THREE ROLL MILLS
because precision matters.
WE SIMPLY LOVE TO BE PRECISE.

Precision, passion and consistency – this is what EXAKT stands for. Our Three Roll Mills, Ointment Mills and the Cutting and Grinding Technology guarantee our customers maximum precision, quality and reliability »Made in Germany«. More than 60 years of experience are reflected in their development. With an innovative pioneering spirit and passion for technology, we optimize and produce our high performance systems at the company headquarters in Norderstedt, Hamburg. Consequently, we are one step ahead of the competition around the world.

Bernd Franke
Owner and CEO
With EXAKT Three Roll Mills trendsetting results from research and development can be converted into marketable products. This makes EXAKT a unique interface between development and production. Best possible results – that is our goal. That’s why EXAKT has redefined the Three Roll Mill for laboratory, research and production. Fascinated by the potential of this unique technology, our dispersing system has brought us to the forefront throughout the world.

Not only do we support your innovative ideas, we create some of our own, too. Let our wide range of models amaze you.

THE μ COUNTS.

› 60 years of experience and more than 45,000 systems installed worldwide

› Technological leadership, developed and produced in Germany

› Greatest variety of models on the market – the right Three Roll Mill for your application and budget

› More than 40 certified sales and service partners across the globe

› Proven development partner of research institutes and universities
THE THREE ROLL MILL PROCESS.

FUNCTIONAL PASTES

Whether colors, lacquers or coatings with pigments, whether conductive pastes for electronics with silver particles or carbons and resins in composite materials, dispersions or suspensions are crucial for the functioning of many products. Made of solid and liquid components, these pastes must be mixed, homogenized and dispersed during the processing. Solid components must be homogeneously distributed, particle clumps broken up, particles separated and ground if necessary. The particles in a suspension tend to agglomerate, but only in defined de-agglomeration do they unfold their intrinsic properties.

THE PATH TO SUCCESS

The Three Roll Mill is also the most versatile dispersing system in use today and, because of its process-related benefits, is often the only solution when specific results need to be achieved. When dispersing, premixed suspensions are processed between rollers turning at different speeds.

The shear rate between the rollers is the decisive factor for the process. This is determined by the roller spacing and the circumferential speed. Agglomerates and powder clumps are broken up and homogenized. The more controlled the energy input, the more precise the processing.

MODEL SERIES

Dispersing with EXAKT Three Roll Mills is a pioneering technology that is indispensable because of today's wide range of application fields in the laboratory as well as in research and production. The requirements and demands of our customers are equally varied and served optimally with the three series; the G-Line, S-Line and E-Line models.

G-LINE

› Precise, compact and easy to handle
› Versatility in the laboratory and pharmacy

S-LINE

› Maximum fineness and high performance
› Tailor made for higher throughput

E-LINE

› Benchmark for fineness, quality and reproducibility
› Digital and high performance
› Scale-up capability from lab to production

www.exakt.de/en/technology
THE EXAKT TECHNOLOGY

In EXAKT Three Roll Mills, a defined gap is achieved between the rollers by the special machine geometry and precise mechanical system. Controllable circumferential speeds of the rollers and an absolutely parallel gap create a uniform shear rate. This ensures that all of the material is consistently processed in the same way. This is the key to a defined dispersing process and a homogeneous product, finely dispersed down to the micron or nano scale.

The processing quality of the EXAKT Three Roll Mills and precisely controllable process parameters are decisive for the quality of the result.

PROCESS ADVANTAGES

With EXAKT Three Roll Mills, every result is consistent and reproducible. With controllable roller gaps in the µm range, EXAKT Three Roll Mills also process nano particles accurately and dependably. Separation is avoided and sensitive particles, such as micro capsules or carbon nanotubes, are not damaged. The equipment meets different material requirements and is suitable for a broad spectrum of viscosity, depending on the formulation and rheology.

- Precise and defined energy input
- Narrowest particle distribution
- Reproducible results
- No separation
- Processing down to 5 ml, virtually loss-free
- Low cleaning losses
- Durable technology with low operating costs

Process comparison – narrow particle distribution due to uniform gap setting
GX-LINE

The G-Line series of EXAKT Three Roll Mills is designed for versatile use in the laboratory. Whether industrial research or production in a pharmacy, their compact design, simple handling and highest precision have made these models the bestselling Three Roll Mills of their type in the world.

CLEANING MADE EASY

The ease of operation – and especially the cleaning – of a mixing and dispersing unit is becoming ever more important from the laboratory to production. EXAKT pay attention to the key components so that dealing with cleaning agents, consumable materials and disposal is environmentally sound. The hand-made product guides, perfectly ground scraper knife and a selection of easy-to-clean coatings and accessories ensure efficient and low cost operation.
PERFORMANCE

The G-Line Three Roll Mills from EXAKT stand for compact performance and great ease of operation with an outstanding price/performance ratio. As the general purpose range of Three Roll Mills, this model series is distinguished as an entry model in the laboratory and for the production of small volumes. The precise one-hand setting of the roller gap down to 10 µm guarantees excellent, reproducible product fineness. The mechanical concept of the gap setting rules out any dry running of the rollers. The equipment is thus safe to operate, low-wear and durable.

The simple operating concept ensures control of all device settings that influence the dispersing process and hence achievement of the best results. Cleaning is very simple because of excellent accessibility and high quality roller surface finish. In our model with a replaceable roller set, any cross contamination can be ruled out or the rollers cleaned outside the device – depending on the requirements.

HIGHLIGHTS

› Easy to adjust – precise one-hand operation for setting the roller gap
› Fineness guaranteed – stable gap setting down to 10 µm
› Throughput as required – up to 5 or 17 l/h at maximum fineness*
› Quick and clean – replaceable roller set avoids cross contamination*
› Safe working – overload protection, cleaning guard and emergency stop* for safe working conditions
› Mobile and space saving – dispersing on the spot

*Option or performance specification vary depending on the model and application
The S-Line series of EXAKT Three Roll Mills achieve maximum dispersing fineness and flexibility even when using different low to high viscosity materials. Whether used in the laboratory in research or in production – the versatile fields of use, the high level of safety as well as optimum ease of operation are features with which this model series leads the competition throughout the world.

MATCHED TO YOUR MATERIAL

For optimum results, we offer rollers in different metallic or ceramic materials and surfaces for our Three Roll Mills. Whether chemically inert, metal-free, extremely wear resistant and low wear, corrosion-resistant or particularly easy to clean in order to prevent cross-contamination – we will advise you on which type of roller is best suited to your applications. In addition, we provide scraper knives made from a range of materials, suitable for the application and the roller material used.
PERFORMANCE

The S-Line series of Three Roll Mills from EXAKT is the entry point for achieving the finest dispersing results. The precise one-hand adjustment of the roller gap in combination with an extremely stable design ensures excellent, reproducible product fineness down to below 5 µm, depending on the material and application. In combination with digital speed control of the rollers and a high-performance drive, materials with very different rheological properties and viscosity up to 2 million mPas can be processed.

Our universal scraper system also provides crucial advantages for your application – the spring-loaded scraper knife can be adjusted precisely which rules out any manual readjustment and ensures minimum wear.

HIGHLIGHTS

› Maximum fineness guaranteed – stable gap setting down to 5 µm
› Throughput as required – up to 7.5 or 27.5 l/h at maximum fineness*
› High-performance drive – controlled dispersing even at high viscosity
› Precisely controlled – continuously variable roller speed with digital display
› Precise temperature – roller temperature control for optimum process control
› Safe working – overload protection, cleaning guard and emergency stop* for safe working conditions
› Care-free production – life-long dependable quality
› Clean working – precise product guides for splash-free dispersing

* Option or performance specification vary depending on the model and application

www.exakt.de/en/model-series
E-LINE

The E-Line series of electronically controlled Three Roll Mills is the global standard for reproducibility, achievable fineness and accuracy. The versatile electronically controlled equipment functions achieve unique results which assure a maximum level of process control and quality in very different fields of application in research and production.

EXAKT 80E

E-Line display

Temperature control system and scraper force setting

EXAKT 120E-250

EXAKT 120EH-450 with Level Control

Production Equipment

PRODUCTION

EXAKT provides numerous options for increasing productivity and process stability – the adjustable angle of the scraper knife, Automatic Level Control or the Production Equipment for maximum throughput and cleanliness. We optimize your process with individual solutions and provide advice on the integration of the Three Roll Mill in your process, e.g. where several three roll mills are combined into a cascade.
PERFORMANCE

The E-Line series of Three Roll Mills from EXAKT provide maximum control, reproducibility and ease of operation. The outstanding difference to pure mechanical models is signified by the optionally selectable operating modes – Gap Mode and Force Mode.

In Gap Mode, the roller gap is set with a repeatability unmatched in the market and with a micron accuracy to the minimum value of 5 µm (display indication in µm). The combination of electronic gap adjustment and stable mechanical design ensures that the gap setting is maintained accurately.

In Force Mode, the gap is not set to a constant value but controlled by the force value. The required force (line pressure shown in N/mm on the display) is the set value, and the gap is controlled depending on the material used and the speed. This guarantees constant force conditions from the beginning to the end. In this mode, gap values of below 1 µm can be achieved – a unique function.

HIGHLIGHTS

› Fineness from micro to nano
› One-pass calibration – automatic adjustment of the basepoint and parallelism of the rollers
› Electronic display of all operating parameters
› DataLog – documentation of processing parameters
› Throughput up to 7.5, 14 or 27.5 l/h with a gap size of 5 µm*
› Efficient – fewer multiple runs than the competition
› Scale-up from the laboratory to production
› Roller temperature control for optimum process control
› Unique safety concept

* Option or performance specification vary depending on the model and application
The specific function of your suspension requires reproducible processing. At the Technical Center at the company headquarters in Norderstedt, Hamburg, we carry out individual trials and test series for you in order to optimize the processing required to achieve the correct functionality of your products.

Based on our in-depth specialist knowledge, decades of application expertise as well as experience with a wide range of materials, our experts will support you in your specific task. The entire range of G-Line, S-Line and E-Line Three Roll Mill models are available for the trials in the Technical Center. The results of your trials are treated confidentially, secrecy is a matter of course for us. You can also book our Technical Center on a daily basis.

› Individual test series with your product

› Professional analysis and evaluation of the processing

› Support in determining the optimum process parameters

› Individual education and training programs

www.exakt.de/en/services
KNOWLEDGE IN DETAIL – APPLICATION WORKSHOPS AND INDIVIDUAL TRAINING COURSES

Best possible productivity and quality from day one and for years after – this is our aim. That’s why we pay special attention to the integration of EXAKT process technology. To do so, we put the EXAKT Three Roll Mills into operation with your product and train your employees in safe operation of the equipment. Also should you need information or training at a later point in time, we will be happy to assist you.

What is important in processing? Our training courses and workshops provide users with practical expertise. In addition to optimum use of your equipment, we will teach you which factors significantly influence the processing. You will learn all of the parameters that are decisive for a specific result. Working closely with you, we make sure that your EXAKT Systems deliver the best possible result.

OPTIMUM RESULTS FROM THE FIRST DAY ON.
ENSURING QUALITY AND PRODUCTIVITY IN THE LONG TERM

Stable, reliable processes and long service life distinguish EXAKT Precision Equipment. To ensure this over the years, we recommend regular maintenance of the systems. It’s worth it. The expense is low compared to the losses from production downtime. To optimize your product quality and output, our experts are glad to be available on site at any time.

THE μ COUNTS

Besides regular, professional and properly carried out maintenance, the function and use of precise, high-quality original replacement and wear parts is important. The quality of the machine has a crucial influence on the quality of the result. Don’t take any risks. Through our »in-house« roller inspection and regrinding service, our roller grinding shop provides reliable and precise results for your rollers – so that wear is a secondary issue.

SERVICE

To minimize expensive downtime, our experienced and expert service staff are available at short notice, on site or in our Service Center. Get in touch with your local contact partner or contact our Service Department.
For further information or if you have any questions, do not hesitate to contact us or one of our competent sales partners.