



Q-SHIELD TECHNOLOGIES

DIESEL & GAS TECHNOLOGIES PVT. LTD. PIRANGUT, PUNE - INDIA



The Leaders In High Grade Thermal Insulation Technologies



The Goal:

To Be A Global Leader Providing High Grade Thermal Insulation Solutions To The Automotive, Construction, Marine and Agricultural Industries

Q-Shield Technologies Core Team



- ▣ **Director & CEO** – Mr. William Weksel
- ▣ **Director & VP International Sales** – Mr. Jared Lighter
- ▣ **Director** – Mr. Morris Lewitter
- ▣ **CFO** – Mr. Michael Weksel
- ▣ **Sr. GM India Operation** – Mr. Setu Shah
- ▣ **Sr. Sales Manager India** – Mr. Sanjeev Menon

Q-Shield India Manufacturing Unit

Q-Shield Diesel & Gas Technologies Pvt. Ltd. Pirangut,
Pune - India

India Manufacturing Unit :

- ❑ Manufacturing base at Pirangut is about **30 kms. from the Pune city** centre
- ❑ Current Manufacturing facility is **10,000 sq.ft.**
- ❑ Tier 1 supplier to large multinational automotive, engine & industrial companies in India
- ❑ Ranked as one of the top performing suppliers by large multinationals
- ❑ Design Facility: CAD/Catia engineers develop 2-D & 3-D solutions in conjunction with customer drawings and specifications



Product

■ Proprietary Technology

- Products are based on Q-Shield™ multi-layered flexible textile based insulation
- Multilayered technology withstands heat up to 1000 C (1800 F)

■ Applications

- Internal combustion engine applications for gas, diesel, CNG/LPG for heat control management
- Exhaust system
- Climate control
- Engine compartment components

Product Testing & Performance

Product material testing process & accreditations

Q-Shield thermal insulation materials have been tested in India by the following organizations that are all NABL accredited labs

- SGS: <http://www.sgs.com/en.aspx>
- ELCA Labs: <http://www.elcalabs.com/index.html>
- National Testing Laboratory: <http://www.nationaltestinglaboratory.net/>

Tests conducted include:

- Flammability
- Heat resistance
- Chemical testing
- Odor testing
- HAZMAT

Product Testing & Performance

Quality Supplier Performance Reports

- Receive monthly PPM reports from customers
- Plant is performing at 0 PPM based on customer feedback

Product Validation

- Customers undertake their own test cell and/or field testing of the product which varies based on type of application and project requirements (i.e. km driven, hours run, etc.)
- Q-Shield is responsible for undertaking the primary tests (flammability, heat resistance, HAZMAT, etc.) that are conducted by the external NABL accredited labs. Those reports are shared with the customers upon request

Uses & Applications

- Q-Shield thermal shields are used on internal combustion engine applications for petrol, diesel and CNG/LPG for heat control & management
 - Exhaust System (Manifold through to Muffler)
 - Climate control (Exterior firewall, rooftop, side panels)
 - Engine compartment components
- Q-Shield is used on an extensive list of moving & static applications
 - Automotive: Consumer & Commercial Trucks, Buses, Vans, Cars, SUV's
 - Marine: Yachts, commercial vessels, Marine Engines
 - Rail: Locomotive Engines
 - Military: Various types of APC's, MPV's and Trucks
 - Off-Road: Construction, Mining and Agricultural Vehicles
 - Generators & Industrial: Manufacturing Plants, Boilers, Cranes

Uses & Applications

- Q-Shield is a flexible textile-based insulation technology
 - Product is a multi-layered composite solution that can withstand heat up to 1000 C (1800 F)
 - Materials are woven textiles which are high heat treated PTFE coated, aluminum coated, silicon coated, knitted SS wire mesh and non-woven E-Glass
- Solutions typically have between 3 to 5 layers of insulating materials
- Heat shield thickness is typically between 8mm (1/4") and 25mm (1")

Product Information

➤ Warranty

- 1 year or 5,000 hours (for static applications like Gensets/Marine)
- 1 year or 100,000 kms (for an automobile application)

➤ Affixment methods

- Velcro (temperature resistance to 170 C or 338 F)
- Hooks & Washers (stainless steel)

➤ Installation

- Prototyping: Undertaken by Q-Shield technician
- Production: Training customer personnel for in-house installation or remotely

➤ Cleaning

- Warm or cold water on external shield surface. Pressure washer if needed (min. distance 12" or 300mm)

Product Value Proposition

- Benefits of using Q-Shield Thermal Insulation vs other technologies
 - Insulation materials are proven in the market
 - In use by multinational automotive & industrial suppliers
 - High quality proven solution at economical price
 - Production & supply chain performance certified with Tier 1 vendor status
 - Indian production ensures delivery of product at high quality & lowest possible price
 - Zero tooling cost
 - No changes required to current application design
 - Material is flexible & fits in confined area
 - Thickness of material (8mm-25mm) is variable to accommodate area with small clearances
 - Multiple installation options available

Product Value Proposition

- Customer Benefits from use of Q-Shield Thermal Insulation
 - Reduced wear & tear of components
 - Better Climate Control
 - Engine performance improves as Air Intake temperature is closer to ambient
 - Exhaust insulation reduces number of Regen's in CatCon, DPF, etc. as exhaust system performance improves with effective shielding due to reduced heat loss
 - A/C performance improves as solar and engine heat ingress is reduced by shielding the firewall, exhaust system, roof, side panels, doors and so on in hot climates

Q-Shield India customer list – Tier 1



- Major Automotive manufacturers for their commercial vehicle segments in India
- Engine, diesel generators and pump manufacturers
- Industrial boilers manufacturers
- Construction, mining, power plant, earth mover equipments
- Locomotive manufacturers

Q-Shield™ Case Study

Q-Shield™ India solution for 1400hp engine in a Heavy Duty Engine application:

- **Problem:** Application was unable to run due to increased heat generated by larger engine
- **Solution:** Specially designed Q-Shield™ was deployed on exhaust manifolds to reduce heat damage to engine components and electronic sensors
- **Result:** Application passed desert field tests due to upgraded heat shielding resulting in a reduction from 1200°F (650°C) to 165°F (74°C) using a 5/8” (16mm) cross-section shield.

Q-Shield™ Customer Field Test

Test conducted in Apr 2013 – pre Q-Shield Temp : 790 C

| Sr. No. | Time | Point 1 | Point 2 | Point 3 | Point 4 | Point 5 |
|---------|--------|---------|---------|---------|---------|---------|
| 1 | 1:55pm | 75 | 61 | 61 | 60 | 47 |
| 2 | 2:05pm | 104 | 95 | 92 | 89 | 55 |
| 3 | 2:15pm | 113 | 91 | 86 | 83 | 51 |
| 4 | 2:25pm | 107 | 93 | 92 | 91 | 51 |
| 5 | 2:35pm | 103 | 103 | 93 | 92 | 53 |
| 6 | 2:45pm | 103 | 104 | 95 | 97 | 51 |
| 7 | 2:55pm | 101 | 101 | 96 | 90 | 54 |

Our Products

Picture of Heavy Duty Engine Heat Shield



Our Products

Exhaust Manifold Heat Shield
for Marine Engine



Exhaust Manifold Heat Shield
for Genset



Our Products

Canopy Design Genset Exhaust Pipe Heat Shield



Our Products

Heat Shield on the POC DOC



Our Products

Heat Shield on Fire Wall of
an Armored Troop Carrier



Heat Shield on Gear Shift
panel of an Armored Troop
Carrier



Our Products

Exhaust Muffler Heat Shield
on a 1 Ton Goods Carrier



Heat Shield on the Engine
Cover of a 1 Ton Goods Carrier



Our Products

Shield on the Exhaust of a Tipper Truck to prevent the heat entering into the driver's cabin



Our Products

Single Cylinder Exhaust
Manifold Shield of a 1 Ton
Vehicle



Q-Shield on Genset air
intake and exhaust Pipe



Our Products

Q-Shield on Exhaust System of
a 12 X 12 Military Truck



A Crawler Dozer Exhaust
Manifold Shield



Our Products

Q-Shield on Exhaust System
of a 8 X 8 Military Truck



Diesel generator exhaust



Q-Shield Diesel & Gas Technologies

India Manufacturing Unit

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Thank you...



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