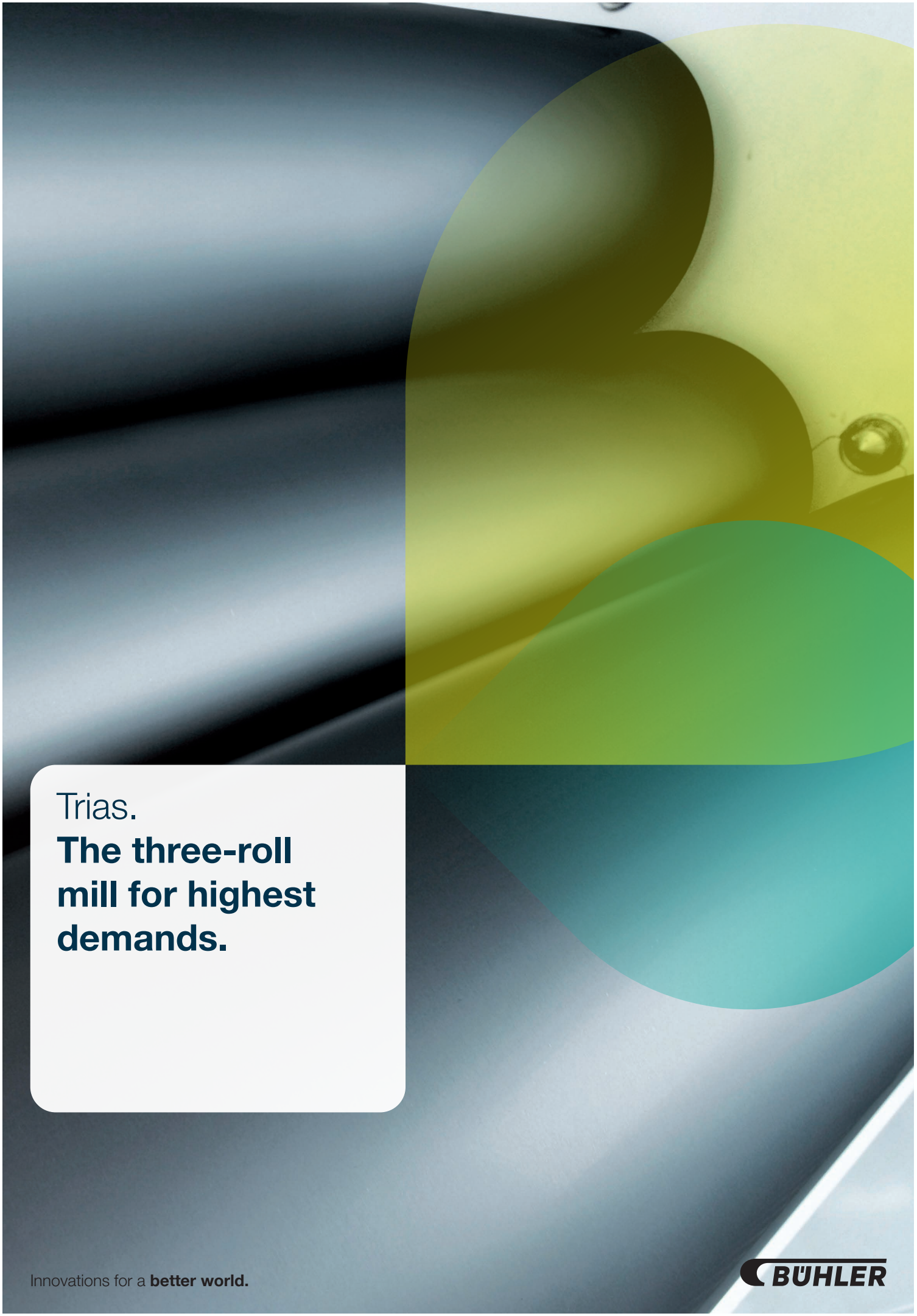

Trias.
The three-roll mill for highest demands.
Innovations for a better world.
BÜHLER

Reliability, high raw material yield and gentle dispersion of contamination- and temperature-sensitive products are key properties of Bühler three-roll mills. Different roll materials and concepts permit clean room production according to international standards. The camberless VIVA roll technology guarantees even product quality independent of the roll pressure.

Trias – setting industry standards.
The flexible, safe and efficient three-roll mill.

Bühler three-roll mills are considered preferred technology in the production of printing inks and pasty products for a wide range of applications in the electronics and high-tech industries. Trias represents Bühler's continuous commitment to further develop long-term established technology.

Reliability, high raw material yield and gentle dispersion of temperature-sensitive products are key properties of Bühler three-roll mills. Bühler three-roll mills also show superiority over other technologies with regards to gloss properties of printing inks. Bühler solutions facilitate contamination-free processing of sensitive products. Different roll materials and concepts permit clean room production according to international standards.

Independent of the roll pressure, the camberless VIVA roll technology guarantees even product quality along the entire roll length.

In respect of operating reliability, the wide range of applications and resulting advantages for the production of pasty products, the Trias three-roll mill generation sets industry standards.

Application examples.

Printing Inks
– Sheet fed inks
– Web offset inks
– Screen inks
– Packaging inks
– Security inks for bank notes

Solar Technology
– Silver pastes
– Aluminium pastes
– Titanium dioxide pastes
– Glass solder pastes

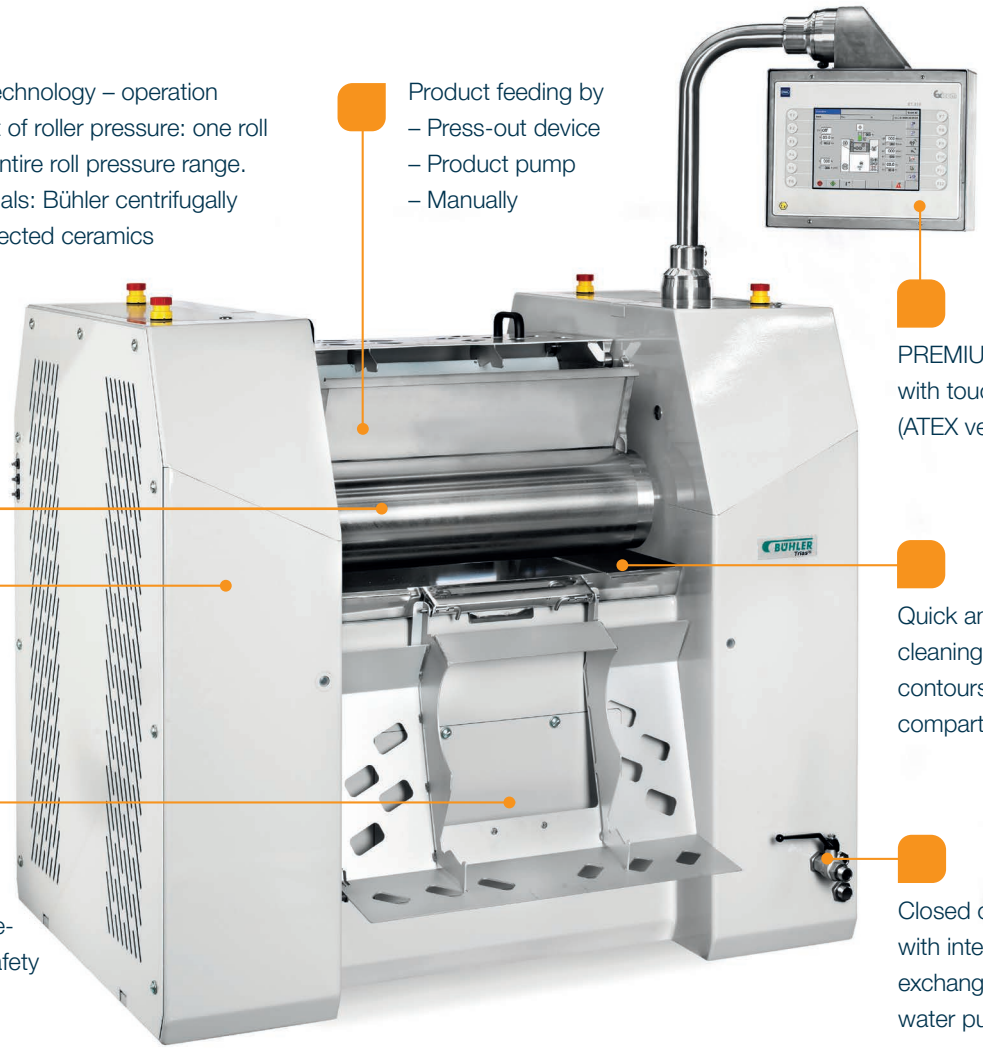
Electronic Industry
– Glass pastes for displays and plasma screens
– Phosphor pastes
– Metal pastes (Ni, Cu, Pt)
– PCB (Printed Circuit Boards)

Other Applications
– Cosmetic products/Soaps
– Carbon nano tubes
– Lubricants (grease, oil)
– Sealing pastes
– Artist colours

Advanced technology from Bühler.
Highlights at a glance.

VIVA roller technology – operation independent of roller pressure: one roll covers the entire roll pressure range. Roller materials: Bühler centrifugally cast and selected ceramics

Product feeding by
– Press-out device
– Product pump
– Manually



PREMIUM Control with touch screen (ATEX version shown)

Oil-free equipment for the operation in the clean room

Quick and efficient cleaning due to simple contours in the roller compartment

Various protective devices for optimal access and comprehensive operator safety

Closed cooling circuit with integrated heat exchanger and cooling water pump

The advantages

– Very wide roller pressure range: up to 120 N/mm (linear loads)
– Products previously produced in gap operation can be processed in low roller pressure range (5 to 25 N/mm)
– Accurate and repeatable roller pressure and gap control
– Electronically controlled operating parameters
– Suitable for the operation in clean rooms according to US Federal Standard 209E – clean room class 1000
– Oil and contamination free operation, optionally with selected ceramic materials

Proven technology for higher performance. **Improved flexibility, repeatable quality.**

Easy access and high standards regarding operator safety are key elements of Trias three-roll mills

PREMIUM control package with graphic touch screen panel

Unique product properties
The narrow particle size distribution, typical for three-roll mills, and the high shear rates allow unique product properties. There is no deformation of size or geometry of the primary particles which can be essential for the de-aggregating and de-agglomerating process steps.

In respect of product viscosity, Trias offers an extremely wide operating range. Bühler three-roll mills permit production processes which are not feasible with other technologies such as high pressure homogenizers, bead mills or rotor/stator systems.

Enhanced pressure range
The precise and powerful roller pressure unit generates linear loads from 5 to 90 N/mm (VIVA rolls) or 5 to 120 N/mm (P-rolls).

Compared to conventional three-roll mills this range is significant wider for both low and high roller pressure. Products, previously produced in gap operation can be processed in low roller pressure range (5 to 25 N/mm).

This guarantees repeatable and defined production conditions. On the other hand higher roller pressures result in more efficient dispersing of tough products.

Control packages PREMIUM

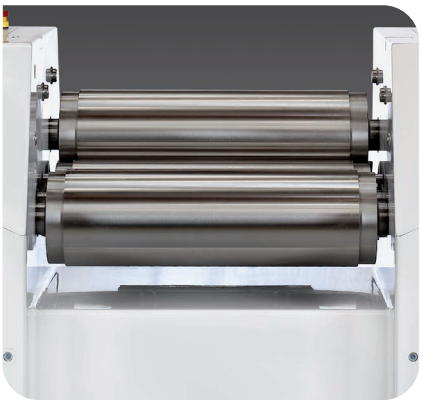
The control package PREMIUM is equipped with a PLC control and a graphic display touch panel.

The PREMIUM package displays all operating parameters and allows process visualisation and thereby enabling automatic control of roller temperature, speed and pressure.

The Bühler data logging software WinTrend is available as an option allowing continuous process monitoring and supports higher level quality management systems.

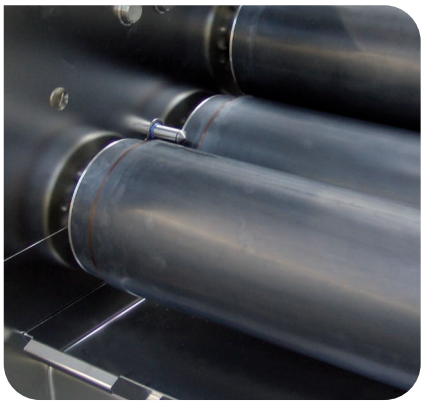
Roller pressure or gap are electronically controlled and allow precise production monitoring and repeatable processes.

Intelligent concepts for more productivity. **Easy cleaning and safe production.**



Easy access to the roller compartment for easy cleaning

The latest safety regulations for operators are fulfilled

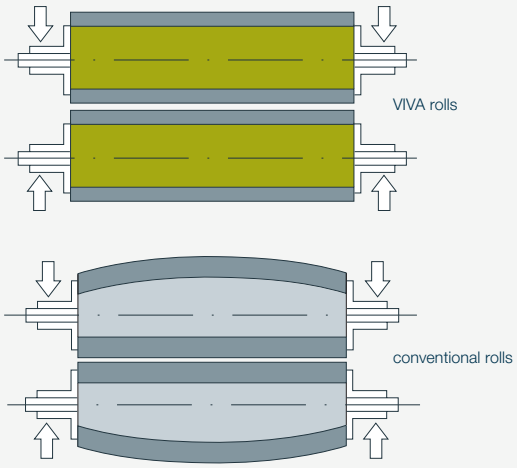


Shoulder hopper plates for SSiC rolls with Si_3N_4 rings.

The intelligently designed roller compartment allows for easy cleaning. The losses during product changes or due to errors are minimal as the process unit only holds a very small amount of product.

The broad range of protective devices allows a safe production independent of the product feeding system.

The asymmetrical roll alignment and the elevated apron are designed ergonomically. The Trias roller pressure is mechatronically operated. By omitting the hydraulic elements, oil contamination of the product is now impossible.



Camberless VIVA rolls have remarkable advantages when variable roller pressure is required

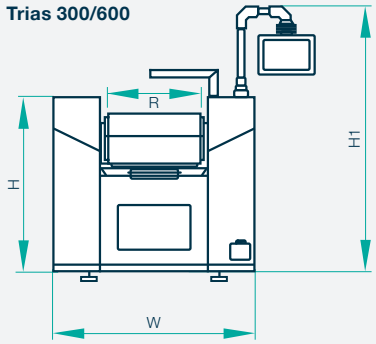
VIVA – unrivalled roller system.

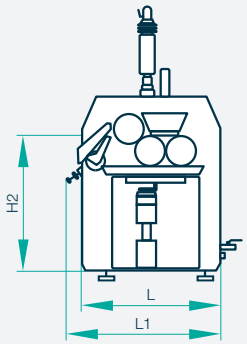
VIVA camberless three-roll mills operate reliably – even if requirements differ and with variable roller pressures. In contrast to conventional rolls, the Bühler VIVA roller technology is designed to be operated at different roller pressures and accordingly cover the whole pressure range.

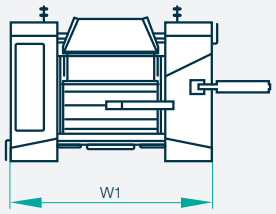
VIVA camberless roller technology guarantees equal product quality along the entire roll length – independent of the roller pressure. As a result, comprehensive and easily repeatable product qualities are achieved and in so doing boost productivity.

Technical data Trias.
The three-roll mill for highest demands.

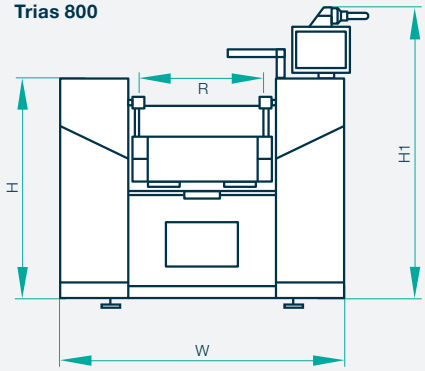
Trias 300/600

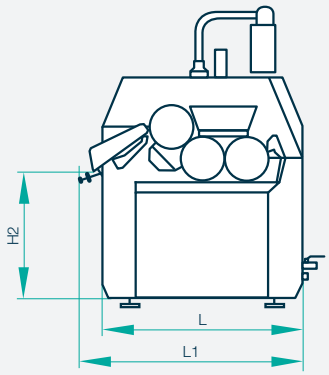


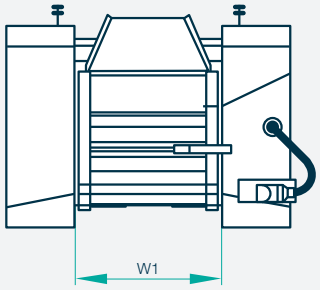




Trias 800







Trias [1]	300	600	800
Drive [kW]	11	22	45
Economic batch size [kg]	0.5–75	2–150	20–800
Closed cooling circuit	●	●	●
Protective hood / draw-in guard	●	●	●
Cleaning guard	●	●	●
VIVA roller technology	○	○	○
Ceramic roller materials	○	○	○
Automatic gap setting device	●	●	●
ATEX	○	○	○
Cleanroom execution	○	○	○
Product level monitor	○	○	○
Weight approximate [kg]	950	1,150	2,800

Dimensions [mm]

Trias	300	600	800
H	1,200	1,200	1,510
H1	1,400	1,400	1,710
H2	740	740	856
L	955	955	1,380
L1	1,067	1,067	1,520
W	1,078	1,378	1,963
W1	434	734	999
R	300	600	800
R Ø	200	200	300

● = Standard. ○ = Option. All data are approximate. Technical alterations reserved.

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