

# Leading the world in knitted mesh for automotive components







# An introduction to Knitmesh Automotive

KnitMesh has a heritage of over 60 years in the design, manufacture and supply of critical components to our global and industry-leading automotive sector partners.

Our engineering and manufacturing teams work closely with both Tier-1 and Tier-2 suppliers, and also major OEMs, to develop bespoke products for their exacting requirements. This has resulted in our knitted mesh being used across the world - contributing to the production of vehicles that achieve the highest specifications in both passenger and environmental safety.

## Experienced in automotive

Over six decades KnitMesh has developed an enviable reputation for the supply of precision knitted mesh components that meet the precise needs of our prestigious automotive customer base.

With a product range that includes components used in everything from airbag filters and actuators, to seals and sound attenuation isolators, KnitMesh goes further than meeting the minimum required international quality standards and customer expectations.

We continually innovate and invest in state-of-the-art design, production and testing techniques to ensure our products are unequalled. At KnitMesh we take pride in exceeding customer expectations. We do this by paying obsessive attention to detail and constantly driving to exceed the highest quality standards. This has helped underpin our continuous growth whilst ensuring that our customer relationships are stronger than ever.



# About our knitted mesh

Knitted mesh is a metal, ceramic or synthetic wire which is knitted into a mesh of interlocking loops. With fantastic heat and corrosion resistance, not to mention the ability to reduce vibration, shock and noise, this strong, flexible and resilient material is ideal for all kinds of automotive applications.

Main properties:



Flexible & Malleable



Energy Absorbing



Variable Porosity



High Resilience



High Strength



EMC/RFI Screening



Harsh Environments



Aesthetically Pleasing



High Surface Area



Low Cost



Electronically Conductive



Encapsulates & Protects



Environmentally Friendly



Material Versatility



# Innovations for the automotive industry

As KnitMesh Technologies has been involved with the international automotive industry for over 60 years, many leading automotive component manufacturers from all around the world rely on us for their mesh products.

Working with both OEMs, and first/second-tier suppliers, we enjoy an outstanding reputation for both quality and reliability. Proudly meeting TS16949 – the automotive industry standard – these are just some of the automotive components where our knitted mesh is used.

## 1 Anti-Vibration, Sound Attenuation & Heat Shields

In its processed form knitted mesh has unique, energy absorbing, properties that enable it to reduce vibration, dissipate or absorb heat and attenuate sound even in the most hostile operating environments. Automotive Engineers routinely specify these components where improved noise, vibration and harshness (NVH) characteristics are required; and for remedies in buzz, rattle and squeak (BRS) applications. From customer specific prototyping-to-PPAP stage, the products are highly cost effective and available on short lead-times.

## 2 Exhaust Decoupling Rings & Mesh Bellows Sleeves

Knitted mesh rings are used in exhaust decoupling joints, and load support assemblies, to absorb vibration, reduce noise and accommodate thermal expansion. Mesh sleeves for use with bellows serve to reduce both vibration and noise. Design versatility, and high levels of temperature and corrosion resistance, result in the products proving highly cost effective in use.

## 3 Catalytic Converter Seals

Single-piece compressed mesh seals are designed to protect the delicate, honeycombed ceramic bricks and intumescent mats from damage due to either vibration and/or gas erosion. The custom designed seals, available in a range of metal or synthetic materials, prevent gas bypass between the brick and the inner converter shell. They are also used extensively in diesel particulate filter (DPF) assemblies.

## 4 Catalytic Converter Mesh Wraps

Crimped wire mesh wraps are designed specifically to protect delicate catalytic converter assemblies from damage by shock and/or vibration. Typically manufactured as one-piece, low-to-high nickel alloy 'tubes'. Often incorporating intumescent mats, the wraps are easily fitted over the ceramic bricks in the canning process. A quick prototyping service is available for these products which offer cost effective protection and recyclability.

## 5 Separation Rings

Twin-brick catalytic converters require the use of a metallic knitted wire mesh separation ring. These ensure a constant gap between the ceramic honeycomb bricks and prevent gas erosion of the intumescent mats. The products are available in a wide variety of sizes, shapes and material types including co-knit ceramic yarns that improve sealing characteristics.

## 6 Spacer Rings & Air Gap Seals

Used extensively, on down-pipes and dual-pipe exhaust systems, to reduce vibration and noise by maintaining a constant gap between the pipes. Available in a limitless range of profiles they are designed to accommodate thermal expansion in high temperature environments of up to and exceeding 1000°C. The spacer rings also act as extremely effective vibration dampers that prevent damage in NVH and BRS environments.

## 7 Silencer & Muffler Packing

In silencer applications the stainless steel, wire wool tubes or pads, are designed to encapsulate the perforated tube within the mufflers to retain the basalt or glass wool resulting in enhanced muffler performance. Use of our exhaust silencer packing materials reduces gas erosion of the fibres resulting in longer service life of the mufflers. The mesh, supplied in roll, tubular or die-cut form, can also be used as a wrap to the wool in order to provide a better shape definition and to ease installation.

## 8 Airbag Filters

Uniformly compressed knitted wire mesh filters are routinely incorporated in airbag inflator systems. Acting as an effective heat sink, they are used to cool and control the expanding gas flow following actuation and to trap the resulting propellant particulates in order to prevent the incandescent particles from entering or damaging the airbag. Available in designs to suit all air bag and actuator applications.

## 9 Isolators: Mesh welded to Washer

Our proprietary mesh-to-washer welding technology results in dramatically improved process efficiency and reduced scrap rates in the production of isolators and decouplers for use in heat shield applications.

## 10 ANPR

KnitMesh has over 60 years' experience in the manufacture of knitted mesh products for EMC (electromagnetic compatibility) shielding applications. We supply a global customer base with a range of bespoke products for use in protecting ANPR roadside equipment from electromagnetic interference (EMI) and radio frequency interference (RFI).

## 11 Bump Stops

Bump stops protect a car's suspension system when it is under compression and moving parts come into contact with each other. Compressed knitted metal wire components are often favoured in motoring applications where conditions are not suitable for polymeric or elastomeric alternatives.

## 12 Alloy Wheel Filters

Knitted wire mesh has a unique interlocking asymmetrical wire loop structure that, in a layered and compressed form, can be produced with an infinitely variable porosity. The resulting media has proved ideally suitable for use in the casting of automotive products such as alloy wheels and high-performance motorsport components.

## 13 Alternative Fuel Vehicles

KnitMesh is working with several manufacturers in this rapidly growing market. Knitted mesh has many properties that render it suitable for new generation fuel cell and battery technology applications. These include high surface area-to-volume ratio and resiliency, variable porosity, conductivity and compressibility, and superb heat and corrosion resistance. With extensive experience in electrochemical and catalyst applications we would welcome the opportunity to participate in your development projects.

## 14 Exhaust Clamp Gaskets

Mesh gaskets for clamps and jointing solutions are used in a variety of automotive applications including turbo inlet and outlet connections, exhaust gas recirculation (EGR) systems and in diesel particulate filter system connections. We can also supply your bespoke clamping solutions via our JV company in India.

## 15 Mesh & Graphite Components

Mesh and graphite components can be designed and manufactured to your individual requirements. The addition of graphite to our knitted mesh results in enhanced lubrication and gas sealing properties in a wide range of products including gaskets, seals, bearings, bushings, isolators and anti-resonance de-couplers.

## 16 Non-Mesh Products

KnitMesh Technologies offers non-mesh products that are used to support, encapsulate, integrate with or provide attachment to knitted wire mesh components. These include metal components such as exhaust mesh gasket support rings and exhaust gas recirculation (EGR) pipe clamps and brackets.

## 17 Anti-Slosh

Knitted wire mesh may be considered as an alternative material for anti-slosh devices and baffles that control adverse fuel 'slosh' or destabilising and undesirable movement within fuel tanks.

## 18 Engine Breathers

Increasingly stringent legislation is placing considerable demands on internal combustion engine (ICE) manufacturers to reduce emissions from crankcase breather systems. KnitMesh can supply breathers that can remove oil droplets in the 3-10 micron range at >99% efficiency with negligible pressure drop. Also used as breathers in oil filler caps we can supply in a variety of materials and forms including galvanised steel or stainless steel where high temperature or corrosion resistance is required.

## 19 EGR Clamps & Splitrings

Supplied with or without mesh our engineers will be happy to assist in the design of your specific requirement for support clamps, fastenings and associated mesh split-rings (C rings).

## 20 Actuators

Utilising state-of-the-art production techniques KnitMesh supplies knitted wire mesh filters, for use in actuator applications, that ensure high levels of consistency in a uniformly compressed structure.

## 21 Exhaust Systems

Our knitted mesh exhaust decoupling rings are used in decoupling joints and load support assemblies to absorb vibration, reduce noise and accommodate thermal expansion. In typical NVR applications mesh sleeves are used with flexible bellows to reduce both vibration and noise.

## 22 Fuel Cell Substrates

As the development of hydrogen and hydrocarbon gas fuel cells accelerates on a global scale, so does the search for materials and components that will aid in the reduction of costs and increased efficiencies. The unique properties of knitted mesh render this material ideally suitable for further research (see alternative fuel vehicles above) and we would welcome the opportunity to participate in your development projects.

## 23 Graphite Seals

KnitMesh have developed proprietary production techniques for integrating graphite with knitted wire mesh. This greatly enhances the properties of these components and increases their utility in a wide range of applications.

## 24 Gasket & Seals

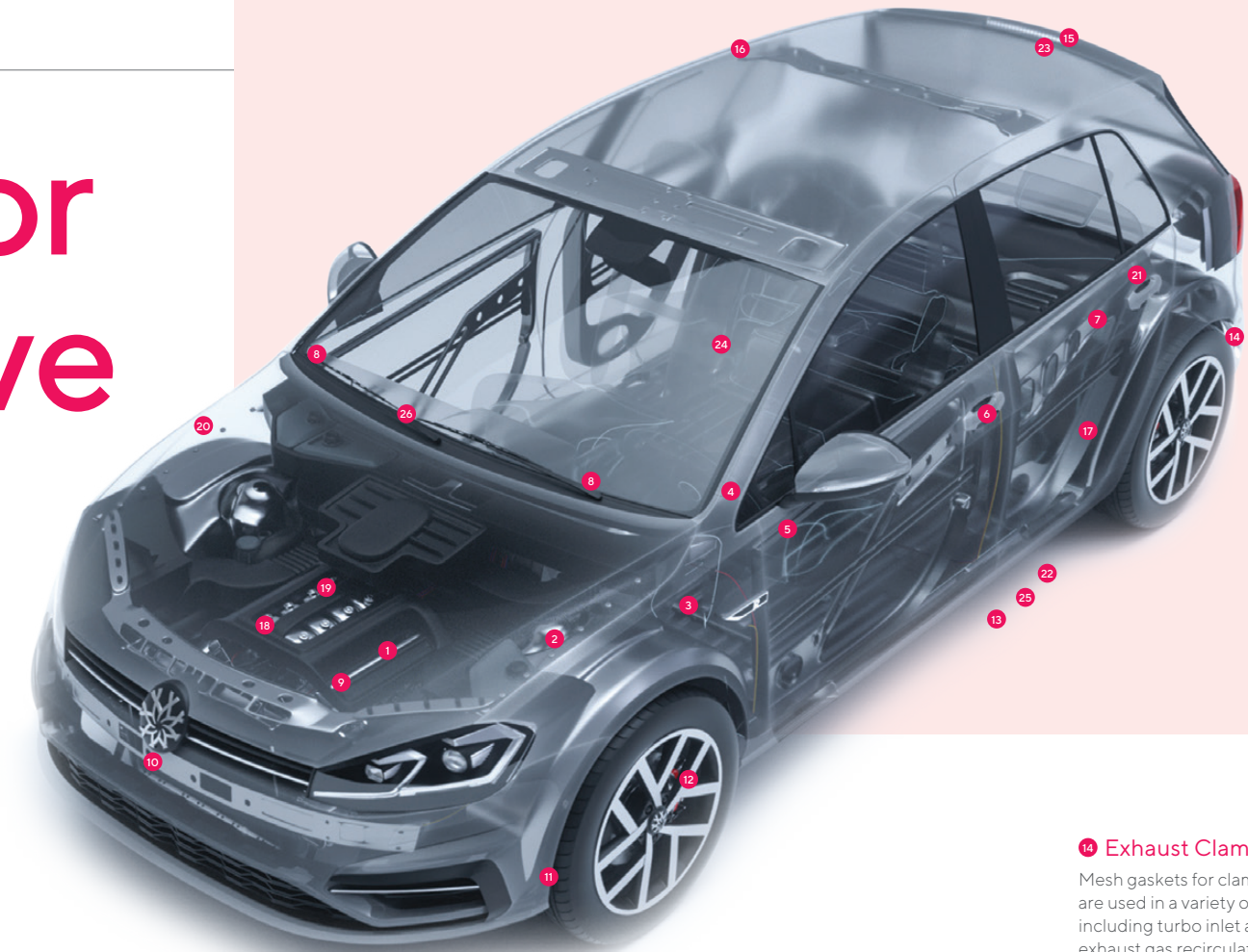
The malleability of knitted wire mesh means that it can be formed into a gasket of almost any shape. When combined with the properties of high temperature and corrosion resistance this results in an ideal sealing or gasket material for use in the harshest of operating environments.

## 25 Small Engine Catalyst Substrates

With increasingly stringent legislative and environmental controls being placed on engine exhaust emissions, our compressed wire mesh components have proved ideally suited for use as catalyst substrates for small two stroke and four stroke engines.

## 26 Knitted Wire Mesh Tapes

The KnitMesh range of knitted wire mesh tapes are used by our global customer base primarily for electromagnetic interference (EMI) shielding of electrical and electronic cable assemblies. Applications include cable jointing, electrical grounding, static discharge and within electrical connector assemblies.



For more information on any of our products, please don't hesitate to contact us.

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