

The benefits of using die-formed packing rings and sets

By Ralf Vogel, ESA member

Modern stuffing box packings offer excellent sealing performance and reliability. There is a huge range of long-term, low-emission and low-maintenance products with demonstrable benefits such as:

- Excellent emission control
- Ability to operate at very high temperatures
- Ability to operate at high pressures and speeds
- Ability to withstand most process chemicals

A wide variety of packing materials is available for different industrial purposes. The prime importance for the user is to source a quality packing, which suits his requirement and budget thus increasing production output and profits. We often think the most efficient way of cutting and bending a packing to the required size is to do it ourselves. But there are lots of factors which can influence this decision. How much effort do users have to spend and what resources do they have to make available to obtain properly cut lengths of packing? Can rings of precisely the correct size for sealing stuffing boxes of pumps and valves easily be formed? How difficult is it to bend and

install the cut packing when the cross-section is very small or very large? Most importantly – are personnel properly trained for the job? Do you want to avoid all the extra hassle and hidden costs? Die-formed custom manufactured to your requirements are the best solution. The individual rings are pressed in a tool or die with a specific load to ensure a high and consistent cross-sectional density and a smooth packing surface. They are not only easier and quicker to install but the pre-compression increases the density of each ring thus reducing the gland loads necessary to seat and compress



Plunger pump packing rings with 45° cut

multiple rings in the stuffing box. This guarantees lower friction and a longer lifetime of the packing set. In pumps additional benefits are reduced running-in times and better sealing performance overall. Also the packing life, as well as that of the valve stem, shaft or sleeve will be significantly improved. Die-formed rings can be supplied endless, with a single straight or 45° cut and as split rings in two halves, depending on the application requirements. For specific applications, high pressure plunger pumps for example, the rings can be supplied in higher densities so that minimal compression set occurs because of the high system pressures. Endless, expanded graphite rings without any additional fillers or binders show no volume loss at extremely high temperatures. For certain applications such as cover lids, special geometries can be made, not only square or rectangular shapes. These rings can also be made to specific densities depending on the application requirements. In addition, through continuous research and development activities ESA member companies are able to recommend various possibilities to select not only the right die-formed packing ring but also dedicated ring sets.



Valve with sealing set



Die-formed fugitive emission sealing set

Different combinations of packing rings, with or without additional components such as spacer discs, internal or external springs or lantern rings are available on request for particular applications such as valve fugitive emission sealing, soot blower applications or high pressure plunger pump systems.

Besides releasing the end user from extra hassle and allowing more time to focus on the core business, die-moulded packing rings and sets offer even more benefits

over rings cut from length form material, such as:

- Easier and quicker installation
- Improved sealing performance
- Superior pressure distribution
- Lower gland pressures
- Lower friction on shaft or spindle
- Longer service life
- No waste

So do not hesitate to contact any of the ESA Packings Division Member Companies which can be found on the ESA website www.eurosealing.com for specific technical or commercial assistance. Equally, a number of publications are available to provide assistance here, the most recent of which is the FSA+ESA Compression Packings Technical Manual (available from the ESA website).

The European Sealing Association (ESA) has produced this article as a guide towards Best Available Techniques for sealing systems and devices. These articles are published on a regular basis, as part of their commitment to users, contractors and OEM's, to help to find the best solutions for sealing challenges and to achieve maximum, safe performance during the lifetime of the seal. The ESA is the voice of the fluid sealing industry in Europe, collaborating closely with the Fluid Sealing Association (FSA) of the USA. Together, they form a key source of technical information on sealing technology, which is the basis for these articles. For more information, please visit www.eurosealing.com