

“Buying with confidence – the benefits to users of purchasing sealing products from ESA members”

Project scope and work agenda

1. What is the objective of this project?
 - a. To make ESA members the first choice for sealing solutions
 - b. To give buyers confidence that they are high quality, reliable seals from trustworthy suppliers
 - c. To create buyer doubts about purchasing copy seals from “other sources” – any examples of disasters, and the costs of leaks
 - d. To create a “one page” summary of benefits to accompany large value quotations from members
 - e. To encourage non-members to join the ESA
2. What style of document do we need to produce?
 - a. Produce a document for ESA members to use, and public information?
 - b. What issues should be included in the document?
 - i. What does ESA stand for? And what is expected of ESA members, and what they provide as services
 - ii. List of current and past activities
 - iii. List of standards groups ESA is member of
 - iv. List of all standards relevant to sealing products
3. How best to publicise/ market the document?
 - a. Place document on the ESA web site only, or find other ways to publish the information?
 - b. Produce a publicity campaign to advise users of benefits of using ESA members products?
 - c. What media would be appropriate to use?

Specific chapters that should be considered:

1. What does membership of ESA mean?

The European Sealing Association (ESA) represents most Sealing Product manufacturers in Europe. The ESA has over 50 members, with a combined turnover of Euros 2.6billion, and employs some 12,500 people. 60% are in manufacturing, 8.8% in R&D, and 25.9% in Sales and Marketing. The ESA works in very close co-operation with the Fluid Sealing Association (FSA) who represent most Sealing Product manufacturers in USA and Canada.

ESA expects each of its Members to abide by the **ESA Code of Conduct** which aims to assure users, specifiers, legislators, and purchasers of Sealing Devices, that they can **“BUY WITH CONFIDENCE”** from an ESA member company.

ESA represents Members who are committed to the highest degree of professionalism, technical expertise, ethical conduct in every aspect of their operations, including safety, reliability, quality assurance, and supporting their products.

ESA insists on being relevant and technically competent and will represent members on all relevant technical and legislative committees throughout Europe. This ensures members are both

represented in technical discussions, but also kept up to date with all standards and regulations relating to sealing products.

Members are expected to contribute towards a fairer, more environmentally balanced society. For this, Members need to positively and proactively influence all employees, partners and stakeholders involved in their business chain. Members must respect all ethical aspects of race, creed, sex, and orientation.

The Code of Conduct applies to the ESA employees, the Executive Committee, and all ESA Member Companies, suppliers of materials to Members, in all the countries where they operate and sell their products.

2. Products and Technical Standards

Each Member shall ensure that the Products it offers are selected, designed, manufactured, and supplied in accordance with all the relevant statutory regulations and technical standards that are mandated, and which are claimed for each product.

Each product division within the ESA provides general selection guidelines and all relevant performance characteristics that should be expected. An example is the Mechanical Seals division which refers to STLE SP-30 selection criteria which is based on the operating conditions expected.

Product Performance

A Member must be able to demonstrate that the published features of all products comply with any benchmark, performance standard, or any other criteria to which it lays claim.

If a member claims to meet a particular standard they must be able to provide the test documents that confirm this claim.

Quality Assurance

Members will be certified to ISO 9001/2 quality assurance system.

Environment

Members shall act in accordance with all relevant standards on environmental protection and seek to continually reduce their company's impact on the environment.

Materials of construction must comply with regulations and any restrictions on their use, to minimise their environmental effect.

Members are encouraged to qualify their manufacturing operations to the ISO 14001 standard.

Health and Safety at work

One of ESA's Values is prioritizing Life and Safety. This means Members must do everything possible to ensure the health and safety of all those involved in the production chain, and those who use Member's products.

We expect Members to aspire to meet the requirements of OHSAS 18001.

We require that Members and their suppliers:

- Meet all requirements of labour legislation, and of collective work agreements and conventions, and their established norms and parameters.
- Provide healthy and safe conditions in the workplace, with quality of life, as well as individual protection equipment and any other necessary materials, in compliance with required standards of quality and maintenance.
- Report indicators related to situations of risk to employees, as well as the occurrence of any kind of accident to members Health and Safety Department.
- Have a plan of action to cut the number of cases of workplace accidents and illness/disease.
- Comply with their Health and Safety Policy, as well as other documents related to health and safety.

Members must be able to prove they comply in all respects of this policy.

If any member or user has cause to think this is not the case in a particular situation, they should advise the ESA Secretary (mark.neal@europeansealing.com), who will arrange a full investigation into the circumstances.

After Sales Support

Members must advise customers on what Training, Maintenance, and Support is available for all their products. Members are expected to provide onsite support in dealing with “Bad Actor” sealing issues. Many members in the Mechanical Seal division provide service centres which will be able to provide refurbishment of seals after the API 682 mandatory 3 years continuous running period. Spares must be made available on short notice delivery.

International supply and support capabilities

Members must be able to confirm international support companies, licensees and accredited distributors in all marketplaces they claim to be active in.

Training

It is vital there is a focus on **the competency of the technicians tasked with fitting sealing devices**.

There are many accredited Technician Training programs available from ESA members, and accredited training organisations. Leak Detection and Repair (LDAR) systems and programs are also available, as is the training of technicians to use these effectively.

3. Consequences of purchasing substandard sealing devices

Unfortunately, there are many consequences from fitting poorly selected or sub-quality sealing devices. The initial small cost saving is outweighed by the more significant costs which can occur due to a seal failure (Figure 1).

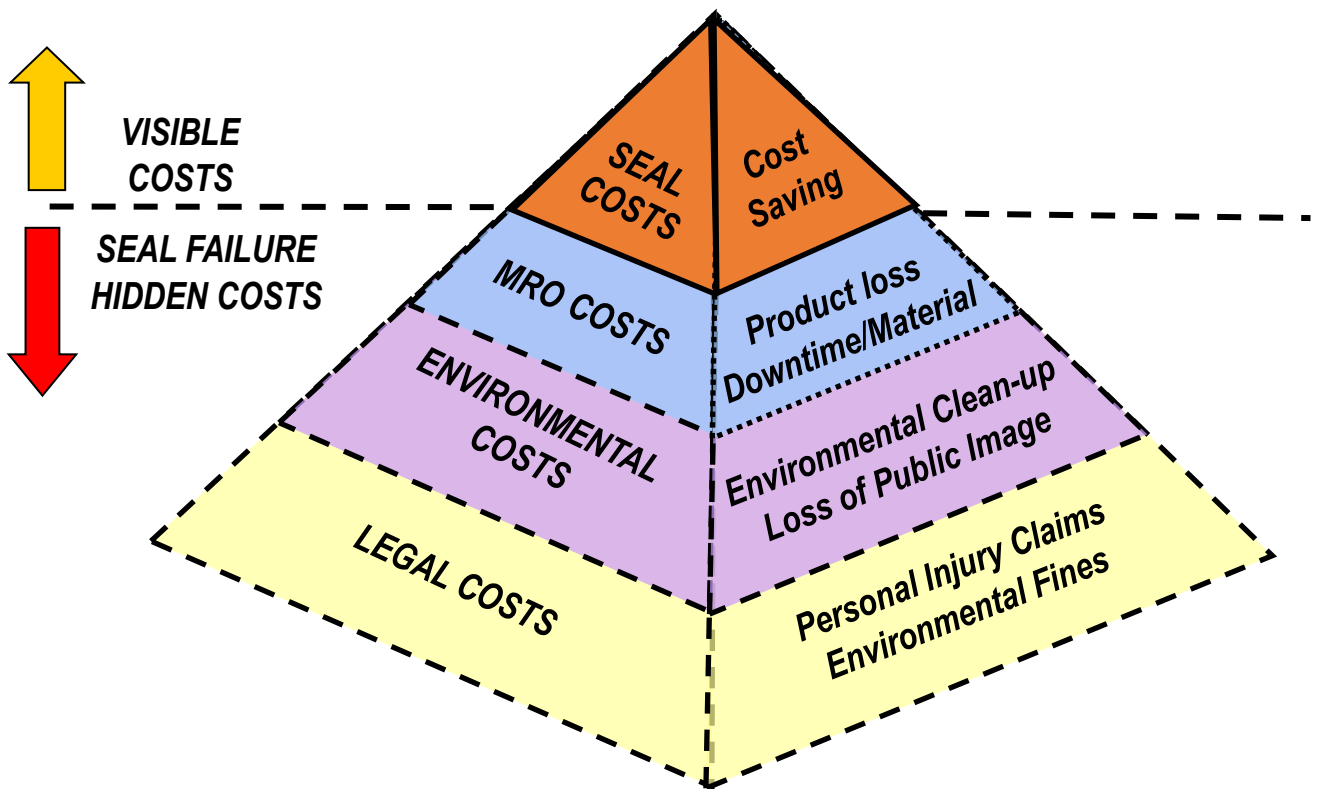


Fig.1: Hidden seal failure costs

- a. Firstly, there are the losses associated with lost product. Most manufactured products have significant costs associated with its production.
 - a. It is reported that there are up to 500,000 tones/year of fugitive product emissions from US chemical plants.
 - b. Also, up to 10,000 tones/year of VOC emissions from European refineries.
 - c. Valves account for 60% of leaks, with Pumps 10% and Flanges 5%.
- b. There is an additional production loss due to downtime and repair of the failed application. In addition, there are labour and material costs for the replacement.
- c. Product which is released into environment due to a seal failure can cause additional costs due to contamination. An example is a failure of a butterfly valve seal in a refinery which caused leakage of thermal oil into a nearby yacht harbour. The clen-up of the harbour and yachts was extremely costly. Also, the negative publicity due to environmental contamination can have negative effects on the public image of the company.
- d. In the worst-case people can be injured or killed due to a seal failure. In these cases the costs for subsequent personal injury claims can be expensive. Beside this there are environmental fines for companies if they release product into the environment.

4. Standard and Legislation Committees ESA is represented on

ESA represents members on all relevant Standards or Legislation Technical committees, where individual companies cannot adequately represent the sealing industry, for fear of promoting only their preferred solutions.

Some examples of standards committees the ESA works with:

1. **Article 13 forum.** The Industrial Emissions Directive (IED) article 13 requires the commission to “organize an exchange of information between member states, the industries concerned, non-governmental organisations promoting environmental protection (like ESA) and the commission.”

The Article 13 forum is the working group for this process, which is often referred to the “Seville Process”.

A Technical Working Group (TWG) is set up by the Commission to draw up and or review the BREF (Best Reference) documents. The Commission has published a timetable of BREF review work over the next few years.

TWGs consists of Technical Experts representing member states; industry; Non-governmental organisations (NGOs) promoting environmental protection; and the Commission. TWG members are nominated based on their technical, economic, environmental, and regulatory expertise, as well as their ability to bring information into the BREF from an end user perspective.

It should be noted that the **ESA is a full member of the Article 13 forum TWG**, which is chaired by EU DG Environment. This TWG is responsible for the guidance on the collection of data, the work program for the exchange of information, and guidance in drawing up of BREFs and their quality assurance.

The role of Best Available Techniques (BATs) is to act as a reference for setting permit conditions (Article 14 (3)) and should contain the appropriate Emission Limit Values (ELV) (15 (3)), so that **emissions never exceed BAT emission levels**. Note BATs should be updated at least every 8 years.

IED 2010/75 requires that the Competent Authority **MUST** set emissions levels that did not exceed those specified in the BAT conclusions adopted as a Commission Implementing Decision and ensure that these ELVs are not exceeded.

2. **Drinking Water Directive (DWD).** A new DWD was issued 31.1.2018, when Article 10 of EC98/83 was deleted, and “mutual recognition” was removed. Since then, a new standardisation mandate was issued under CPR regulations.

ESA is a member of European Drinking Water association (EDW) (www.europeandrinkingwater.eu). We attend all the EDW Plenary meetings in Brussels, and responds to all the questionnaires, and give opinions on all suggested approaches.

3. **Environmental Goods Act.** The Paris Climate Change agreement agreed targets for 2050. ESA attended various committee meetings in Paris and Geneva and has succeeded in ensuring most sealing devices appear on the “A” list of zero tariff goods.
4. **BREFs.** ESA is a full member of Article 13 technical forum and plays an active part in the Seville process to agree Best Available Techniques (BATs) and the creation of BREFs. The ESA document on “Fugitive Emissions Reductions” is accepted as a BAT and is available on the BATIS system.
5. **API 682 5th Edition.** This standard specifies requirements and gives recommendations for sealing systems for centrifugal and rotary pumps used in the petroleum, natural gas, and chemical industries. ESA members are active members of the API working group, on the 5th Edition of API 682 which is currently undergoing its rewrite process.
6. **EHEDG** EHEDG Guideline Document 25 'Mechanical Seals for Hygienic and Aseptic Applications' concerns the design and selection of mechanical seals and seal auxiliary-systems that meet the hygienic and if specified aseptic requirements of food-applications. Requirements for design, materials, installation and operation of mechanical seals and seal auxiliary-systems are defined with respect to ease of cleaning, microbial impermeability, sterilisability and pasteurisability. The guideline is applicable for suppliers and users. 3 ESA members were involved in the recent update of this guideline.
7. **EN 1514-1** “Flanges and their joints. Dimensions of gaskets for PN-designated flanges. Non-metallic flat gaskets with or without inserts” This standard specifies the dimensions and marking of spiral wound gaskets for use in conjunction with flat face and raised face flanges complying with the requirements of EN 1092-1 for PN 10, PN 16, PN 25, PN 40, PN 63, PN 100 and PN 160 and up to and including DN 1000. ESA members are represented on the working group which is currently revising this standard.
8. **EN 13555** “Flanges and their joints. Gasket parameters and test procedures relevant to the design rules for gasketed circular flange connections” This European Standard specifies the gasket parameters required by EN 1591 1 and provides the test procedures for establishing the values of these parameters. Gaskets which are wholly based upon elastomers or based upon elastomers with only the inclusion of particulate fillers or particulate reinforcement, as opposed to gaskets combining elastomers, fillers and fibrous reinforcement, are beyond the scope of this document. ESA members are involved in the revision process of the standard,
9. **EN 16752** “Centrifugal pumps. Test procedure for seal packings” This European Standard gives details of a test procedure for packings to be used to seal the stuffing boxes of centrifugal pumps. It gives provisions on the design of test equipment, standard test parameters and reporting criteria. It does not specify performance criteria which should be agreed between supplier and customer but does define 3 tightness classes. It was initiated by the Packings Division of the ESA. Based on a joint research program with CETIM, France a draft for a pump packing testing protocol was developed and adopted by CEN as a standard.

Standard	Committee Name	Aim/Objective	ESA Representation
Drinking Water Directive	European Drinking Water Association (EDW)	Association representing trade associations involved with drinking water - Influencing legislation	General Secretary
Environmental Goods Agreement	Committee meetings	Influencing environmental regulations and tariff codes	Several ESA members
BREFs	IED 13 forum TWG	Work on BAT information for BREFs	Several ESA members
API 682 5 th Ed.	Working Group	Work on standard update	2 members in working groups
EHEDG	Working Group	Work on standard update	3 members
EN 1514-1	Working Group	Update of standard	2 Members
EN 13555	Working Group	Update of standard	1 Member
EN 16752	Standard Working Group	ESA created a standard for packing pump testing	Several members

5. ESA produced documents

ESA Data base (ESAData.org) (<https://www.esadata.org>)

ESA Knowledge Base (<https://www.esaknowledgebase.com>)

Training modules:

Packings <https://www.europeansealing.com/course/an-introduction-to-compression-packing/>

Gaskets <https://www.europeansealing.com/flange-gasket-training-video/>

Mechanical Seals

Expansion Joints

Elastomeric & Polymeric Seals

Fitting instructions:

Gasket Installation (<https://www.europeansealing.com/flange-gasket-training-video/>)

Standards, Legislation and Guidelines:

Packings <https://www.esaknowledgebase.com/wp-content/uploads/2020/09/Regulations-Standards-Guidelines-Packings-September-20.pdf>

Gaskets <https://www.esaknowledgebase.com/wp-content/uploads/2020/05/Regulations-Standards-Flange-Gaskets-April-20.pdf>

Mechanical Seals <https://www.esaknowledgebase.com/wp-content/uploads/2020/08/Regulations-Standards-Mechanical-Seals-August-20.pdf>

Expansion Joints <https://www.esaknowledgebase.com/wp-content/uploads/2020/08/Regulations-Standards-Fabric-Expansion-Joints-August-20.pdf>

Elastomeric & Polymeric Seals <https://www.esaknowledgebase.com/wp-content/uploads/2020/06/Regulations-Standards-Elastomeric-Seals-May-20.pdf>

6. ESA Fugitive Emissions Reduction Document

(https://www.esaknowledgebase.com/wp-content/uploads/2019/11/ferd_5c_v2.pdf)

The Sealing Devices Fugitive Emissions Reduction document reflects an information exchange originally carried out within the sealing industry under **Article 16(2) of Council Directive 96/61/EC**.

This update revision reflects the **Industrial Emissions Directive (IED) 2010/75/EU** adopted on 24th November 2010 and implemented on 7th January 2013 and the **Directive 2008/1/EC** covering Integrated Pollution Prevention and Control (IPPC) which came into force on 18th February 2008.

Essential requirements include:

- Achieve a high level of protection for the environment.
- Prevent pollution and, if not feasible, reduce pollution.
- Access to information and public participation - article 24 and annex IV.
- Permit is required for operating the installation – article 4.
- Permit conditions include:
 - Emission Limit Values (ELVs) for all relevant pollutants – listed in article 15.
 - ELVs based on the use of Best Available Techniques (BATs).

Leaking losses are generally higher from dynamic equipment (compared with static equipment) and from older equipment.

7. Distribution of the document and which media outlets to use

Conferences – BHRG, Valve World Conferences, International Valve Summit IVS

Trade shows – Achema, Valve World Exhibitions, Pumps & Valves

Conference papers – BHRG, Valve World Conferences, International Valve Summit IVS

Magazine articles – Valve World, World Pumps, Pump Engineer, Chemical Engineering, Professional Engineering

Social Media: LinkedIn

Short version added to significant and project quotations.

Adding a short statement to papers and articles stating author works for an “Accredited member of ESA”.