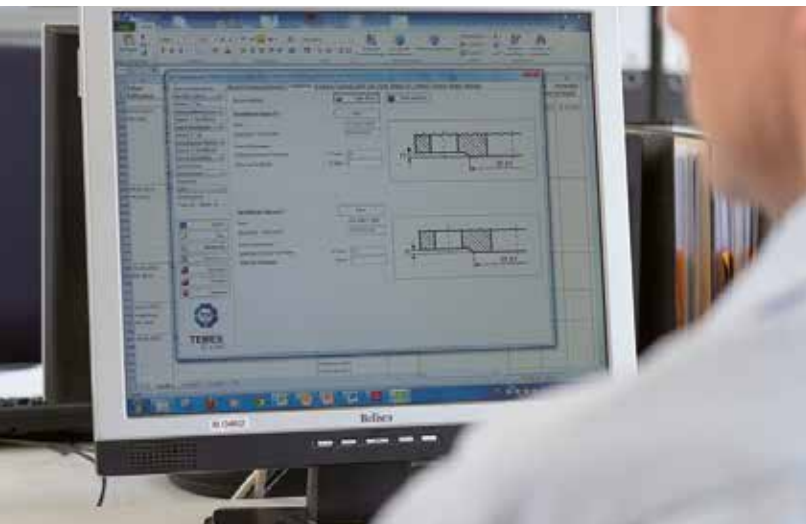




SERVICE AND SUPPORT

Our commitment, your satisfaction



KLINGER KEMPCHEN

Accrued competency – innovative know-how

KLINGER Kempchen GmbH develops, produces and distributes gaskets, packings and compensators. As a market leader within the KLINGER Group, we not only set benchmarks in terms of research and development, but make a valuable contribution to an environmentally friendly technology. Since 1889, we support our customers with competence, commitment and numerous innovations.



COMPREHENSIVE SERVICE

In addition to our products established worldwide, comprehensive services in the areas of service and support complete our portfolio: from free online computations to certified installation training to our comprehensive shut down service directly at the customer location.

The following is a more detailed description of these services and support activities.

WORLDWIDE SUPPORT

Since January 2004, we are a member of the group of independent KLINGER companies. KLINGER is a reliable partner for global solutions in the field of sealing and valve technology. The KLINGER Group employs more than 2,400 professionals and has 60 manufacturing, sales and service offices on all continents.

COMPUTATION SERVICE

01

INSTALLATION INSTRUCTIONS

02

INSTALLATION TRAINING FOR FITTERS

03

ENGINEER TRAINING

04

MOBILE TRAINING

05

FLANGE MANAGEMENT

06

SHUT DOWN SERVICE

07

KEMBAG

08

KEMANALYSIS

09

BLIND GASKET SERVICE

10

COMPUTATION SERVICE

From free online programme to custom analyses

We support our customers comprehensively and need-driven in the computation of gasket joints: with our free online programme KemProof for the computation of screw tightening torques as well as with complex analyses according to project-specific requirements.

KEMPROOF® PRO

Free online calculation program for tightening torques

Our Internet page at **www.klinger-kempchen.de** offers our clients free computation of screw tightening torques in 5 easy steps. The following factors will be taken into account: DIN and ANSI flange types, additional loads, screw type and screw material, pressure, temperature, required leakage class, coefficient of friction and gasket type. The programme foundation is a computation algorithm based on AD 2000-instruction pamphlet B7, taking into account gasket values defined by EN 13555.

If needed, a verification computation according to DIN EN 1591-1 is possible if EN 1092-1 flanges are used. Other data such as flange material and rated computation voltage are taken into account as well. The computation yields the torque as well as the optimal utilisation of flanges, bolts and gaskets and the flange slope. If the maximum slope of the flange is exceeded, the programme will indicate this. The minimisation requirement of VDI 2290 is applied to the computation of the torque.

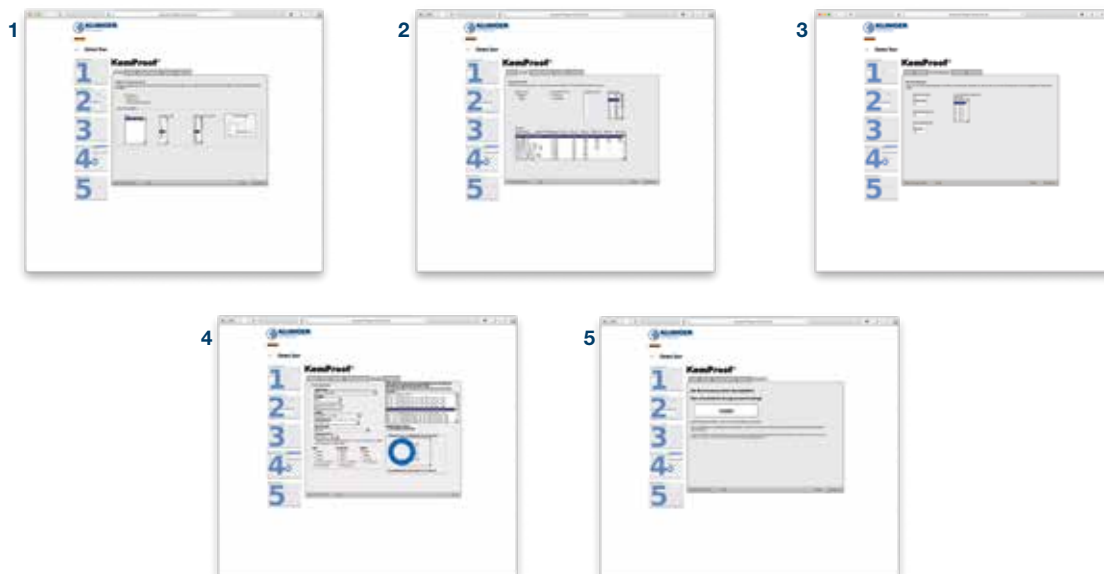
Of course, you may also use the free online computation programme on your Smartphone. Our service is then available to you wherever you are, for example, directly at the installation site.

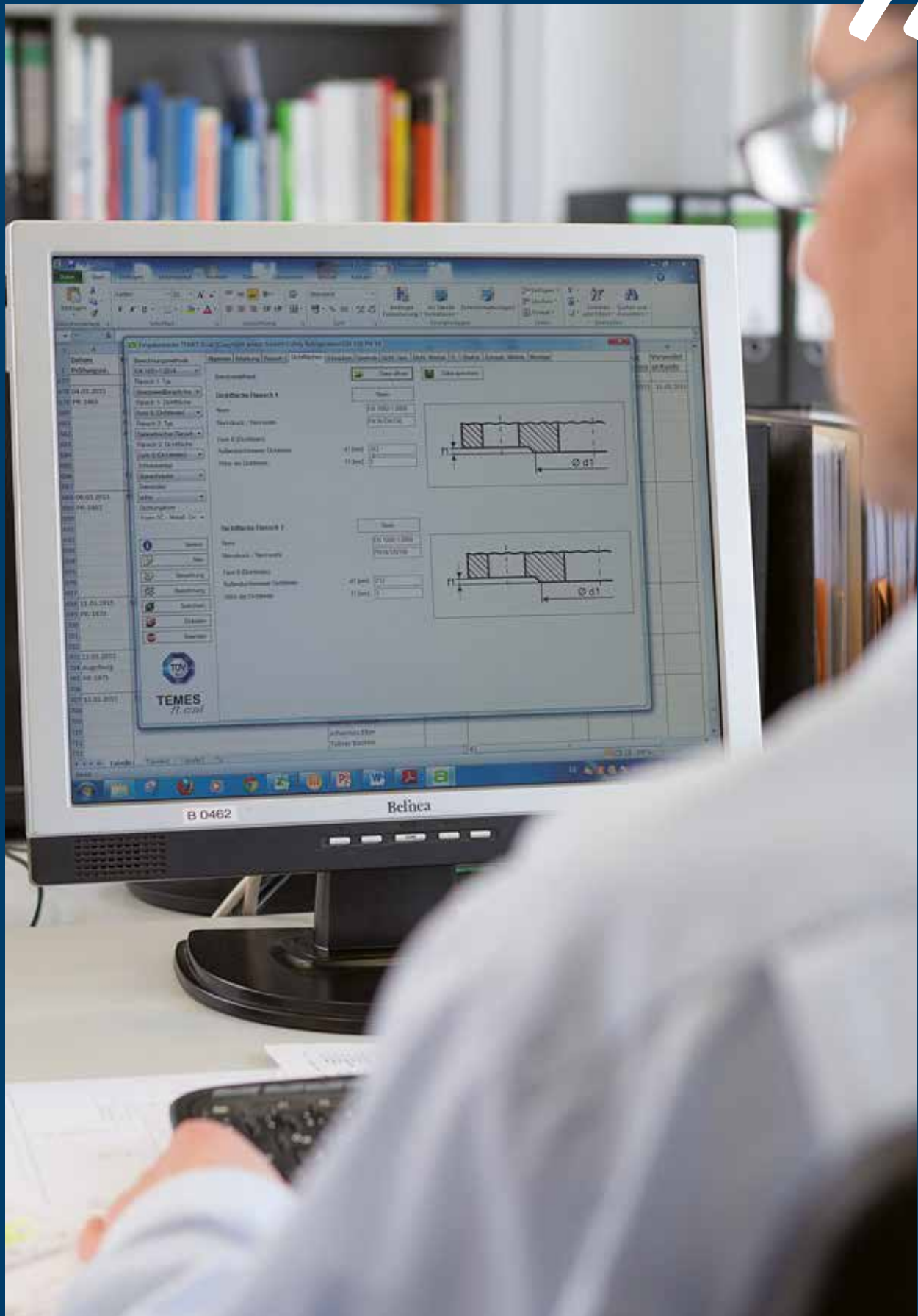


EASY STEPS FOR USING KEMPROOF®:



Log on to **kemproof.klinger-kempchen.de**. Shortly afterwards you will receive an e-mail with the access authorisation to use KemProof immediately. All relevant parameters are selectable from data tables via a menu structure. The user-friendly programme shows the desired result after just a few inputs. All data are sent to you as a PDF file by e-mail.



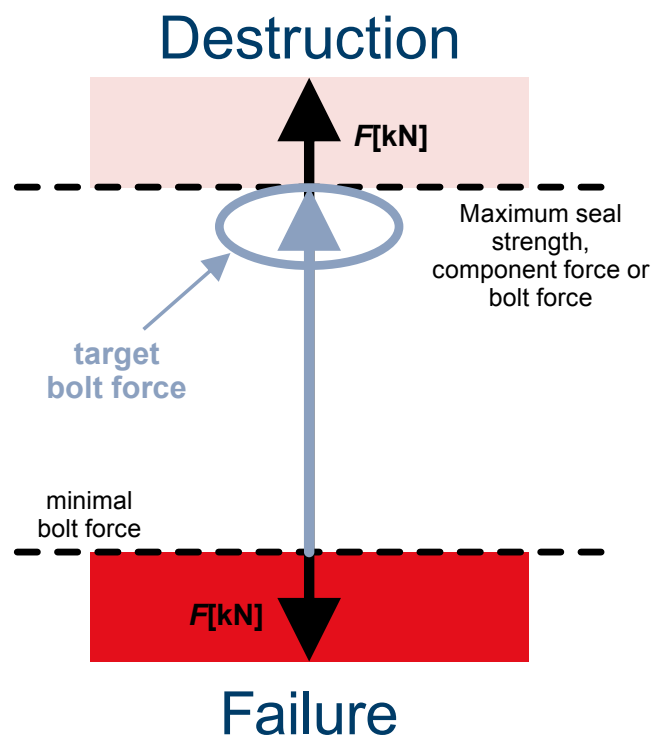


INDIVIDUAL COMPUTATIONS OF FLANGE CONNECTIONS ACCORDING TO CUSTOMER-SPECIFIC REQUIREMENTS

Project-specific complex computations of flange connections are part of our excellent service offerings. These are carried out based on the rules and standards:

- » AD 2000-instruction pamphlet B7 and B8
- » ASME VIII Div. 1 Appendix 2
- » DIN EN 1591-1

The spectrum ranges from flange connections as per DIN EN 1591-1 to weld lip gaskets and packings to RTJ type BX and FEM computations. In addition to the information required by the standards, we offer you an own compilation showing the calculated values at a glance. All computations are delivered on CD-ROM and can be tracked with the corresponding order numbers in the system archive.



TRAININGS AND INSTRUCTIONS

Gasket joints in flanges are part of countless machines and systems. Their professional installation within the scope of turnarounds, maintenance and shutdowns, is of the highest relevance for safety, efficiency and environmental protection.

That is why KLINGER Kempchen offers all who must install or are responsible for installing sealing elements verifiably and according to existing regulations professional support and training: from installation instructions to certified installation training according to DIN EN 1591-4 as well as fitter and engineer training. In addition to our in-house training centres in Augsburg, Hamburg, Leuna and Oberhausen, we can perform all training also directly at your location using mobile training stations.

INSTALLATION INSTRUCTIONS

Professional instructions for the assembly of flange connections

If flange connections must be installed during machine or system shutdowns, our experienced fitters and engineers visit your company and guide your employees step by step through the process for a professional installation. Our technicians teach and provide basic information, among others, about flange connections at your plant, the importance of regular cleaning, the use of assembly and installation tools, and the necessary practical know-how for the installation of a perfect flange connection. Information on the correct torque plays a crucial role here as well.



01

02

03

04

05

06

07

08

09

10

INSTALLATION TRAINING FOR FITTERS



Training as a certified fitter for gasket joints in flanges

The requirements for bolted flange connections are constantly increasing. In the future, gaskets in flanges will be installed exclusively by certified personnel.

To standardise the computation of gaskets and the corresponding training of fitters, the DIN introduced EN 1591 standard was implemented in the context of European harmonisation. Thus, it is possible to select installation personnel based on individual assembly and installation expertise. With the aim of ensuring standardised training of fitters in your company, KLINGER Kempchen offers fundamental training based on EN 1591-4 as well as additional training modules in its own training centres in Augsburg, Hamburg, Leuna and Oberhausen.

In addition to the training and the provision of training materials, we also undertake the organisation of exams and certifications: from registering fitters to monitoring re-certification. The training sessions and workshops are held regularly or by appointment. They are supported with funds from the European Social Fund.

Training contents

The training modules consist of theoretical and practical lessons carried out by our experienced application consultants and engineers. Basic knowledge about various flanges, gaskets and screws is imparted in the theoretical sessions. Topics include storage and transportation, tools and methods, work safety conditions and of course professional installation, among others.

The practical part consists of exercises involving installation procedures of gaskets using different flange shapes. The functional use and handling of the torque wrench is as much a part of the lessons as is the visualisation of surface pressure on a gasket (in dependence of bolt force and leverage). Using measurement technology available in our training centres, fitters become sensitised to the correct selection and application of torque.



Certified fitters exam

An examination by an independent expert follows the theoretical and hands-on training. Fitters who passed the exam will receive a certificate and an ID card, which certify the competence for the installation of screw connections within the scope of the Pressure Equipment Directive in accordance with DIN EN 1591-4. Already more than 3500 fitters have successfully completed our training.



ENGINEER TRAINING

Expertise in sealing technology – from the basics to computations

This type of training is designed specifically for engineers responsible for computations and installations of sealing elements. Our experienced trainers teach your employees the basics of sealing technology and computation of gasket joints in two subject modules

The subjects at a glance:

Subject module 1: Basics of sealing technology

- » Steps to a high-quality gasket joint
- » Rules, regulations, latest developments
- » Basic gasket types
- » Selecting the right gasket
- » Selecting sealing characteristics
- » Evaluating the sealing characteristics
- » Impact on sealing performance
- » Quality of the sealing surface
- » Impact on installation

Subject module 2: Computation

- » Principles of gasket joint computation
- » Introducing computation methods
- » Kempchen algorithm
- » Performing computations:
 - DIN EN 1591-1
 - KemProof®

The training sessions are held in our in-house training centres by appointment.

MOBILE TRAINING

Our entire training capabilities directly at your site

We are the first company in Europe offering our customers the possibility to train their employees in our fully equipped truck at the customer site. Built up in less than one hour the truck provides 10 fully equipped training places.

So you can take advantage of our training program without long downtimes due to travel time of your specialised personnel. The mobile training is recommended especially if you want to train many employees or if your place of business is far away from our in-house training centres.





01

02

03

04

05

06

07

08

09

10



FLANGE MANAGEMENT

Quality assurance of the flange installation during turnaround, downtime, and maintenance

In addition to the complete supply of sealing elements and the mobile production on-site, our quality assurance support during flange installation completes our full service portfolio. Our employees qualified as per DIN EN 1591-4 monitor the removal and installation of flange connections on-site during the requested period. They visually assess the situation according to their specifications and note any deviations. In addition, our team will assist your installation partners with technical issues during the service operation. After the project is finished, a report with complete documentation and a final evaluation completes our service package.

- » Quality assurance of flange elements
- » Qualified technicians according to DIN EN 1591-4
- » Visual inspection, deviation logging
- » Evaluation and documentation
- » Support during the service operation
- » Preparation of complete documentation
- » Use of security seals (QR-Code)



KEMRECORD 1.0

QS-FLANGE MANAGEMENT

Total documentation with our new
app KemRecord 1.0



SHUT DOWN SERVICE

Our service and production base at your plant

The KLINGER Kempchen shut down service makes our entire service and product range available to you directly in your companies – whenever you want, as long as you want. In our mobile service and production support station on your premises, we provide not only a customised consignment warehouse with all standard pipe gaskets (grooved and flat gaskets, packings etc.) but also a fully-equipped machine park.

We are thus able to produce flat gaskets from all soft materials and in all installation sizes. Moreover, groove gaskets can be inspected, cleaned, regenerated and produced (up to Ø 600 mm). And finally, we can also produce corrugated gaskets (up to Ø 1250 mm) on the spot.

The online connection to our company provides access to our goods and inventory management, as well as the rapid organisation of custom-made products such as complex metal components.

Our highly specialised team experienced with turnarounds ensures fast, smooth operations and is available as a permanent contact on site. The simplified ordering channels relieve your logistics staff as well. At the same time, your administrative effort and your process costs are substantially reduced.



Your advantages at a glance:

- » Constant contact on-site
- » Customised stock range
- » Producing soft material gaskets with plotter technology
- » Producing grooved gaskets
- » Producing corrugated gaskets
- » Issuing gland packings
- » Refurbishing metal and soft material gaskets
- » Expansion on screws and bolts, blind gaskets
- » Cleaning of screws/bolts

Shut Down Service – our mobile machinery

Our mobile equipment has all the machines needed for the production of common sealing qualities: from flash cutter to corrugated ring crimping machine to a lathe. A screw and bolt cleaning machine completes our technical service for a fast, professional turnaround.

01

02

03

04

05

06

07

08

09

10



FLASH CUTTER – FLASHCUT 222 TYPE L12

The cutting table **Flashcut 222 type L12** has been developed for prototyping as well as for the production process of soft material gaskets. Using its built-in projection system makes it possible to trace and crop any shape on the raw material. Its powerful vacuum system has a variable power setting and thus saves energy. In addition, two independent work zones provide a high degree of flexibility. With its compact design and small footprint, it is ideal for mobile use in the field.

CORRUGATED RING CRIMPING MACHINE

Corrugated gaskets with soft material layers, mostly from graphite or PTFE, convince with their high degree of tightness and minimal loss of bolt force. Specifically, their metallic shaft ring ensures excellent elasticity.

For these reasons, they are ideal for use in areas with high pressure and temperature loads. The corrugated ring crimping machine serves to stamp grooves (corrugations) into standard gaskets. Our portable machines can produce corrugated rings with diameter up to 1250 mm.



MOBILE LATHE

70 to 80 percent of all gaskets are made of metal. With our portable lathe, we can produce gaskets with a diameter up to 600 mm directly on-site. In addition, reworking of heavily worn or damaged sealing surfaces is possible as well.



SCREW CLEANING MACHINE

According to VCI guidelines for flange mounting, bolts and screws must be reconditioned before being used again. A screw and bolt cleaning machine, cleaning approximately 180 screws per hour (M33 x 250) is among our mobile equipment and significantly reduces the amount of work required.



KEMBAG

Installation bag for the safe transport of gaskets

Improper transportation of gaskets to the site leads not infrequently to smaller and larger damages. If gaskets are carried casually in toolboxes, tools, screws etc. may scratch, dent or bend the gasket. The result: high number of rejects or the installation of defective gaskets which is detrimental during operation. On request of our customers we have provided a remedy here and developed the outdoor installation bag KemBag. Specifically, the durable and water repellent KemBag is made for industrial gaskets up to DN 200. Kembags support the safe handling during the transport and are easily and comfortably carried even on bikes.



Product details

- » 9 pockets (PU coated) for gaskets up to DN 200
- » Dimensions (overall): 400 x 125 x 330 mm
- » Outer material: Dupont Cordura
- » Colour: black
- » 1 inside tool pocket: 315 x 35 x 170 mm
- » 1 outside tool pocket: 95 x 40 x 270 mm
- » Transparent keep-safe compartment in the lid with short installation instructions in German
- » Velcro closure
- » Weight: 2.3 kg

KEMANALYSIS



Professional analysis of sealing surfaces and flange connections

In most cases, poor flange seals result from problems with the flange contact surfaces on which the gaskets are placed. These problems may be unevenness due to corrosion, damage due to cleaning or expansion tools, as well as partial indentations in the middle of the sealing surface etc. The relevance of the damage depends on its impact on the locally present surface pressure. KemAnalysis allows an accurate assessment of this situation.

Professional troubleshooting

The measuring instrument consists essentially of a graphite layer that visualizes unevenness as impressions, as well as pressure-sensitive paper depicting the surface pressure. A special coating protects the measuring unit from chemical attack. KemAnalysis is mounted like a conventional gasket. The analysis can start after a short exposure time: either through a visual assessment or using a software-based surface analysis.

It offers insights into the loss of bolt force during installation, the deformation of the flange and the impact of irregularities in the sealing surface on the sealing behaviour. On this basis, the problem areas or damaged spots can be located and the necessary remedial measures and the optimal gasket configuration can be determined as well. The software-based evaluation also sheds light on the existing surface pressure, potential leakage channels and the need for reconditioning the flange.



01

02

03

04

05

06

07

08

09

10

BLIND GASKET SERVICE

Reliable supply: rule-compliant, secure, efficient

The supply of the correct quantities and types of blind gaskets for maintenance is costly and time consuming for machine or system operator. Therefore, this task is often transferred to contractors. With moderate success. Because in most cases, blind gaskets are poorly labelled, do not conform with rules or standards and are too thin for reasons of installation ease. At the same time, they are safety-relevant components subject to high pressure, which prevent the medium from leaking and injuring people when pipes are severed. In addition they must be proven according to the rules and standards in order to determine the thickness:

- » AD 2000-instruction pamphlet B5
- » ASME Code 31.1
- » Required proof of certificate EN 10204 3.1

Individual blind gaskets with customized dimensions

Our laser systems can produce complete blind gaskets in one operation. Each blind gasket is provided with a sturdy marker plate containing details about the manufacturer, nominal width and nominal pressure level. The coloured safety paint additionally serves to prevent accidents and unintentional isolation. The blind gaskets feature a hole for hanging storage that helps keep the gasket from being damaged.

We manufacture blind gaskets and spectacle blind gaskets for all standard flanges. In addition to the customary formats, we produce also special forms featuring technical sealing advantages. If a thickness is not specified, we dimension according to AD 2000-instruction pamphlet B5. Using high-strength materials we can manufacture thin and thus lightweight blind gaskets that offer the same pressure resistance at a lower weight.

BLIND GASKET PROFILES

- » Profile A1S
- » Profile B7S
- » Profile B9S
- » Profile A5S
- » Profile A11S and Profile A13S
- » Profile A5BS
- » Profile A11BS
- » Profile A13BS

In the context of our shut down service, we gladly offer a blind gaskets service as well. Depending on agreement, we provide the associated flat gaskets (with A1S) in addition to the blind gaskets or cover the sealing surfaces (with B7S / B9S). A rental system (similar to consignment stock) for a fixed monthly fee is also possible.





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