



CREAMS, OINTMENTS, MASCARA & SUSPENSIONS PLANTS

Whether your process requires sterile conditions, powder and liquid ingredients need to be introduced under contained conditions or you simply need a high quality performing mixing & homogenising system under vacuum:

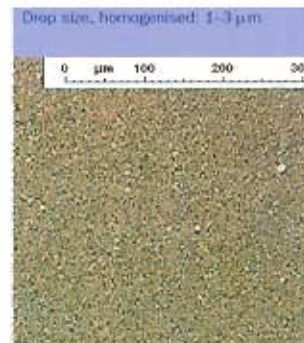
Krieger's platform and building blocks design approach meets your specific needs!

Two design platforms, the Molto Mat and the K-Mix range can be chosen in function of your application. The base platform can be combined with various building blocks, each with a wide variety of process functions and technical requirements to fine tune your equipment to suit your exact needs. Our platform design allows to configure mixing & homogenising equipment ranging from vacuum processing to processing under the most stringent sterile and toxic conditions. Various building blocks for CIP and SIP can be chosen from to complete the solution to suit your needs.

A wide choice of mixing tools, high speed dissolvers and homogenisers with different FDA sealing concepts is available.

APPLICATIONS

Liquids & semi-solids production
for Pharma, Ophthalmics, Cosmetics, Bio, Food, Chemicals



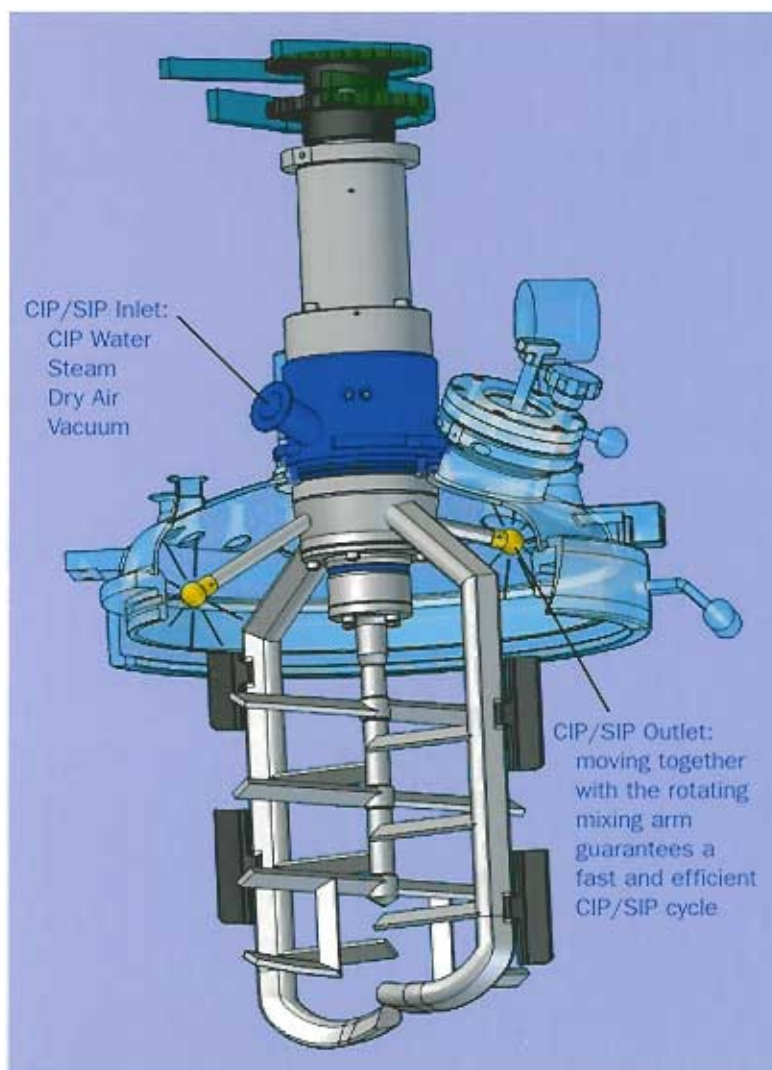


THE MOLTO MAT AND K-MIX PLATFORM

The Molto Mat platform is designed for high pressure applications and has all amenities for an efficient Cleaning and Sterilisation in Place. The K-Mix platform is designed for vacuum processing with easy to use cleaning and sanitisation functions.



The Krieger CIP/SIP counter rotating gear box integrates various functions – mixing, homogenising, cleaning, sterilisation and drying – in one single validated piece of equipment. This famous Krieger development is now a standard building block on the Molto Mat and can now be combined with the K-Mix platform to achieve the highest performing CIP/SIP system on the market for the mixing and homogenising system of your choice.



THE MOLTO MAT MMD PLATFORM

- 30 – 1000 litres capacity
- stainless steel GMP machine frame
- hydraulic lifting pillar
- GMP motor & utility housings
- integrated cleanable & sterilisable energy connections



The Molto Mat Building Blocks

Vessel 2/3 bar

sanitary design, heating and insulating jacket, vessel cover with manhole, lighting, free nozzles definition quick closing clamp for fast opening, with cleanable & sterilisable vessel cover seal, available in different certified designs (PED; ASME)

2/3 bar Krieger CIP/SIP Validated mixing process

-1/3 bar process design counter rotating mixing system, with integrated Krieger rotating CIP/SIP system, double mechanical seals, coolable, sterilisable

2/3 bar KRIEGER CIP/SIP Validated high speed mixing

-1/3 bar process design counter rotating system with central high speed mixer/homogeniser blade, with integrated Krieger CIP/SIP system, double mechanical seals, coolable, sterilisable

Homogenisers/dispersers

2/3 bar high flow/ low shear homogeniser with double mechanical seals coolable, sterilisable

2/3 bar high flow/ high shear homogeniser with double mechanical seals coolable, sterilisable

2/3 bar high speed dissolvers with double mechanical seals coolable, sterilisable

CIP/SIP/drying system

water/ steam/ dry air supply pipes attached to outer mixing arm, with 100% guaranteed coverage of all vessel cover nozzles and openings

vacuum/pressure/N2

fully automatic regulation

Vacuum foam detector

regulation of vacuum pump to avoid foam building

Toxic powder entry system

special powder valve with split valve for automatic toxic powder entry

Cooling mechanical seals

pressurised sealing cooling unit with a sterile liquid or a system generated sterile liquid

Electrics

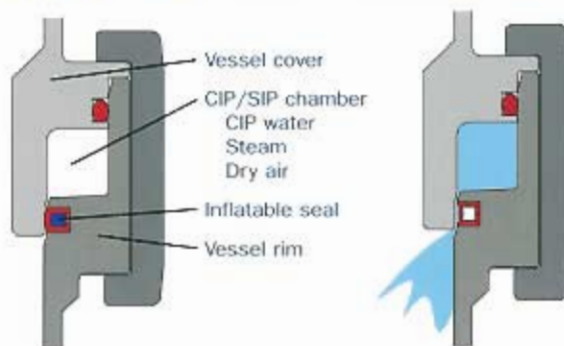
country specific regulations ATEX designs, UL electrics, etc.

Operator panel & software

Siemens touch screen panel, software validated to Gamp 4

Allen-Bradley touch screen panel software validated to Gamp 4

New inflatable vessel cover seal:



Process mode: Seal inflated

CIP/SIP mode: with the seal deflated, the pressurised CIP/SIP media flows through the specially shaped chamber into the vessel via a small crevice, allowing a perfect and efficient cleaning and / or sterilisation of the cover seal part.

The new inflatable vessel cover seal is especially useful for vessels that are frequently opened during the production process and guarantees perfect cleaning, sanitisation and / or sterilisation



MMD Basic Platform



High flow/Low Shear Homogeniser



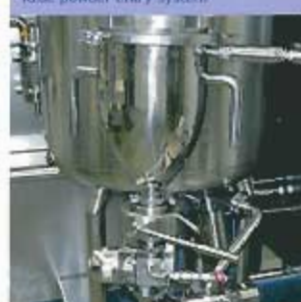
High flow/High Shear Homogeniser



High speed mixer



Toxic powder entry system

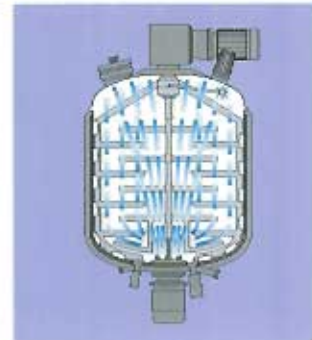


THE K-MIX PLATFORM

- 30 – 1000 litres capacity
- Stainless steel platform for utilities
- Vessel cover electrically lifted sideways
- Direct transmission of motors
- Cleanable and sanitisable energy connections

The K-Mix Building Blocks

Vessel -1/0.5 bar	sanitary design, with heating and insulating jacket vessel cover with manhole, lighting 6 nozzles for energy connections vessel closure by clamps available in different certified designs (PED; ASME)
Vacuum mixing process	-1/0.5 bar process design counter rotating inner agitator and scraper arm high performance lip seals
Vacuum high speed mixing	-1/0.5 bar process design counter rotating system with central high speed mixer high performance double lip seals
Homogenisers/dispersers	2 bar high flow / low shear homogeniser with single acting mechanical seal dry running or coolable 2 bar high speed dissolvers with single acting mechanical seal dry running or coolable
CIP/SIP/ drying system	water/steam/dry air supply rotating spray balls fixed in vessel cover
Vacuum/pressure/N2	manual or semi-automatic regulation
Electrics	country specific regulations ATEX designs, UL electrics, etc.
Operator panel & software	Siemens touch screen panel, software validated to Gamp 4 Allen-Bradley touch screen panel software validated to Gamp 4

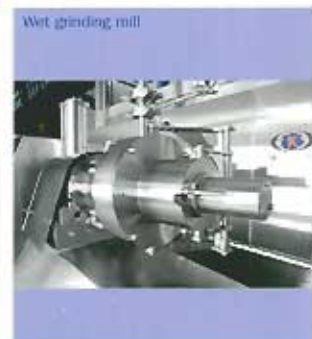
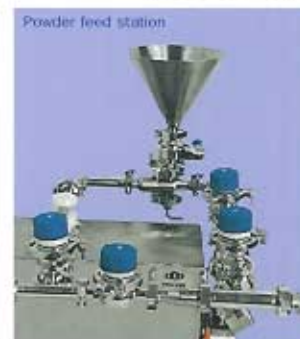


THE COMMON PLATFORM

- For vessels with a capacity larger than 1000 litres
- Vessel 2/3 bar, cover bolted onto the vessel
- Capacity 1000 – 10000 litres
- Openable for maintenance purposes
- K-Mix in 0.5 bar execution
- Molto Mat in 2/3 bar execution

Common Building Blocks

Bottom inlet/outlet valves	Pneumatic inlet/outlet bottom valves with plunger
Different phase vessels	For preparation of water or fat phase with adapted mixing tools such as scrapers, dissolvers, etc.
Integration of other process features	Wet grinding mills, powder feed systems etc. See also our special leaflets





MMD Platform 700 litres
 CIP/SIP gear box with 2/3 bar mixing
 2/3 bar high flow / low shear homogeniser
 Automatic vacuum / pressure / N2
 Integration of different phase vessels
 Indirect heating/cooling, CIP/SIP rack



MMD Platform 500 litres
 CIP/SIP gear box with 2/3 bar high speed mixing
 Automatic vacuum / pressure / N2
 Cooling mechanical seals
 GAMP 4 software
 Direct heating/cooling, CIP/SIP rack



MMD Platform 30 litres
 CIP/SIP gear box with 2/3 bar mixing
 2/3 bar high flow / high shear homogeniser
 Automatic vacuum / pressure / N2
 Alex design
 Indirect heating/cooling, CIP/SIP rack

From easy and efficient vacuum processing with the K-Mix to processes under sterile and contained conditions with the Molto Mat all intermediate levels are possible for combination.

Some examples of possible combinations:

A vacuum process with a vertically openable vessel

Platform	MMD
Building blocks	K-Mix 0.5 vessel, vacuum mixing design, K-Mix homogeniser
Utility block	direct heating system

K-Mix with a 2 bar design and Krieger CIP system

Platform	K-Mix
Building blocks	2/3 bar process design with integrated rotating Krieger CIP/SIP system, K-Mix homogeniser
Utility blocks	K-Mix semi-automatic vacuum regulation direct heating system CIP rack

Sterile Molto Mat

Platform	MMD
Building blocks	Molto Mat vessel with sterilisable vessel cover Molto Mat 2/3 bar process design 2/3 bar homogeniser Molto Mat automatic vacuum/pressure/N2 cooling mechanical seals
Utility blocks	indirect heating CIP rack steam sterilisation system



MMS Platform 2500 litres
CIP/SIP gear box with 2/3 bar mixing
2/3 bar high flow / low shear homogeniser
Automatic vacuum / pressure / N2
Integration of different phase vessels
Indirect heating/cooling, CIP/SIP rack



KMix platform 300 litres
vacuum mixing process (-1/0.5 bar)
2 bar high flow / low shear homogeniser
Manual vacuum / pressure / N2
Touch screen panel
Direct heating/cooling, CIP system



K Mix platform 300 litres
CIP/SIP gear box with 2/3 bar mixing
2 bar high flow / low shear homogeniser
Manual vacuum / pressure / N2
Pneumatic bottom valves
Direct heating/cooling, CIP/SIP system

Process Advantages of the Krieger Systems

Fast homogenisation time

Extremely long stability of finished creams and ointments thanks to gentle homogenising

Perfect skin feeling factor for luxurious products

Easy and automatic incorporation of powders and liquids

Small quantities of ingredients are mixed homogeneously throughout the entire batch

Automatic introduction under contained conditions for toxic powders

Infinitely small product loss of introduced ingredients

Fast cleaning/sanitisation/sterilisation cycle through integrated Krieger CIP/SIP system

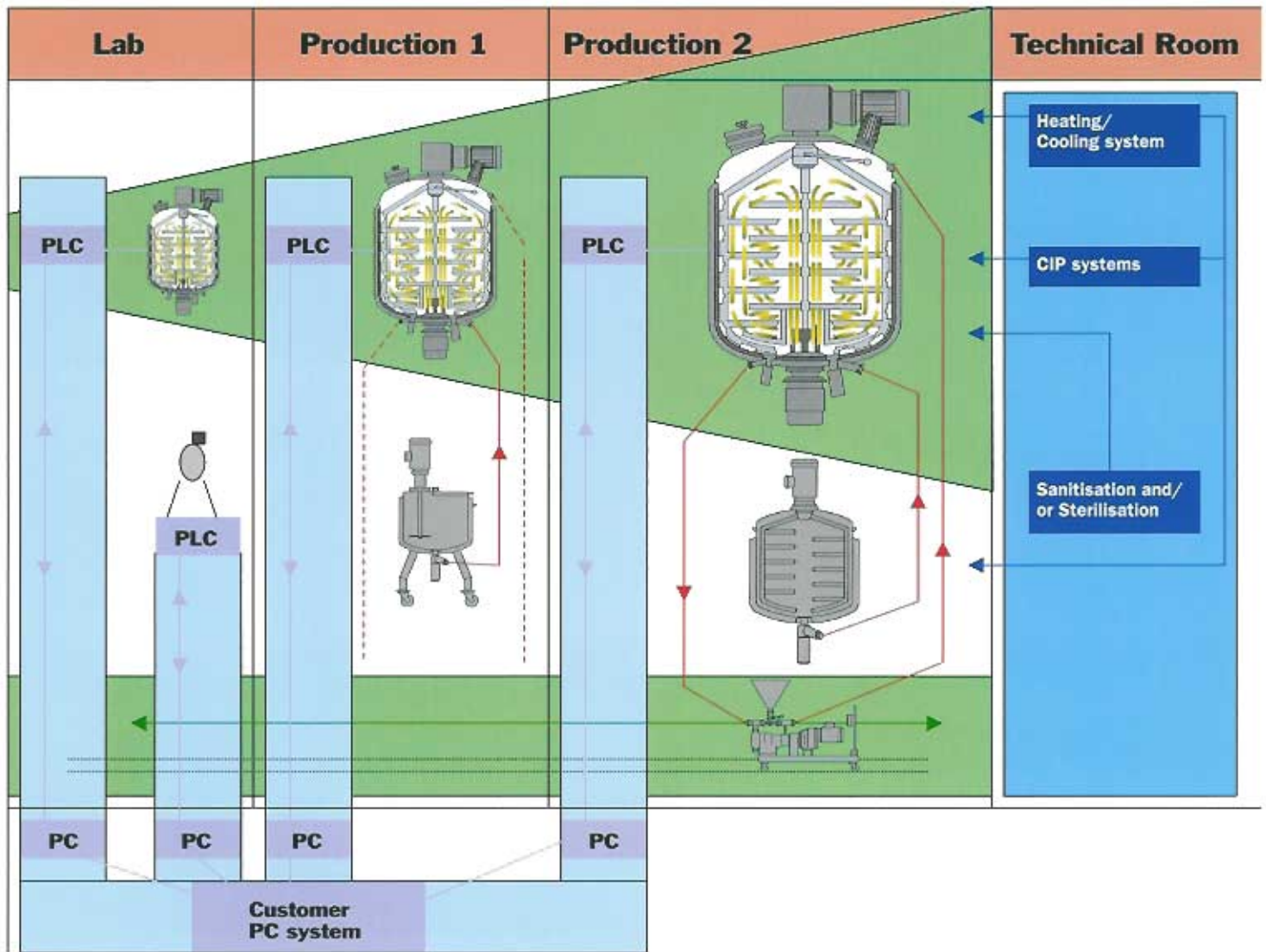
Our Customers' Return on Investment

Superior Swiss made systems requiring little maintenance

Spare parts and maintenance guaranteed

Thanks to building blocks a tailor made system at a standard price

The Krieger Integrated Liquids/Semi-Solids Processing System



Utility Blocks

Heating /cooling systems

For direct or indirect heating/cooling with different capacities

CIP systems

6 bar high pressure cleaning of the vessel, utility connections, bottom valves via recirculation with visible indication of the cleaning stadia
detergent dosing systems, temperature control of cleaning media, bacteriological control of result

Sanitisation and/or sterilisation

Steam sterilisation of the vessel, utility connections, bottom valves via recirculation
temperature verification system for highest sterility assurance level in the entire vessel
sterilisation of mechanical seals



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