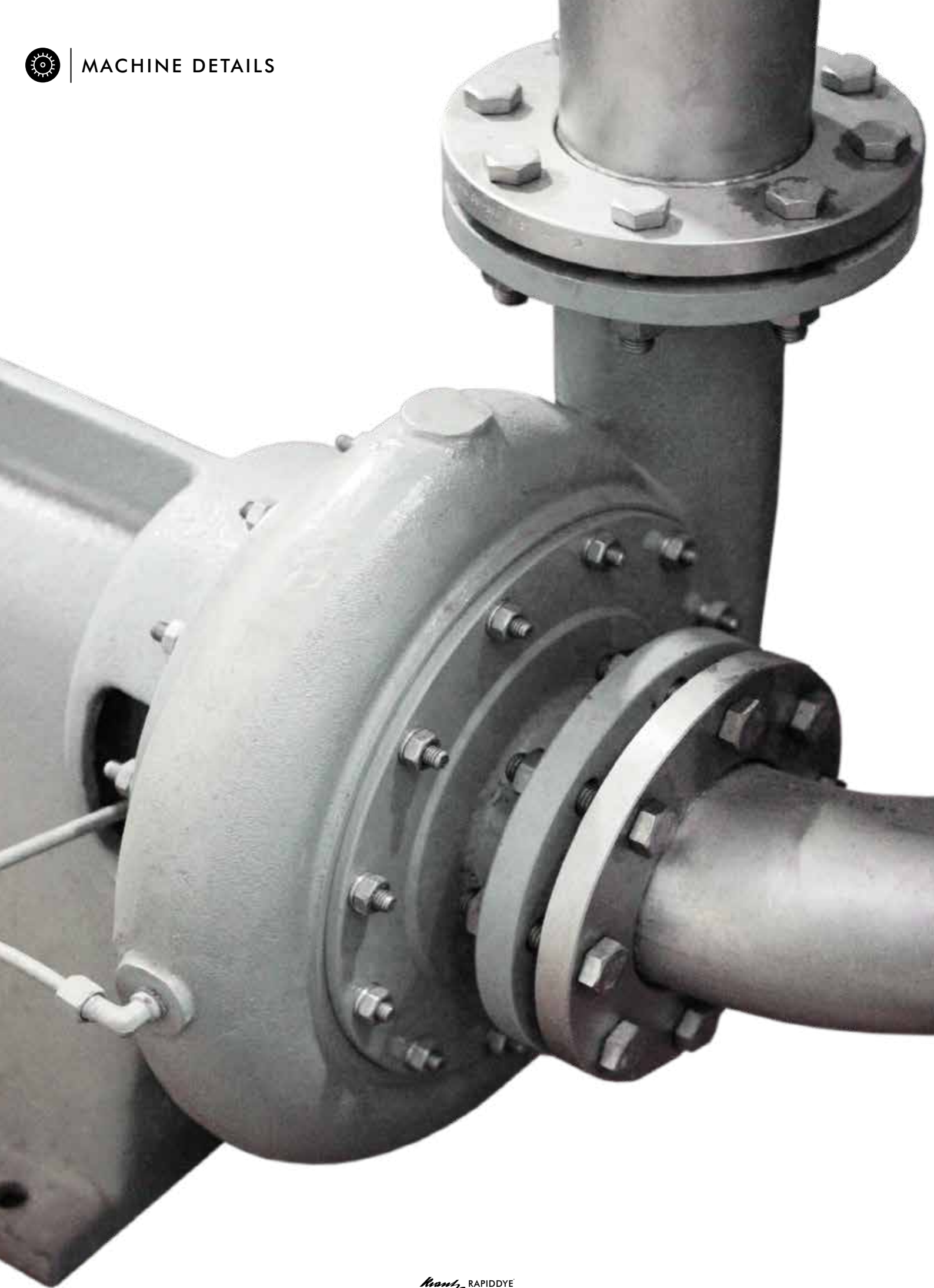
inside view of the main body



automatic plaiter in the treatment chamber



treatment chamber while washing process





circulation pump

All circulation pumps, as one of the main parts of the piece dyeing machine with a superior function for the dyeing effect, have always been produced in the own factory of Krantz, so even today.

The power of the used circulation pump is depending on the treated kind of fabric and fabric weight.

In this regard, the installed power of the circulation pump varies between 5.5 up to 75hp.



circulation pump 7.5hp for RAPIDDYE-150-1

This procedure is set into the processing recipe and is automatically adjusted by means of a frequency controlled A/C motor.



circulation pump 30hp for RAPIDDYE-100-7



circulation pump 45hp for RAPIDDYE-150-8



general view of circulation pump





automatic filter

Time is money...this applies especially to the textile finishing industry worldwide. In order to save time, Krantz company developed the newest generation of self-cleaning filter, the automatic filter **AUTOCLEAN SCF**[®], which enables precious time savings in comparison with manual filter cleaning processes.



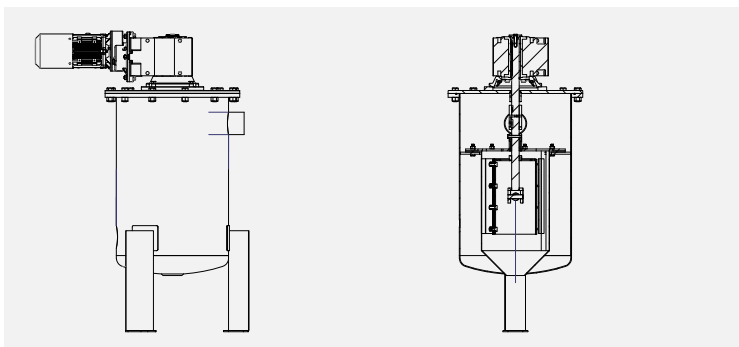
automatic filter



manual filter

The new developed automatic filter system ensures the following benefits to the customers:

- ✓ precious time savings are guaranteed
- ✓ a complete and accurate filter proces is ensured
- ✓ no manual operations of the machine operator required
- ✓ maintenance of machine cleaning
- ✓ best possible protection of the bath circulation pump
- ✓ excellent results during enzymatic treatment



Krantz AUTOCLEAN SCF[®]





heat exchanger

One of the most important part of the dyeing machine is the main heat exchanger.

the outer shell as well as also the inner tubes of the heat exchanger are produced from AISI 316L stainless steel.

While extreme temperature differences lead to a crack of welding points, all inner tubes are not welded but pressed into the end walls. Therefore a crack or damage of the inner tubes are is almost impossible.



main heat exchanger along the machine

The heat exchanger additionally is fitted with a condensate return on/off valve, a proportional heating & cooling valve and a cooling water return on/off valve.



inside view of the main heat exchanger



main heat exchanger





bath distribution system

The transversal movement of the liquor treatment bath by means of the new bath distribution system from KTM KRANTZ, the so-called **BDS OCTOPUS**[®], essentially improves and speeds up the achievement of an even and homogenous treatment bath.

This innovative bath flow ensures to mix the liquor bath completely approximately every 30", hence mixing is four times higher than the bath volume per lap, based on a hypothetical average rope turn of two minutes.

Based on these facts, the new bath distribution system, ensures an absolute even and homogenous distribution of the dye liquor in comparison to other conventional systems available on the market.

Conventional systems have a lower balance of bath feeding in the different treatment chambers and also a smaller bath suction area as well.

the new **BDS OCTOPUS**[®] bath distribution system ensures a perfect bath distribution in the different nozzles of the machine, a suction is guaranteed on the whole length of the machine and a better mixing of dye liquor is achieved.



BDS OCTOPUS[®] ...



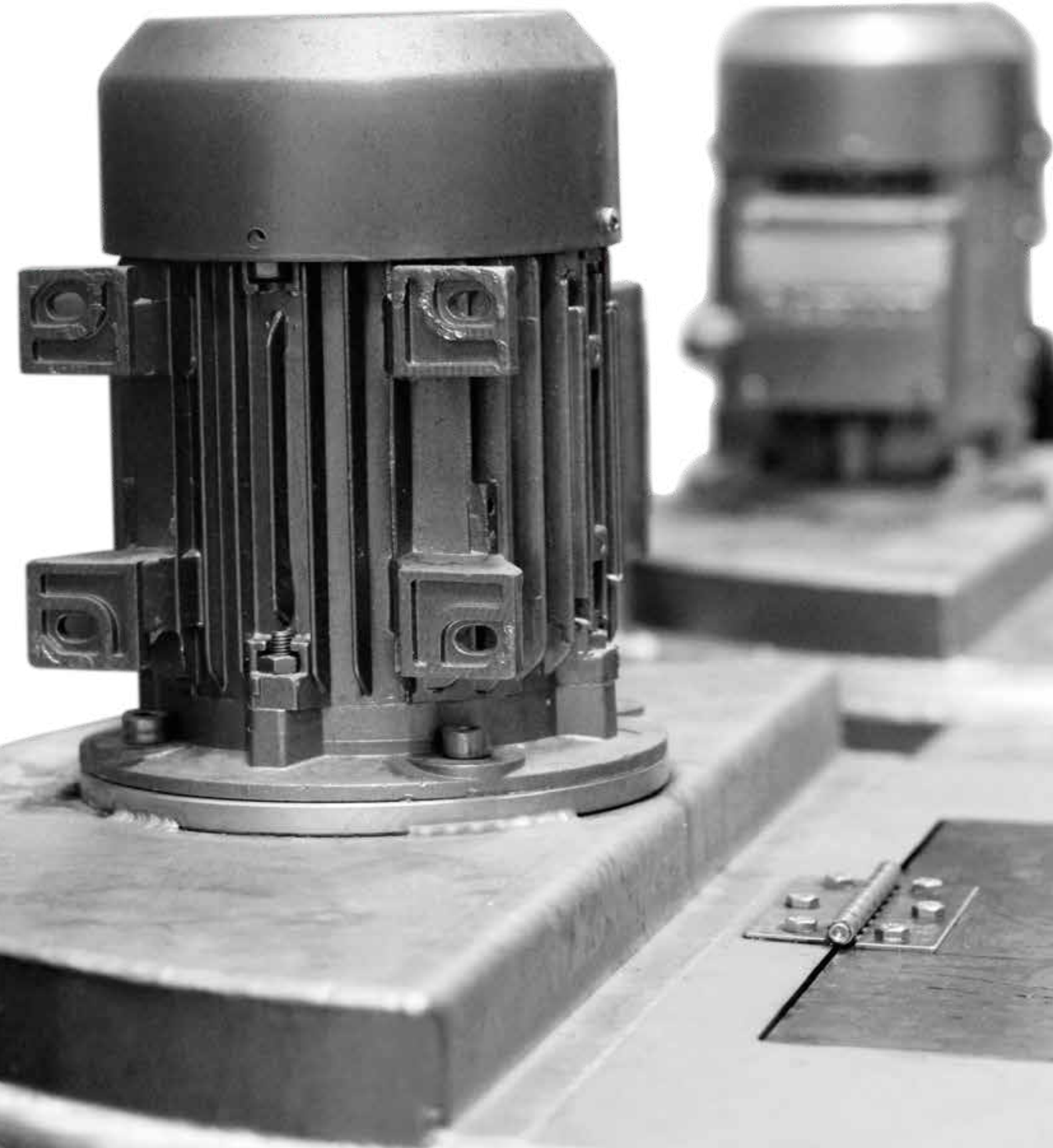
mounted on a RAPIDDYE[®]-200-4



BDS OCTOPUS[®] mounted on a RAPIDDYE[®]-100-3



BDS OCTOPUS[®] mounted on a RAPIDDYE[®]-150-4





preparation tank

The preparation tanks are used for the preparation of the treatment liquor bath including dyestuffs and chemicals or salt.

The tank is indirect steam heated by means of heating coils located at the ground of the tank (heating gradient is 5°C/min)

The tank is also fitted with a mixer and a level control system and cleaning automatically takes place after the dye process is finished.

As an option, our customers have the choice to take a separate hot water tank, which reduces the process time by 1-1.5h.

The pump for the preparation tank is a reserve centrifugal-type pump.



dye bath while splash protection cover of the tank is open



motor for mixer



preparation tanks



quick dosing system

The new revised quick dosing system **RAPIDDOS**[®] shortens the dye process time enormous by diluting the alkali with the process bath.

The programmable, automated dosing of dyes and chemicals by using readily adjustable parameters and bypass circulation saves time and minimizes process faults.



control valve for water



control valve for steam

smart bath control

The smart bath control **SMABACON**[®] is a smart sensor for analyzing the bath in the dyeing machine.

By using this special sensor, the current status of the wash bath is constantly measured and therefore the current status of the washing process is reflected at any time.



smart bath control sensor

The very precise working continuous level control inside the bath allows the machine operator to work with extreme low bath levels, which is absolutely essential for the efficiency of the **SMABACON**[®].

By transferring all current data continuously to the PLC via the sensors located in the machine, the washing process will be controlled self-regulating.



control valve

fast fabric rinsing

The fast fabric rinsing **TURBORINSE**[®] is a very helpful system, with which the fabric can be rinsed with clear hot water.

Main advantage is the much more higher washing effect compared to rinsing just with purified bath water.



fabric rinsing in process



electrical control panel

the whole switch board & electric cabinet is made from stainless steel.

All relevant motors, such as motor for the reel, for the circulation pump or for frequency-controlled A/C motors and the corresponding inverters are all made by high-end manufacturers from Europe.

Krantz just uses high-end controllers from top manufacturers such as the Secom series from Setex or Sedomat series from Sedo-Treepoint.

With these controllers, even very sophisticated automation tasks can be realized without problems. Integrating an automatic dye kitchen becomes a standard task.

Complex machines can easily and directly be operated by using the integrated touch-screen.



additional control buttons



controller SECOM series



controller SEDOMAT series



frequency-controlled inverters





 GERMAN TECHNOLOGY
designed & developed in Germany

sales & distribution

Hochstraße 42
52078 Aachen
Germany
T +49.241.560 002 87
F +49.321.210 914 30
E info@ktmkrantz.com

factory I

Osmangazi Mahallesi
Küçükyaşma Cad. No:13/2
Esenyurt-Istanbul/TR
T +90.212.858 08 08
F +90.212.858 00 70
E info@ktmkrantz.com

factory II

Yazlık Yenimahalle
D-130 Karayolu Cad. No:87/A
41650 Gölcük-Kocaeli/TR
T +90.262.343 30 90
F +90.262.343 30 90
E info@ktmkrantz.com