

# Pilot Gaskets: sustainable sealing solutions for the valve industry

In today's world the dynamics of business are changing rapidly, and organizations are striving hard to strike a perfect balance to stay profitable, innovative and relevant. Moreover, being customer-centric, employee-friendly and ecologically sustainable are no longer just choices but necessities for a business to thrive long-term. PGE (Pilot Gaskets) Industries Pvt. Ltd., based in Thane, Mumbai, India is one such company that is making all the right moves to ensure customers are fully satisfied, employees motivated and environment unharmed. Mr. Darshan Parekh, Technical Director, PGE, explained in detail why his company is a pioneer in sealing and insulating products.



By David Sear & Tanya Rudra

R&D is the basis for growth, states PGE's Technical Director Mr. Darshan Parekh

Established in 1981, PGE is a prominent manufacturer of a variety of high-quality non-asbestos gaskets, metallic gaskets, semi-metallic gaskets and laminar seals along with a myriad of valve internals and insulating products. The company prides itself on its research and development background and expertise in taking up pilot projects, hence, the name Pilot Gaskets. The company's mission is to provide innovative and environmentally friendly industrial solutions to ensure compliance to stringent fugitive emission norms and incremental satisfaction of its clients.

"We specialize in projects that require development of components. If there is demand for a customized valve, we develop compo-

nents in partnership with the valve manufacturer. Only after thorough testing do such components become onboarding items," Mr. Parekh said.

For PGE, R&D is the basis of growth and that is why Mr. Parekh credits his company's willingness to experiment and learn from mistakes as its biggest strength.

### Gaskets are not created equal

In simple words, a gasket is a seal that unites two separate components to create a single entity. Depending on the usage, gaskets can be made from rubber, plastic, metal, and other materials. However, there's more, much more to gaskets than simply an item that prevents a leak, which makes gasket selection far

more complicated than might first appear. This is why PGE not only develops custom components, it also helps customers with this complex decision.

Mr. Parekh, a member of the Bureau of Indian Standards (BIS), helps in educating clients about the sealing standards across the world. For him, it is of utmost importance that the Indian standard grows to be on par with the global level.

Mr. Parekh further explained how a refinery can handle a shutdown every three years for maintenance activities but on the other hand, a nuclear power plant requires equipment that lasts 50 years. Calling it a team effort, he said that all the components - gaskets, bolts, flanges - need to

be at a similar level of quality for the equipment to last longer.

"To ensure maximum efficiency and long life of gaskets, we perform accelerated ageing tests in which we speed up the ageing process either by temperature or pressure. However, when advising clients on gasket longevity we always factor in an appropriate safety margin, as there can be a divergence between lab tests and actual applications," Mr Parekh said.

### Gaskets in the valve industry

Gaskets have been around for as long as valves have been manufactured and are extensively used for two-piece and three-piece valves, the body-bonnet connection, etc. Commented Mr Parekh:

“the proper functioning of the metallic components is very much dependent on the efficiency of the non-metallic components. We are proud to serve many of India’s finest valve manufacturers.”

He continued: “we can identify surface stress between mating components using NDT and based on the available surface stress, decide the best possible gasket material. PGE helps with design calculations, surface stress pressure and bolt torque requirements. This unique approach is what gains us the trust of valve R&D heads and assures the end user of an emission-free valve design.”

For PGE, currently 15% of the business comes from the valve industry and this figure is expected to grow consistently with time. According to Mr. Parekh, the valve industry in India is technically sound and in alignment with the global environment regulations which makes it an ideal partner for custom sealing solutions as well as high-end applications.

“We recently invested in a clean room manufacturing project for the valve community. Set up inside our plant, this clean room helps us in handling extremely critical components destined for the

valve industry which need to be dust free and manufactured to specific ISO standards,” Mr. Parekh added.

Mr. Parekh further explained that the aforementioned technique is critical for gaskets destined for application in oxygen and pharmaceuticals and BAM certification is required to carry out these operations.

The Federal Institute for Materials Research and Testing (BAM) tests the sealing material compatibility for use in flanged connections with liquid and gaseous oxygen. The reactivity of a gasket material with oxygen at high pressure and elevated temperature is evaluated. If there is no change in appearance, in mass, and in autogenous ignition temperature of the material, it is considered ageing resistant.

### State-of-the art machinery

PGE has extensive expertise in sophisticated applications and boasts of a highly automated production system that includes oscillating knife cutters and laser cutting machines. These unique machines are widely used by European manufacturers but PGE indicates it is one of the few Indian companies dealing in the valve OEM market to have installed these.

With the help of a drawing, it is possible for PGE staff to cut out a gasket of any size and specifications within just minutes. This speed and flexibility allow PGE to undertake pilot and R&D projects with its client base at the testing phase. In addition, the in-house availability of cutting facilities, engineering abilities and skills have made PGE more efficient in service-



PGE has extensive in-house testing facilities, enabling the company to test materials under ASTM F36J, ASTM F146, ASTM F152, and DIN standards as well as to conduct extensive R&D

ability. This modern equipment not only reduces the lead time but also minimizes raw material wastage, thereby reducing scrap and PGE’s sustainability outlook. PGE has also received approval for API 622 Combination Gland Packing and will focus on more fugitive emission solutions for the valve OEMs going forward. This means customers are assured of one-stop-shop convenience with consistent product quality for static and dynamic sealing requirements.

PGE also has in-house testing facilities that comply with ISO 9001 certification. The testing facilities enable the company to test the materials under ASTM F36J, ASTM F146, ASTM F152, and DIN standards.

### Asbestos, fugitive emissions and sustainability in general

On 21<sup>st</sup> January 2011, the Supreme Court of India banned the use of asbestos in the country. Although the mineral can no longer be mined, India still remains a major importer and consumer of asbestos, such as in roofing sheets, insulation and brake linings.

“India is moving to global standards especially with environmental norms, so usage of asbestos is decreasing on a daily basis,” noted Mr Parekh. A champion in promoting non-asbestos products, Mr Parekh says such alternatives are not just superior in terms of alleviating health risks, but can actually



be more efficient. "From the performance standpoint especially with fugitive emissions, non-asbestos far outperforms asbestos materials," he added. "We are proud of the fact that PGE doesn't offer, recommend or manufacture any asbestos materials and is actively working towards changing customers to the safest option available."

In 2014, PGE established a non-asbestos policy and strictly abides by it. Being an ISO certified company, PGE also follows occupational health and safety standards.

As far as fugitive emissions are concerned, India is one of the signatories of the United Nations sustainable development goals which includes emission controls as part of the environmental goals. PGE is one of the few companies to follow the UN Global Compact program which pledge themselves to follow the UN SDGs for a better tomorrow.

"The environment ministry has established a fugitive emissions clause for petrochemical plants and refineries that are coming up. The policies are in place but it is still a new concept in India. The laws here are not as stringent as they are in Europe but it is definitely a start in the right direction," Mr. Parekh said.



Thanks to top-notch equipment such as laser cutting machines, PGE can meet the sealing needs of sophisticated applications

PGE works closely with manufacturers to have valves tested for fugitive emissions. It has API 622, ISO 15848 and ISO 10497 certifications to back its claims.

### Make in India and potential of MSMEs

A firm supporter of Prime Minister Narendra Modi's initiative "Make in India", Mr. Parekh also believes that domestic manufacture is important for the country's economic growth. He sees a great amount of potential in the homegrown small scale or medium scale companies going global in the future.

"The MSME are way more flexible than the big giants and are able to develop faster. Right now India is at a stage of growth and MSMEs provide a platform which allows the next generation to develop. This is our responsibility and that's why we should be looking at giving employment to the youth, R&D and value to the customers. I believe in the vision and the idea because it is surely the right approach," Mr. Parekh said.

### The customer base

PGE's customer base is divided into three categories: original equipment manufac-

turers (OEMs); maintenance, repairs and operations (MROs); and engineering, procurement and construction (EPCs). The company sells directly to the OEMs making items such as valves, heat exchangers, reactors, etc. because extensive customization is required for these products.

At the MRO level, PGE works with distributors and partners who are strategically located near the industrial hubs and can provide fast service. The EPCs form a highly competitive market, therefore PGE delivers large volumes of standardized piping material and piping gaskets directly to the customer base.

Elaborating on this, Mr. Parekh said: "MRO turnover helps to keep our business stable. New-build projects can get delayed, but the regular maintenance of a process facility is seen as a vital activity to ensure plant availability." PGE is also active in international markets where it works directly with the OEMs to ensure that the source of its products remains highly

## PGE: Product Highlights

- CNAF cut gaskets and sheets: CNAF, expanded graphite
- Semi metallic and metallic gaskets: PiloSeal (SWG), SealPro, double jacketed, ring joint gaskets
- PTFE: cut gaskets, machined components, adhesive tapes
- Expanded graphite: moulded graphite, graphite sheets.
- valve internals: laminar seals, machined seals and components
- Others: insulating gasket kits, PTFE envelope gaskets
- Gland packing: fugitive emission range of combination gland packing sets, PTFE braided packing, graphite with Inconel packing, pure carbon braided packings
- Insulation: ceramic thermal insulation, fiberglass thermal insulation, non-asbestos millboard, silica cloth, Furnax™ welding blankets



traceable. Moreover, Mr. Parekh stated that PGE is concentrating on the petrochemicals and energy industry to further expand its business.

## Employees first

PGE takes a lot of pride in its top-class products, excellent customer service and short turnaround times. Mr Parekh acknowledges the unstinting dedication of all staff in this respect. "Our skilled and motivated employees fit into our vision and enable us to take up pilot and R&D projects. The young and dynamic team thrives on challenges and responsibilities," Mr. Parekh said.

PGE's standing as an employee-first company with an admirable approach to occupational health and safety is reflected in Mr. Parekh's leadership style. "We have a flat organization where respect and responsibility are based on work ethics, not designations," he added.

Mr. Parekh bluntly dismisses the 'hustle culture' as a relic of the past and believes that work-life balance, fair treatment and due acknowledge-



*PGE manufactures a huge variety of non-asbestos gaskets, metallic gaskets, semi-metallic gaskets and laminar seals, plus a myriad of valve internals and insulating products.*

ment are the top motivators for the younger generation. "The new generation want time for themselves. What COVID taught us is how important relationships are and prioritizing a balance is secret to a happy team."

## The way forward

Apart from making a mark in the global markets, PGE aims to take up even more challenging tasks in India. Plans therefore call for the company to further expand its material knowledge, to realize its growth strategy and, moreover, to enhance employee development. "The pandemic highlighted how stressful financial

objectives alone can be. That is why we focused more on employee training and upgrading our machinery as ways to further strengthen our foundations," Mr. Parekh said.

Moving forwards, PGE plans to expand its manufacturing space, double production and increase employee strength by the end of 2022. It will also continue to work on its vision of becoming the industry

leader by being customer-centric, growth-oriented and consistent in its mission to make India asbestos-free

"Our biggest goal is to concentrate on problem solving. We just don't want to be known as the largest gasket provider, but the one that cares the most. Our goal is not to be big but to be great," Mr. Parekh concluded.

## Key elements to remember before you select a gasket material

**A gasket has primarily ten important functions as follows:**

1. Gasket should create the initial seal.
2. Gasket must maintain the seal for extended period of time.
3. Gasket must maintain integrity during handling and installation.
4. Gasket must be sufficiently deformable to flow into imperfections in the seating surface to create an initial seal.
5. Gasket must have sufficient strength to resist crushing under applied load and defy blowout under system pressure.
6. Gasket must chemically resist the system fluid and even the highest system temperatures.
7. Gasket must strong enough to maintain its seal, tough enough to handle creep relaxation and resilient enough to provide recovery during normal operation including thermal cycling, vibration and pipe hammering.
8. Gasket must never promote corrosion of the seating surface.
9. Gasket must be impervious to the fluid being sealed.
10. Gasket should be easy to remove.

