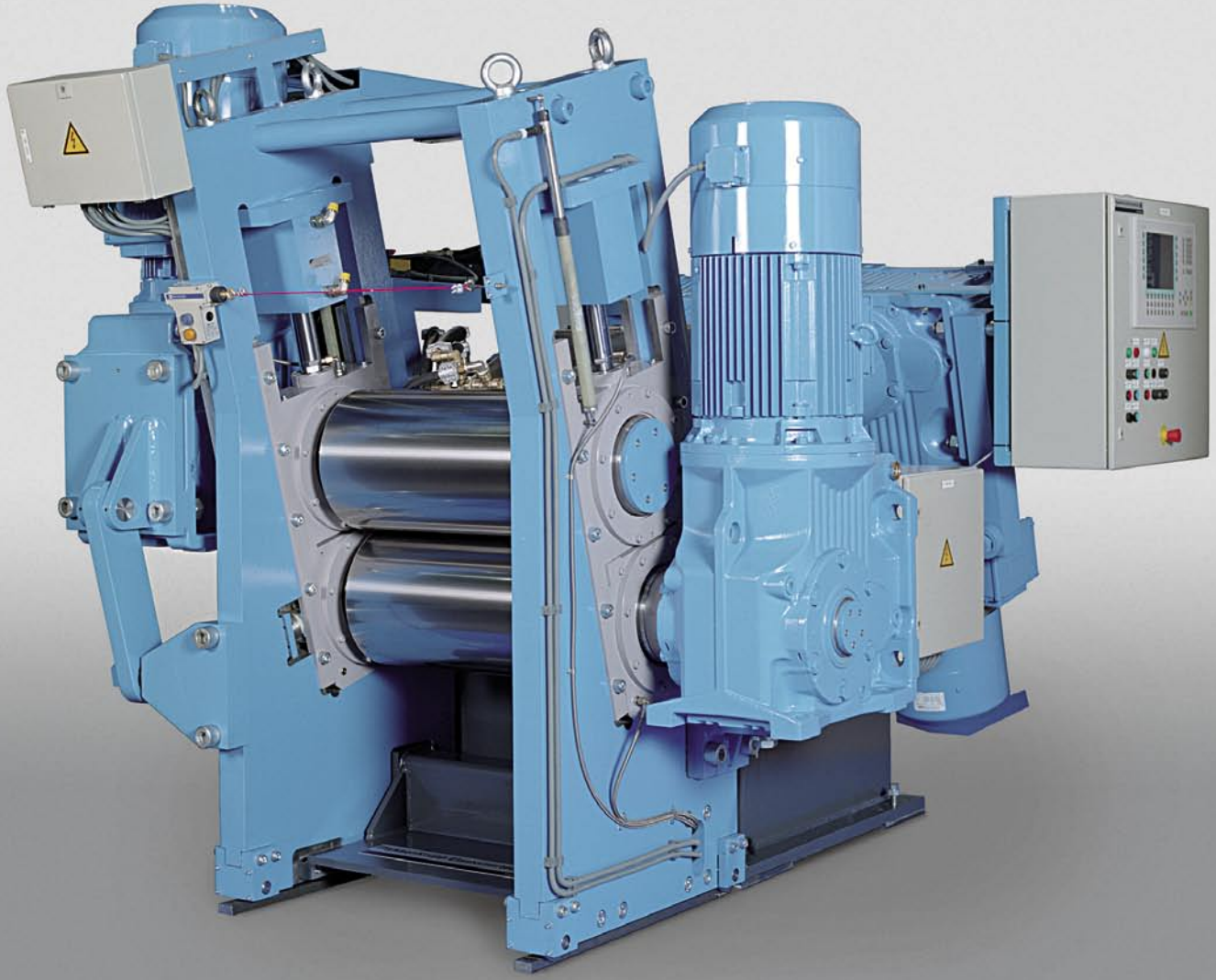
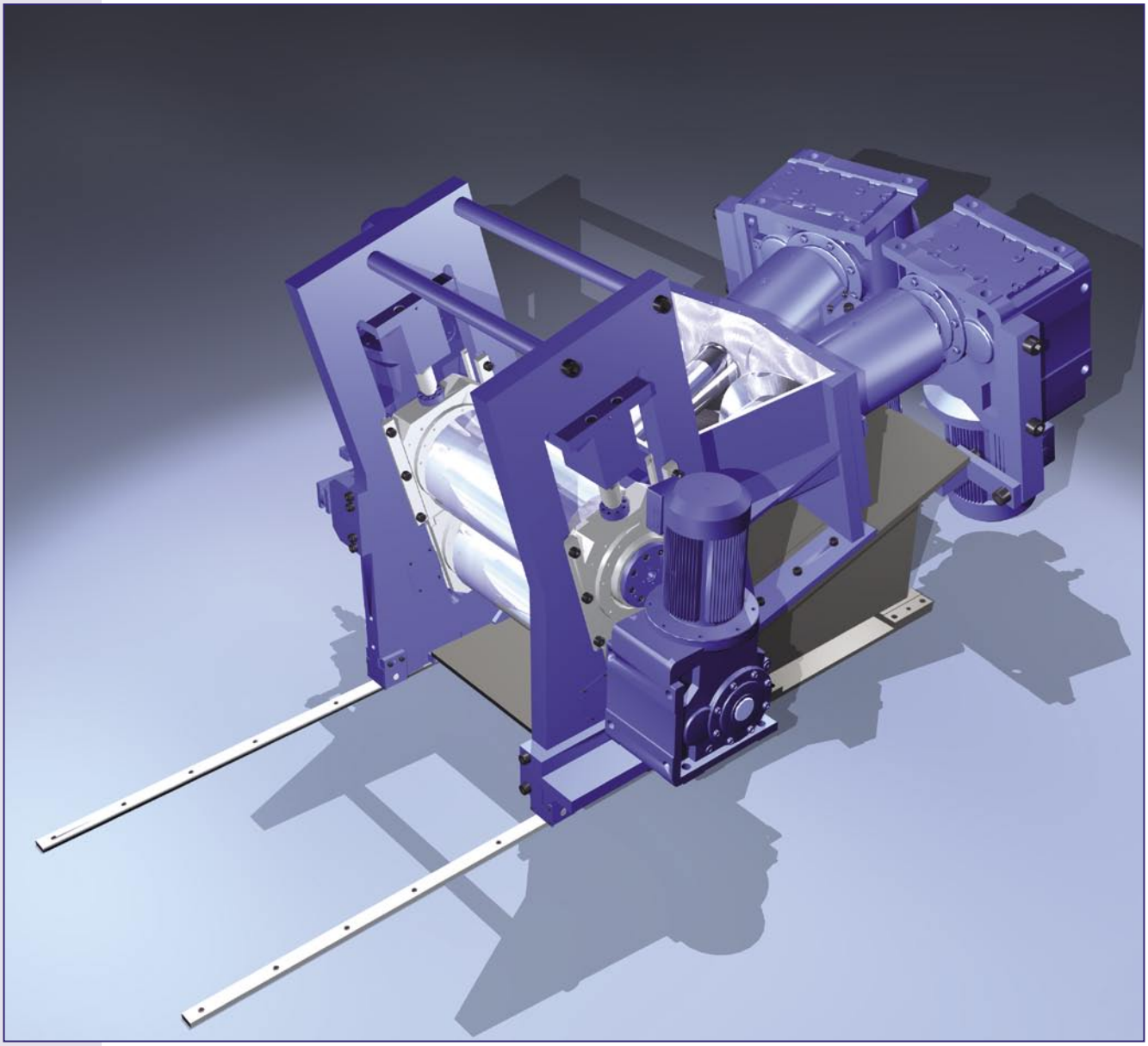
The DSE 200 Twin Screw Extruder: A downstream unit for the Internal Mixer.



HARBURG FREUDENBERGER

DSE 200 Twin Screw Extruder
with 360 x 650 roller die calendar.

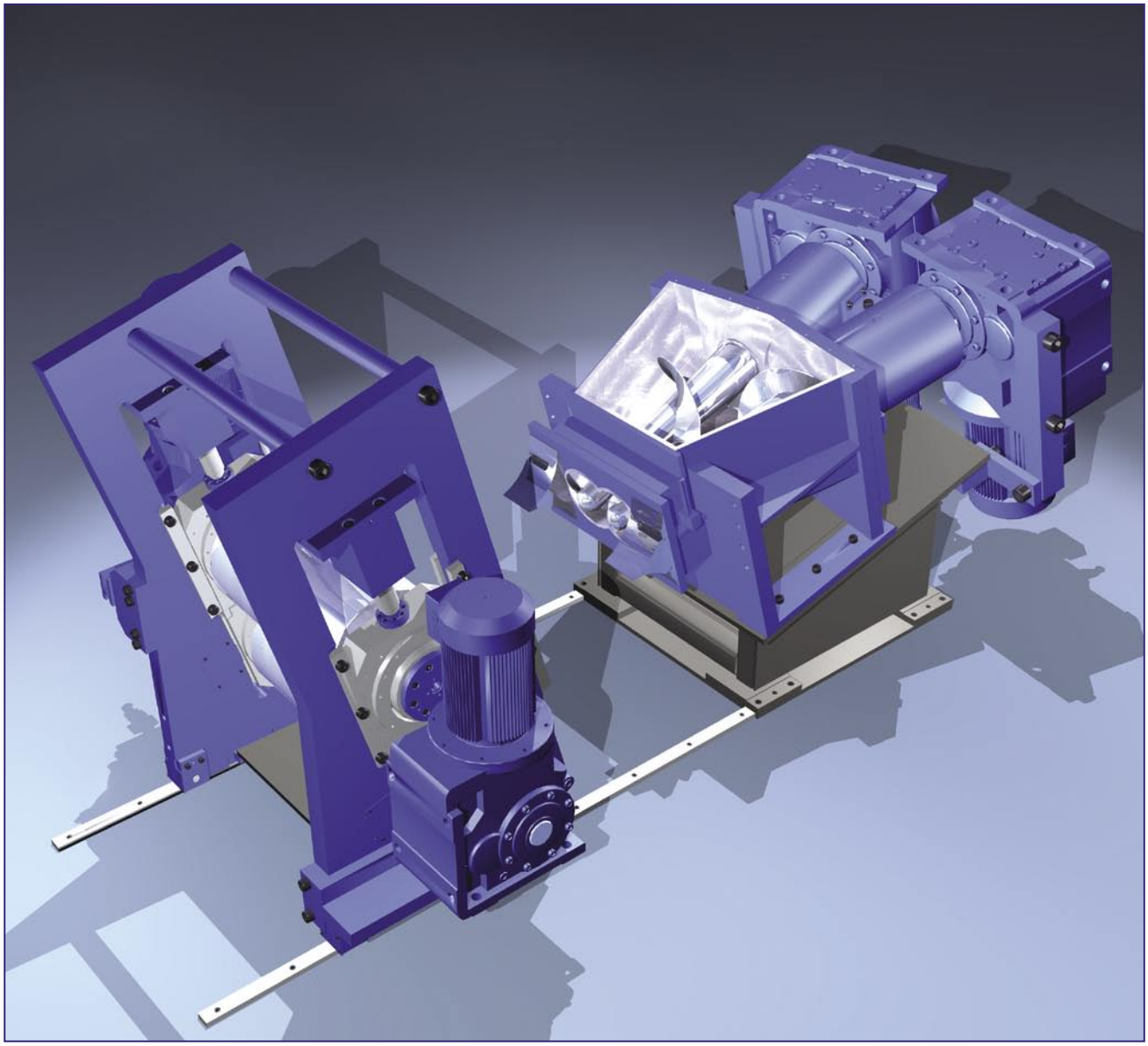
With the DSE 200, Harburg-Freudenberger is able to offer a downstream unit for the internal mixer that is specifically designed for the technical rubber goods industry. This machine is characterized by a compact design and high reliability.



This small DSE was developed from the sophisticated technology of larger sized machines and in close cooperation with our customers. The construction of the DSE 200 reflects our experience over many years in the design of twin screw extruders.

The overall concept of the machine, with the high flexibility of the units and with various sizes of calendar, is designed to meet all requirements. Thus for many compounders the DSE 200 is particularly attractive and economic.

The DSE 200 distinguishes by its` large feed section, the inclined axis of its` screws and the optimized screw geometry required for the extrusion process. The robust design enables easy maintenance.



High drive powers allow the machine to start up even when filled with compound, providing that this has not cooled down excessively. Cooling of the screws and rolls meets the high demands placed on the cooling capacity of an extruder of this type. In addition the wear resistance of all components complies with the requirements of the technical rubber goods industry.

The roller die of the DSE 200 reflects our experience in the design of roll mills and roller die calendars over decades, where proven roll technology has been combined with flexible drive concepts.

The individual roll drive makes it possible to adjust the friction between the rolls to suit various processing requirements. The roller die has hydraulic nip adjustment and is also protected against possible overloads by means of this feature.

The layout of the DSE 200 can be modified to suit different customer requirements. Two options of connecting the extruder to the roller die are therefore available.

The first uses a fixed connection between the extruder and roller die, with hydraulic roll movement of up to 150 mm to allow high accessibility.
The second allows the roller die to be separated from the extruder in the horizontal plane, by a hydraulic cylinder. In this case the maximum roll movement is 50 mm.

Infeed and rolls

DSE 200 specifications

Extruder		
Screw diameter	approx. mm	480/200
Screw length	approx. mm	820
Variable screw speed	min^{-1}	5 – 25
Drive rating	kW	2 x 30
Calendar		
Roll diameter	approx. mm	360
Roll length	approx. mm	650
Drive rating	kW	2 x 22
Roll gap (adjustable)		
Working gap	mm	3 – 10
Maximum gap	mm	150
Variable roller speed	min^{-1}	4 – 20

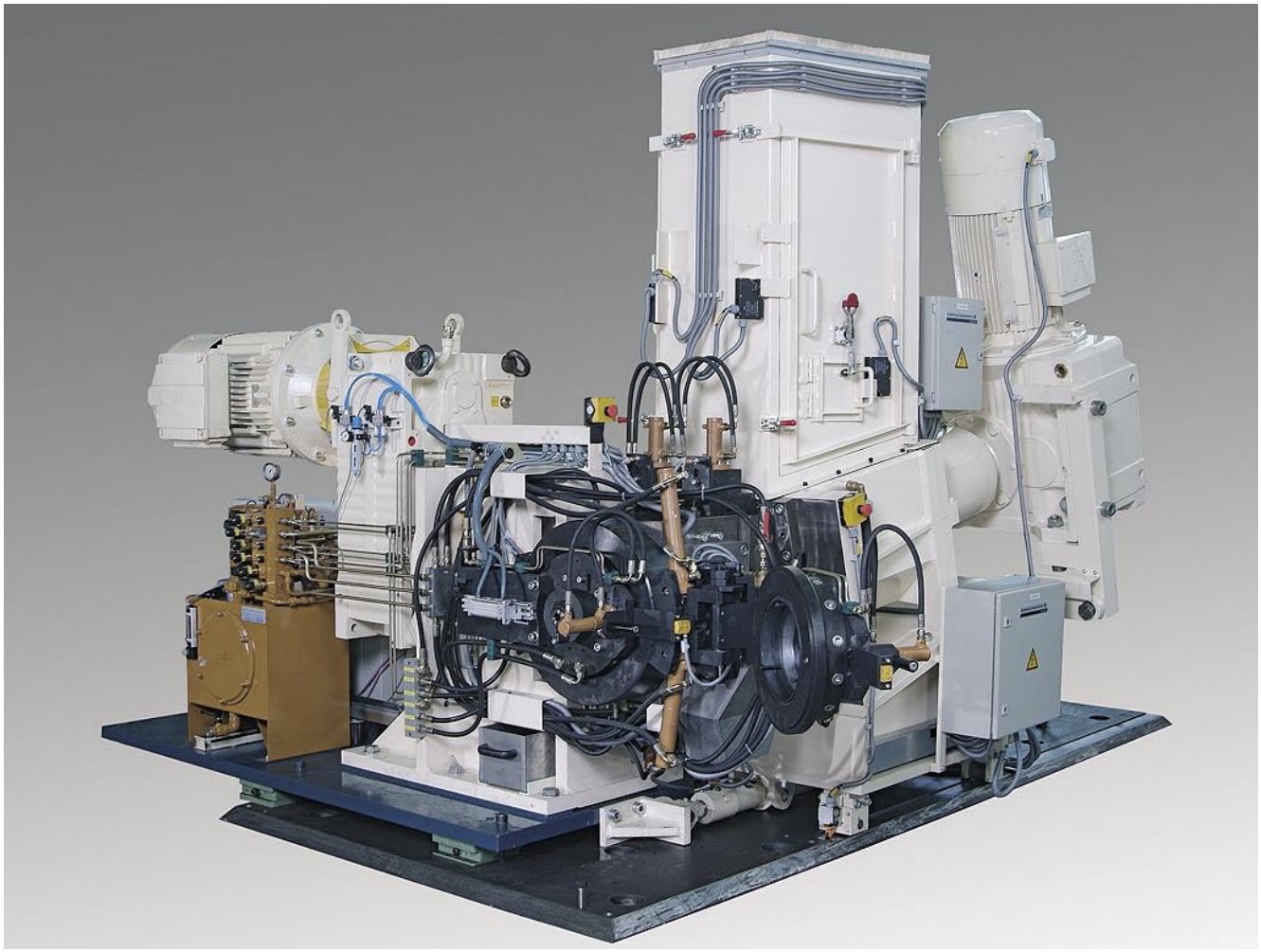
In the technical rubber goods industry the focus is on small batch volumes and frequent compound changes. We therefore offer a special drive system that allows a relative motion of the screws, one to each other, resulting in the enhanced cleaning of each screw channel through the wing of the other screw. This has the benefit of significantly reducing the risk of compound retention in the extruder.

The DSE 200 also ensures optimal uptime due to the compact and proven single drive concept of the earlier DSE 330, based on three-phase drives. Screw synchronisation is maintained via the 'electrical shaft' concept and is a further benefit. Through a positional control system, with double security, the precise screw positions are known at any time. Minimal deviations resulting from normal load changes on the screws are corrected with the utmost accuracy.

To meet the increasing demands from the technical rubber goods industry for strained compounds, we are also able to offer a gear pump for use with this machine. This combination enables fully automatic, in line, compound straining. Both units have been optimized for multiple compound changes, with interface gaps minimised. As a result the screw tips are located directly in front of the gearwheels of the pump.

The modular design enables the separate supply of DSE and gear pump, similar to the DSE and roller die combination.

DSE with gear pump



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We develop, build and distribute machines, lines and systems across our three company divisions based on 150 years of company tradition.

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We provide the most comprehensive range of machines for the rubber and caoutchouc industry including all major preparation and processing stages.

- Complete mixing room systems
- Internal mixer
- Mixing mills
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Caoutchouc technology
Production machines and lines for the manufacture of tires and technical rubbergoods from raw material feeding to vulcanisation:

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- Extrusion lines
- Tire building machines
- Curing presses

Edible Oil Technology
Machines for processing oilseed, crude oils of vegetable origin and animal raw materials as well as screw presses for the dewatering of synthetic caoutchouc and similar products:

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- Extraction lines
- Refining lines
- Process engineering

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