



**AARIKA INNOVATIONS PVT LTD**

**CLEAN & EFFICIENT TECHNOLOGIES**



## CLEAN & EFFICIENT TECHNOLOGIES EXTEND DIESEL ENGINE LIFE



“Diesel will continue to be the dominant technology for the foreseeable future,” according to the Diesel Technology Forum.


“Combustion engines carry on in construction,” -the Diesel Technology Forum



**INDIAN CV APPLICATIONS DEMAND AFFORDABLE, ROBUST, CLEAN AND EFFICIENT RETROFIT SOLUTIONS**

## BS6 SOLUTIONS: EXPENSIVE, INEFFICIENT AND NOT ROBUST

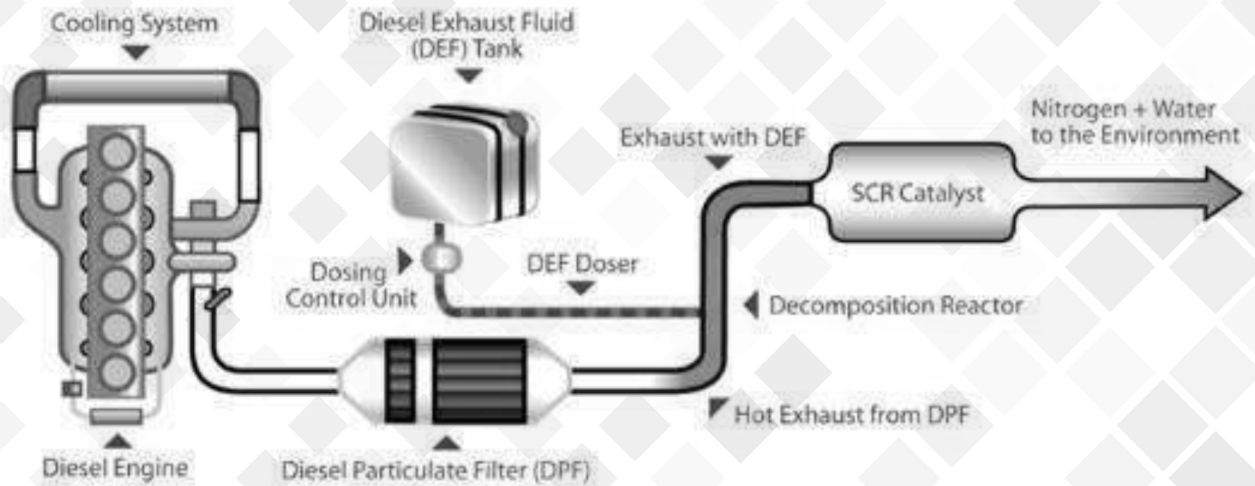
Selective Catalytic Reduction (SCR) systems on new technology diesel trucks virtually eliminate emissions while reducing fuel consumption



3-4%  
reduced fuel consumption

**DIESEL**  
TECHNOLOGY FORUM

Source - July 2019 U.S. Vehicles in Operation Data (Class 3-8 vehicles, Model Year 2010 and newer) provided by IHS Markit



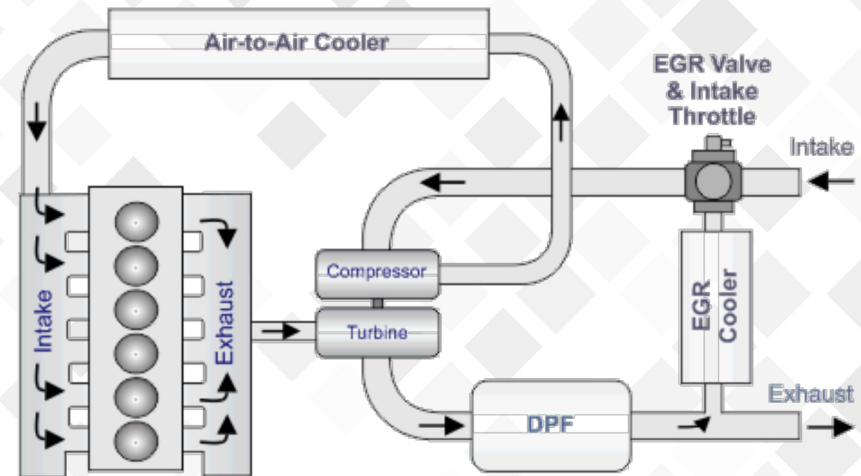
Source: July 2019 Vehicles in Operation data (Class 3 – 8 vehicles, Model year 2010 and newer) provided by IHS Markit

**REQUIRES SOPHISTICATED AND SENSITIVE ELECTRONIC CONTROLS, CANNOT BE RETROFITTED**

## BS4 SOLUTIONS: EGR REDUCES COMBUSTION EFFICIENCY

EGR (Exhaust Gas Recirculation) reduces NO<sub>x</sub> but also has unacceptable increases in fuel consumption, emissions of PM, HC, and CO, engine wear and reductions in engine durability. In order to address these trade-offs, costs are added in the form of technologies below:

- reductions in lubricating oil consumption
- increases in fuel injection pressure
- increased use of diesel oxidation catalysts
- increased intake manifold boost pressure.

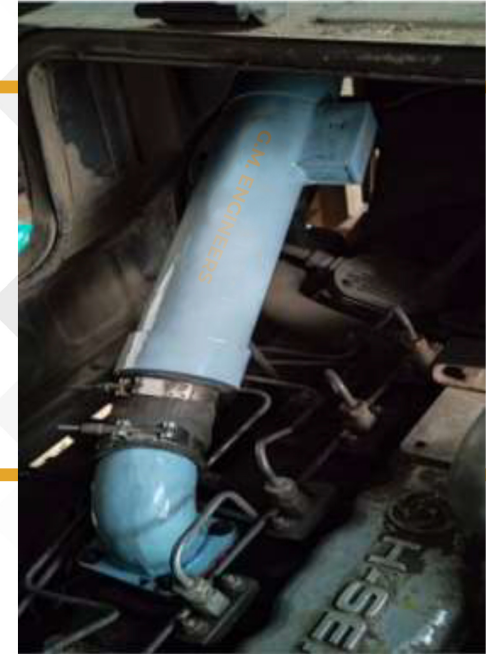


Source: Hannu Jaasealeinen and Magdi K. Khair, Exhaust Gas Recirculation abstract in DieselNet

**EGR REDUCES NOX BUT INCREASES FUEL CONSUMPTION AND LOWERS DURABILITY**

# AARIKA INNOVATIONS: INNOVATIVE TECHNOLOGY TO IMPROVE COMBUSTION

The lack of oxygen in the EGR into the engine reduces volumetric efficiency resulting in reduced power. This is compensated by turbocharging and higher fuel consumption, thus increasing smoke (which is taken care of by higher DOC catalyst).



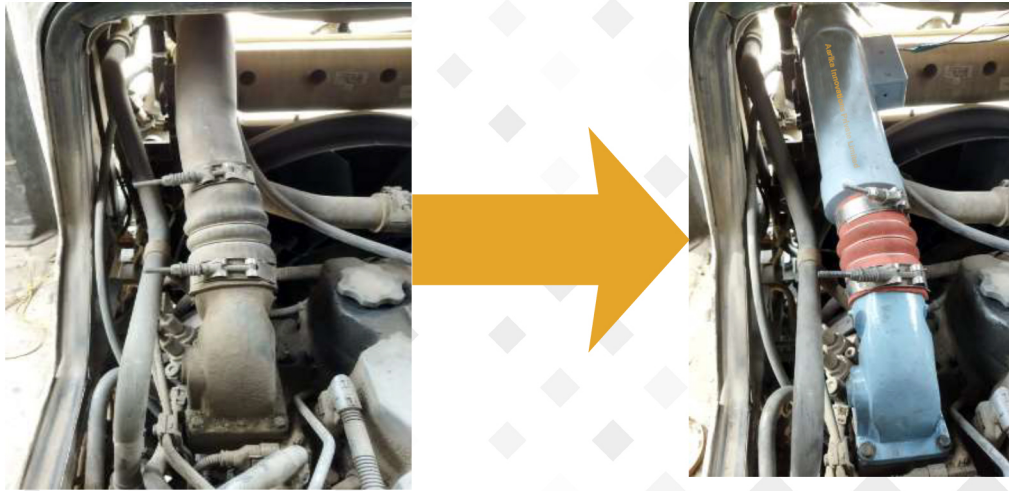
Our patented technology charges the intake air with more oxygen to compensate for the lack of O<sub>2</sub> in EGR and hence improves volumetric efficiency and combustion, resulting in

- Reduced fuel consumption
- Reduced smoke

Indian Patent No. 201811004232 WIPO No. WO 2019 / 15039

## G.M. ENGINEERS IMPROVES FUEL CONSUMPTION, SMOKE AND POWER IN BS4 ENGINES

## AARIKA INNOVATIONS: DEMONSTRATED IMPROVEMENT IN VEHICLES



Vehicle air intake system replaced with Aarika Innovations Private Limited in Tata

Aarika Innovations technology retrofitted in fleet vehicles and run for over 100,000kms. Successfully demonstrated benefits in multiple OEMs in 6 cylinder applications:

- Tata BSIII 1518 to 3118
- Tata BSIV 2818 to 4825
- Ashok Leyland 2518, BSIII and BSIV

Benefits measured:

- Improved fuel consumption from 8.49 – 18%
- Reduced smoke upto 50%
- Increase in power ~ 0.2%
- Service life 100,000 kms

Currently running in several fleets in multiple states in North India

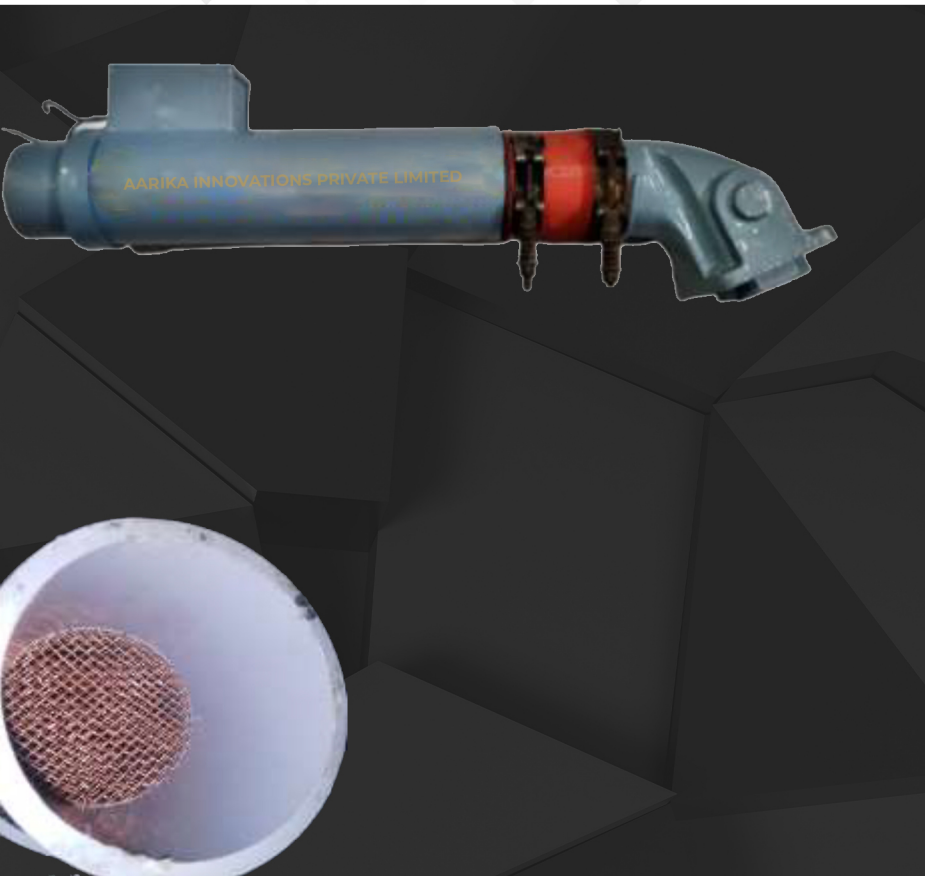
**AARIKA INNOVATIONS**

**TECHNOLOGIES ARE SUCCESSFULLY**

**PROVEN IN BSIII, BSIV CV**

**APPLICATIONS**

## AARIKA INNOVATIONS: TECHNOLOGY OVERVIEW



Aarika Innovations Private Limited consists of an air intake inlet tube and manifold that is internally modified to accommodate a series of conducting wire meshes that can be charged to form a capacitive discharge system, which modifies the air flow into the engine (oxygen enrichment). The electric supply is provided by a battery integrated onto the intake intake tube.

Resultant benefits include:

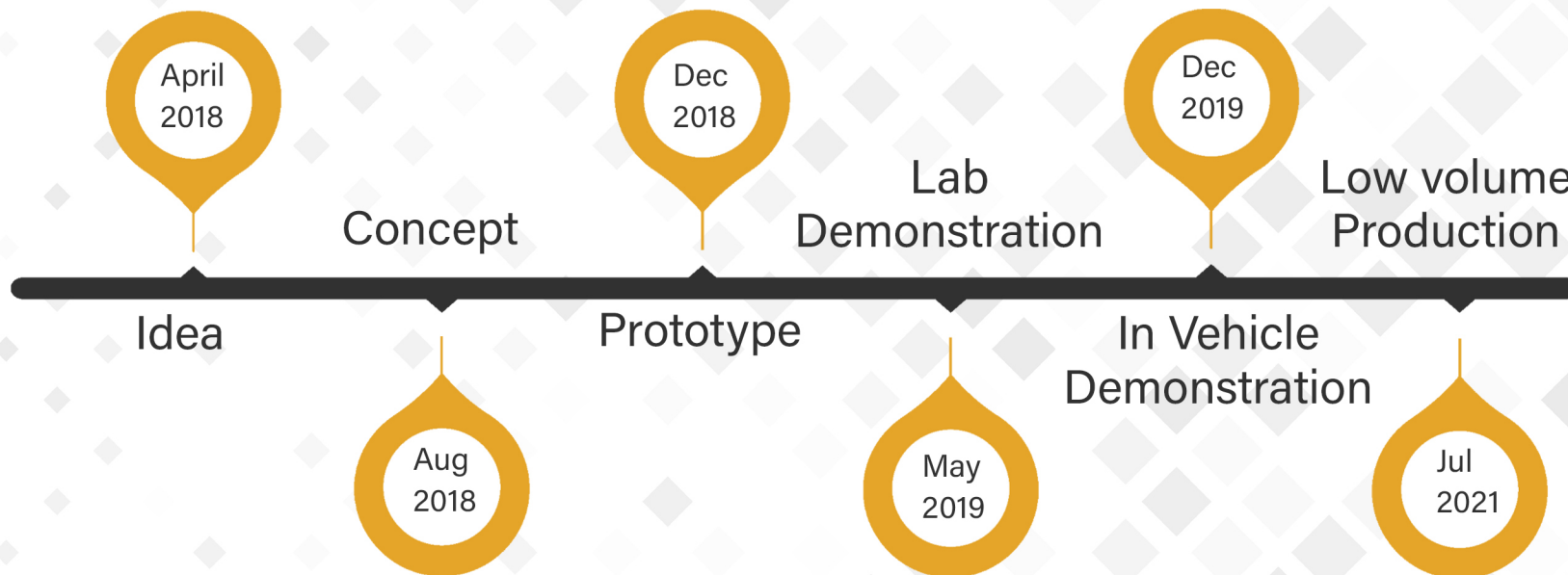
- Improved fuel consumption
- Reduced smoke
- Improved power
- Enhanced engine life

**FIRST WORLD INNOVATION IN CLEAN AND EFFICIENT DIESEL TO BE COMMERCIALIZED**

# TECHNOLOGY IS ALREADY IN LOW VOLUME PRODUCTION



## Aarika Innovations Private Limited



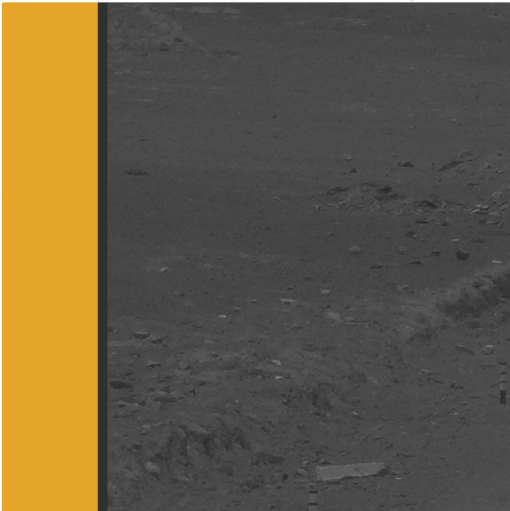
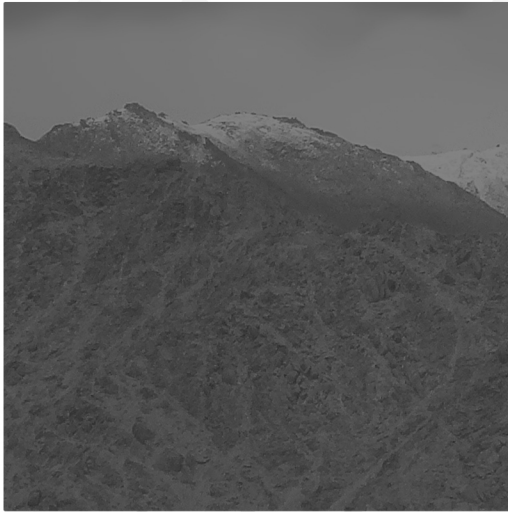
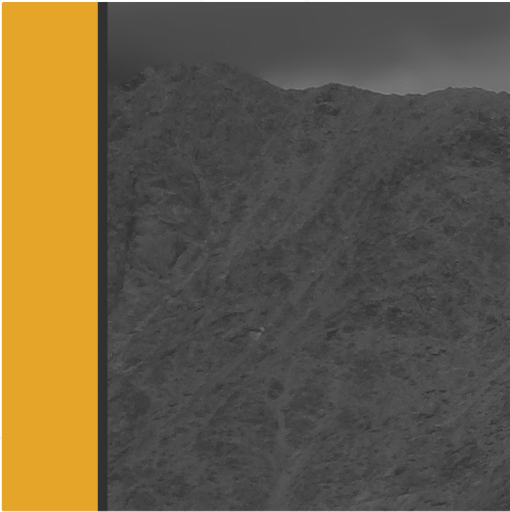
**FIRST INDIAN INNOVATION IN CLEAN AND EFFICIENT DIESEL TO BE COMMERCIALIZED**



## WHY SHOULD TRANSPORT COMPANY & DIESEL USER USE OUR TECHNOLOGY?

- USP of fuel savings, power increase, smoke reduction at affordable cost is tested and approved by CV fleet owners and drivers. RoI is attractive for users.
- BS6 vehicle and diesel fuel price hike has increased the demand for used vehicles with improved fuel efficiency and lower smoke
- Diesel will be the fuel of choice for long haul and construction vehicles for a very long time
- First and only retrofit table fuel savings and emission improvement device in India
- Patented design provides barrier to entry. Designed and manufactured in India with locally available materials, no special manufacturing process required – assures high margins
- No competition or competing technologies
- Easy to fit and service on BSIII and BSIV vehicles with mechanical fuel injection

**IMMEDIATE AND UNMATCHED WEALTH CREATION OPPORTUNITY**



**AARIKA INNOVATIONS**  
PRIVATE LIMITED

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