



VELVEX[®]
New Age Lubricants & AdBlue[®]



Quality Assurance for AdBlue and Bypass of SCR System

Presented by



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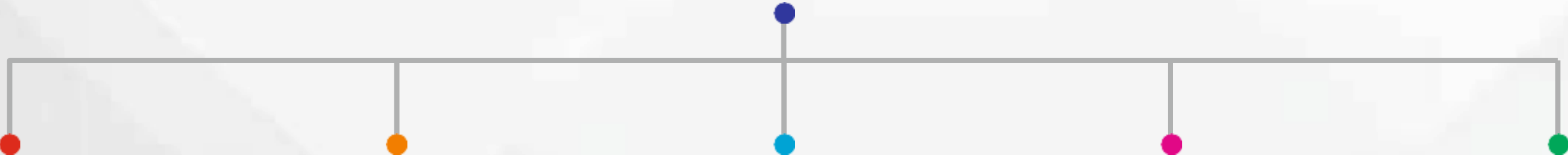


Nandan Group of Companies



NANDAN

GROUP OF COMPANIES



Nandan Petrochem Limited

Manufacturing of Automotive and Industrial Lubricating Oils & Greases, Specialties etc



Nandan Impex Pvt Ltd

Manufacture of Plastic Containers for lubricants & Essential Oil
Repacking of Lubricants
CFA for PSU Oil Cos



NutraHelix Biotech Pvt Ltd

Health Food Products



Technical JV with Kruse Automotive GmbH, Germany for manufacturing of AdBlue

NANDAN Bulk Carriers

Company owned Inbound | Outbound Logistics for Bulk Liquid cargos

Over Three Decades Of Rich Heritage



Introduction of Mini DEF Plant & AdBlue® Dispensing System.. Launch of Velvex coolant

Production capacity increased to 3,00,000 MT for Lube 9000 MT for Grease 500000 MT for AdBlue®
Expansion of Pan India Network 16 AdBlue® Plants

Setting up FDA approved Liquid Paraffin Plant for Pharma & Personal Care



2018
2020

Expansion of AdBlue® business with set up of 8 plants



Expanded product portfolio to Transformer oils, White oils & RPO.



On boarded major OEM customers & started supplies to TATA, BOSCH, M&M, LIS, MFC



Launched VELVEX Lubricants for Retail market



AdBlue manufacturing plant with the collaboration of Kruse Automotive, Germany

2017
2018

2012
2015

2015

2011



Incorporation of Nandan Petrochem Limited (NPL). Started toll blending for PSU's



Toll Blending for TOTAL, Mobil, BP, Caltex / Chevron



Technical Collaboration with MEGUIN GmbH, Germany



Custom made Genuine oils for Kirloskar & Greaves Cotton



Expansion of facility with 3 fully equipped plants & OEM business - On boarded ESCORTS, BEML

1992

1995
1997

1999

2001

2005
2011

Group Vision & Mission



Vision

“We at Nandan Group as a responsible Corporate, aim to be a preferred Partner delivering stakeholder value in all our endeavours”



Mission

“We believe in providing solutions to make ”Effort Effortless” and superior experience for “Contemporary Mobility



NPL Group: Business At a Glance



#AdBlue is the Registered Trademark of Verband der Automobilindustrie e.V (VDA)



List of Esteemed Clients



Karloskar

Mahindra
TRUCK AND BUS



GREAVES



FCA
FIAT CHRYSLER AUTOMOBILES

VE COMMERCIAL VEHICLES
A VOLVO GROUP AND EICHER MOTORS JOINT VENTURE



AMARON
HI-LIFE LUBES



Mahindra
Construction Equipment



Mahindra

HYUNDAI
MOBIS



Our Offering – For Genuine AdBlue

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Velvex Automated Dispensing System (ADS) For AdBlue®

India's No. 1 DEF Company



VELVEX
— Feel The Technology —
AdBlue



Environment Friendly



Exceeds 18 Parameters



Reduces NOx Pollution

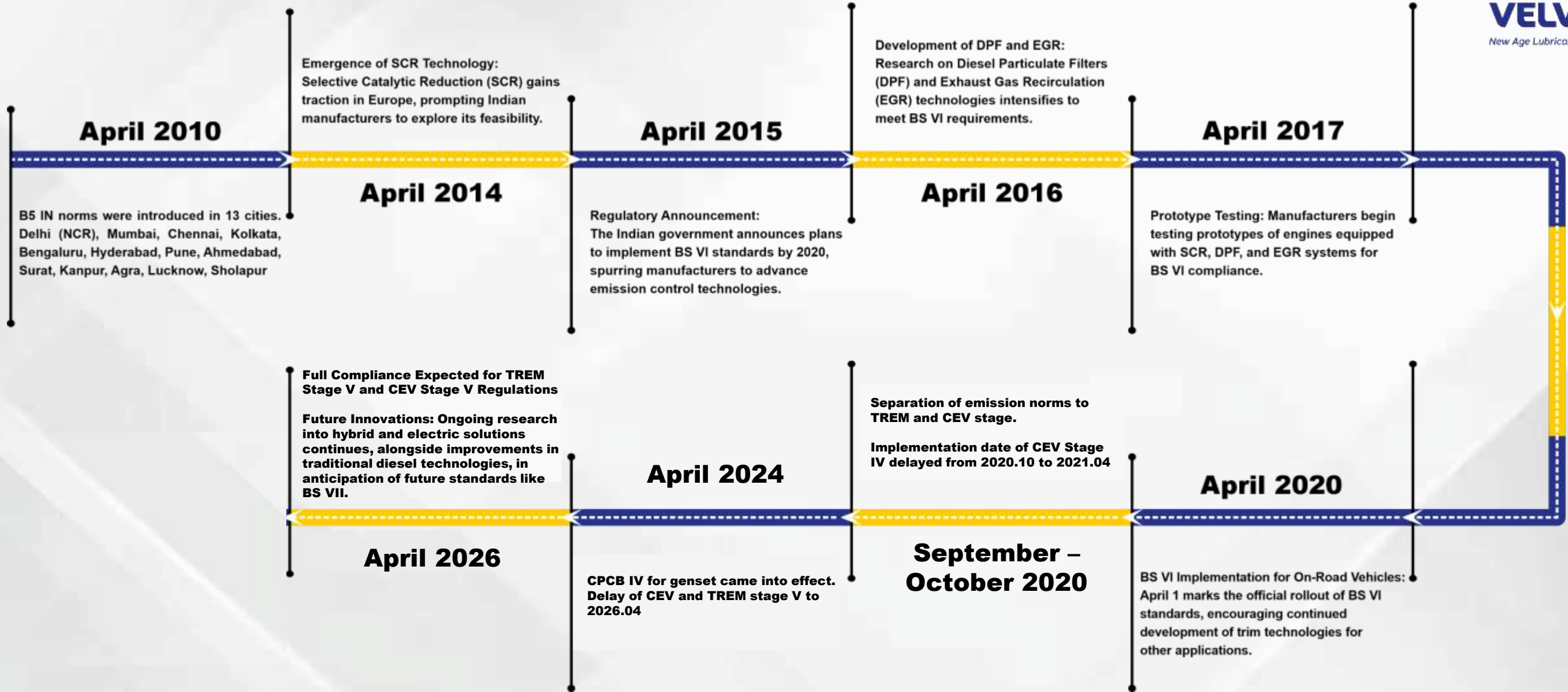


Pan India Network



#AdBlue is the Registered Trademark of Verband der Automobilindustrie e.V (VDA)

Progress of BSVI Implementation In The Country



APPLICATIONS

Velvex AdBlue® is being used in the following applications



What is AdBlue® ?

- AdBlue® is a registered trademark for AUS32 or Aqueous Urea Solution
- AdBlue® is a trademark owned by The German Association VDA
- The right to use the name AdBlue® can only be acquired by a license
- A non-toxic, crystal clear & synthetically produced solution
- Used in SCR system to reduce NOx emissions from exhaust of vehicles
- It is carried in an additional tank that is fitted by the vehicle manufacturer
- ISO 22241 standard ensures its consistent quality. In 2006, Euro technology to enable trucks to meet the Euro IV and V limits
- An SCR system uses AdBlue® to reduce NOx to convert it into Nitrogen and water

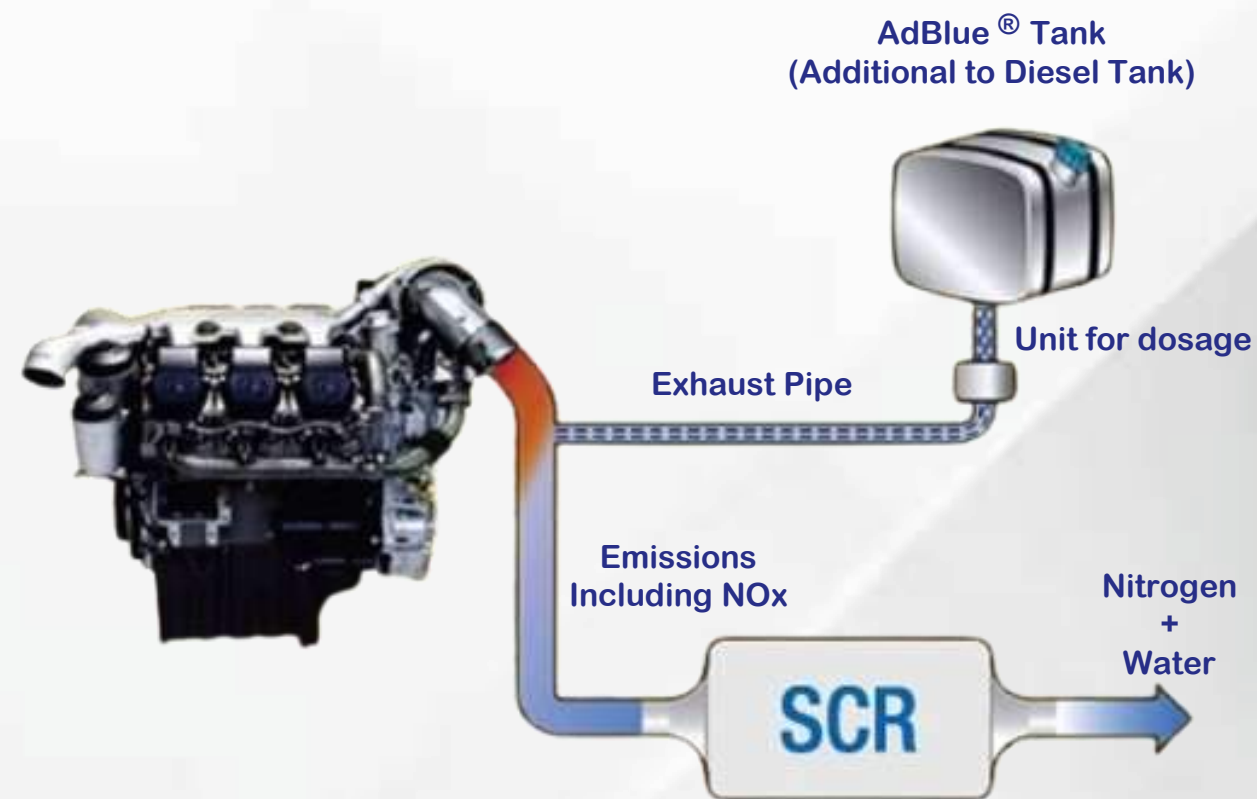
What is VDA?

- Verband der Automobil Industrie (VDA) is a German interest group representing the German automobile industry. Its members include both automobile manufacturers and component suppliers.
- VDA QMC is the certifying body that audits the suppliers' plants and certifies them to use the AdBlue® brand name.
- To use the AdBlue® trademark, suppliers must hold a valid VDA license.

How much is the AdBlue® consumption rate?

- AdBlue® consumption is expected to be approximately 4-6% fuel consumption. It may vary depending on vehicle operation, duty cycle, geography, load ratings, etc.

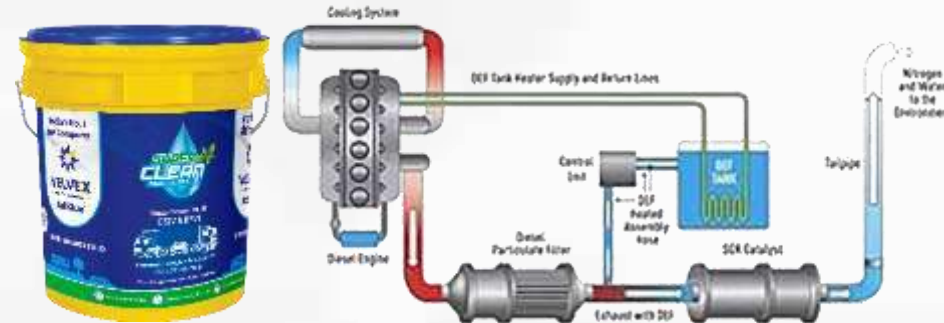
Functioning of the SCR System



SCR = Selective Catalytic Reduction

AdBlue / DEF / AUS32 Market Size

Diesel Exhaust Fluid (DEF), also known as AUS 32 and marketed as AdBlue, is a key liquid used to reduce air pollution from diesel engines.



Market Insights

- **Annual Consumption:** The DEF market is estimated at 800 to 1,000 million liters per year.
- **Market Share:** Nandan Group holds an approximate 35% share, making it the leading DEF manufacturer in India.
- **Major Reputed Brands:** Tata Genuine DEF, IOC Clearblue, Gulf AL AdBlue, Velvex AdBlue

Financial Outlook

- **Market Value:** The DEF market is valued between Rs. 3,200 to 3,500 crores annually.
- **Growth Rate:** It is projected to grow at a rate of 12% to 15% per annum.
- **CAGR:** The compound annual growth rate (CAGR) in volume over the past three years has been an impressive 20%. This robust growth indicates a strong demand for DEF, driven by regulatory pressures and the increasing adoption of cleaner diesel technologies.

AdBlue Quality Standard

AdBlue Specifications as per ISO 22241 / IS 17042

SCR systems are sensitive to potential chemical impurities in the urea solution. Therefore, it is essential to maintain high-quality standards in AdBlue manufacturing.

Formaldehyde-Free,
Low Biuret Urea

Deionized Water



Characteristics	Unit	Limits		Significance
		min.	max.	
Urea Content	% (m/m)d	31.8	33.2	It is critical to be in the range for an ideal solution as it provides the lowest freezing point. Also, the SCR system will be calibrated to 32.5% Urea content to get the optimum NOx reduction.
Density @ 20°C	kg/m3	1087	1093	Product Identification, and to check possible contamination
Refractive Index at 20°C	-	1381.4	1384.3	Product Identification, and to check possible contamination
Alkalinity as NH3	% (m/m)d	-	0.2	Determines product shelf life
Biuret	% (m/m)d	-	0.3	Poison to catalyst
Aldehyde	mg/kg	-	5	Form Deposits
Insoluble Matter	mg/kg	-	20	Causes Injector Clog
Phosphate (PO4)	mg/kg	-	0.5	Poison to catalyst
Calcium	mg/kg	-	0.5	Causes Injector Clog
Iron	mg/kg	-	0.5	Poison to catalyst
Copper	mg/kg	-	0.2	Poison to catalyst
Zinc	mg/kg	-	0.2	Poison to catalyst
Chromium	mg/kg	-	0.2	Poison to catalyst
Nickel	mg/kg	-	0.2	Poison to catalyst
Aluminium	mg/kg	-	0.5	Poison to catalyst
Magnesium	mg/kg	-	0.5	Causes Injector Clog
Sodium	mg/kg	-	0.5	Poison to catalyst
Potassium	mg/kg	-	0.5	Poison to catalyst

India: Current Scenario



- Growth of AdBlue demand in the country
- Along with reputed organized players, many unorganized players are entering this segment
- Volume of substandard AdBlue being sold in the market is increasing due to the following reasons:
 - Contamination of AdBlue is taking place due to **Non Dedicated Dispensing Equipment**
 - **Cheaper Industrial / Agricultural grade urea and supplies without mandated testing** of product are some of the mechanisms adopted to reduce cost of manufacturing.
 - Spurious manufacturers supplying AdBlue / DEF / AUS32 with **lower urea concentration** to cut cost.
 - **Lack of Knowledge:** Many consumers may not be aware of the differences between genuine and substandard products, making it easier for altered products to be sold
- In addition, there is now increasing use of cheat technology to by pass SCR and avoid AdBlue/DEF refilling

Quality Control Order

- Quality control order for AdBlue has come into effect from 24th August 2024
- Notification dated 27th February 2024 requires all packs of AdBlue/DEF to bear ISI mark
- The ISI mark can be licensed after a successful audit by the Bureau of Indian Standards (BIS)
- The IS part no is IS- 17042
- The license requires all AdBlue/DEF manufacturers to have their facilities audited and product approved.
- Minimum criteria is for manufactures to invest in laboratory for testing of its product
- It is the first battle amongst many in the fight against spurious manufacturers of the product.



Implementation Date:
24th August 2024

Standards and Certifications

38 companies and 78 plants are as on date registered for manufacturing

Gazette Notification

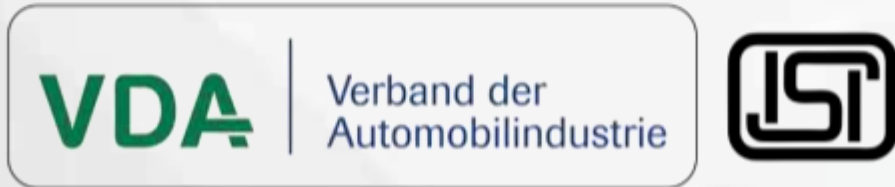
Genuine and Substandard AdBlue

Genuine AdBlue / DEF / AUS32

Certified - Quality Assurance



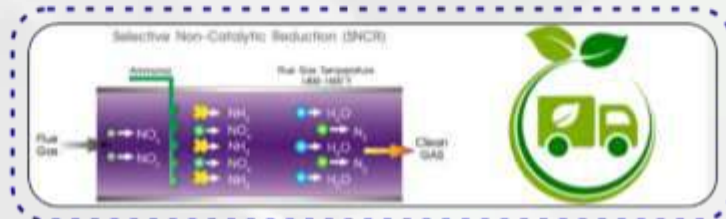
License Approval



Industrial Grade Urea AUS32
(ISO 22241 / IS 17042)



Cleaner Engine and Cleaner Environment



Substandard AdBlue / DEF / AUS32

Not Certified - NO Quality Assurance



No License Approval



Cheaper Agricultural Grade Urea
With Lower Urea Concentration



Bypass SCR and Harms Engine Life / Longer Vehicle Downtime
Negative Impact on Biodiversity



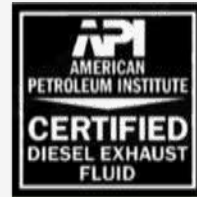
QCO Implementation To Address Substandard Product Issues

Steps Taken in Other Countries

VDA

Europe

AdBlue is a registered trademark of **VDA**. VDA **audits** the manufacturing plants and certifies them to use the AdBlue trade mark.



USA

American Petroleum Institute (API), on lines of VDA, has set up an **audit and licensing** framework. Manufacturers qualifying the audit can use the API logo on their packs.



Brazil

The In metro (Brazilian Institute of Metrology) is responsible for **conformity assessment** of a range of products manufactured and sold in Brazil.



China

In April 2015, the Internal Combustion Engine Industry Association set up a **certification system** for AdBlue and those enterprises who meet the manufacturing specification are authorized to use their trademark called CGT.

BIS in India



ISO 22241

- Standards Applicable globally
- Typically voluntary, but widely adopted
- Currently in effect



ISO 17042

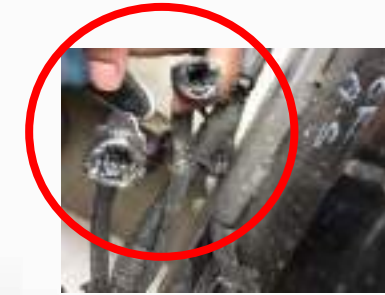
- Tailored for the Indian market
- Mandatory for Indian manufacturers
- Applicable from Aug 24th, 2024



- Limits on various contaminants like aldehydes, phosphates, and metals to ensure they do not damage the SCR system
- BIS certification through facility assessment and testing
- Mandatory to mention product name, BIS mark, batch number, and dates on product packaging
- Penalties for non-compliance include fines, license suspension, and sales prohibition

Cheat Technology – Bypass of SCR Systems

- Rise in tampering of SCR systems in India.
 - SCR Equipment lines are removed from the system
 - Use of OBD emulators to bypass the SCR system
 - Counter Technology Services Providers
 - Diagnostic tools with version program files
 - Bypass of SCR systems is happening in both BS-IV and BS-VI vehicles.



Effects of Bypassing SCR System



ENVIRONMENT:

- Increase in NOx emissions increases air pollution, contributing to **smog, acid rain and degradation of air quality.**
- It will also directly impact public health giving rise to **respiratory problems and other health issues.**
- Environmental degradation with **negative impact on biodiversity.**



OEMs

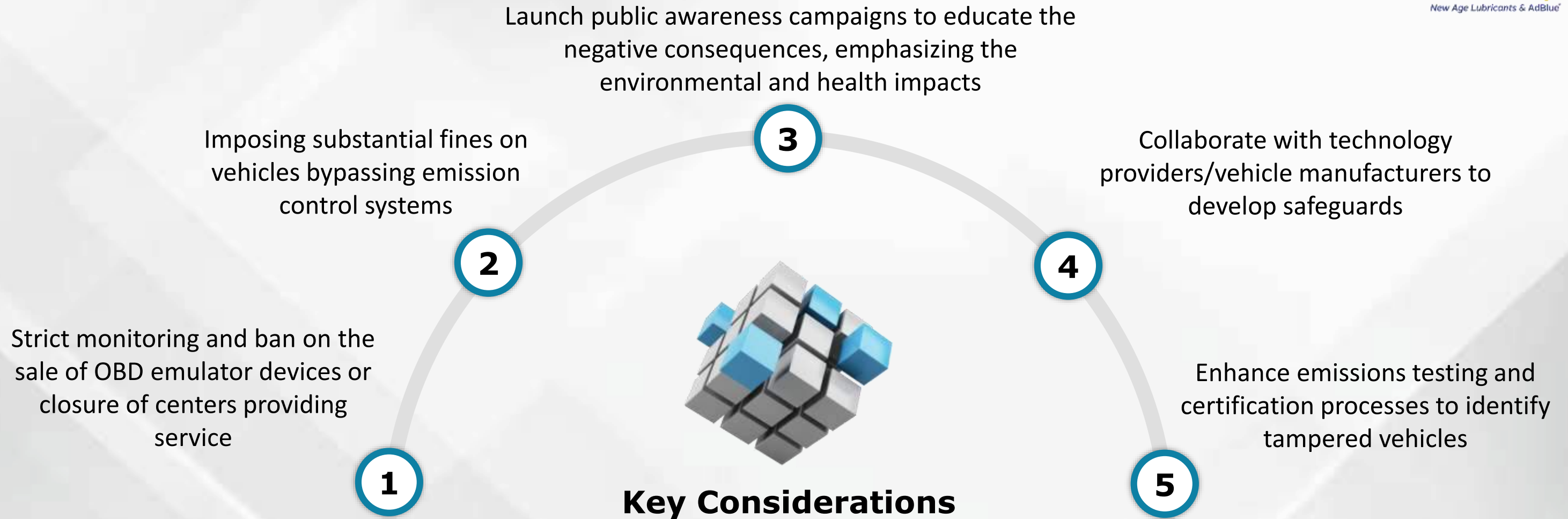
- Negative perception on BS-VI technology **affecting Brand Equity.**
- Future regulatory challenges to implement and maintain emissions standards.



VEHICLE OWNERS:

- Loss of business due to **frequent breakdown.** Higher combustion temperatures leads to increased engine wear.
- Provides **unfair competitive advantage** over law abiding businesses.
- **Decreased resale** value as consequences of such modifications.
- Loss of warranty coverage for engine-related issues.

Way Forward



Vehicles running with inferior quality or without AdBlue / DEF / AUS 32 are more harmful to the environment and society as they emit more NOx than BS I standard.

It will impact public health giving rise to respiratory problems and other health issues.

Thank You!



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