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German Technology
Lubricants & AdBlue®

Developments in the Indian AdBlue Market

NPL BlueSky Automotive

Presented By

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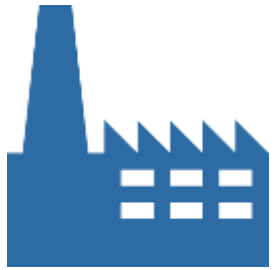
Managing Director

Nandan Group of Companies

NPL

NPL BlueSky Automotive

Pioneer of AdBlue® Manufacturing in India. Plant established in 2011.



Manufacturing plants to produce AdBlue® meeting ISO 22241 standards have been established around the country to meet the increasing demand of AdBlue in the country.

NPL BlueSky Automotive Pvt Ltd is a Technical Joint Venture between Nandan Petrochem Ltd (NPL) and KRUSE Automotive GmbH, Germany.

The objective of setting up this company is to supply AdBlue® to Automotive OEMs in India for their first fill as well as aftermarket requirement.

NPL BlueSky Automotive

KRUSE Automotive GmbH

KRUSE Automotive is a part of the Stockmeier Group which was founded in 1920

KRUSE offers custom-made filling solutions (packaged and dispensing) and
In house fleet of tank trucks for timely supplies of bulk deliveries

Kruse Automotive has a market share of about 25% in the German AdBlue® market

Stockmeier Group turnover is about €1.25Bn, of which KRUSE accounts for roughly 20%

NPL - Business Overview

VELVEX
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25+
Years experience in Lubricants

ISO
9001 I 14001 certified

400+
Employees

German
Technology Lubricants

15+ Major
Industries catered

15+ OEM
Genuine oil & AdBlue Manufacturing

Portfolio
Automotive | Industrial Lubricants
Transformer oil - Process oils
Greases - AdBlue

11
Production
Plants in India equipped with R&D and in house LAB facility

100M$
Annual Turnover

1000+
Variety of SKUs

In-House
Container manufacturing unit

150+
Distributors

Total Production Capacity
1,02,000 MT
of Lubes & Greases
3,40,000 MT
of AdBlue

NPL

Journey So Far...

2019-21
- Setting up of State-wise AdBlue manufacturing plants

2017-19
- Expansion Of OEM business with Car manufacturers

2019
- Set up of add. 4 New manufacturing facilities

2018
- Set up our 3rd and 4th Manufacturing facility

2017
- Expanded current facility and added our 2nd manufacturing facility

2017
- BS IV emission norms introduced in India from 1st April 2017

2012-17
- Expansion Of OEM business

2012
- Started relationship with Tata Motors

2011
- NPL BlueSky Automotive (NPL BS) was incorporated as a joint venture between Kruse Automotive, Germany and Nandan Petrochem Ltd (NPL)

VELVEX®
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Our Valued Customers

TATA

DAIMLER

VOLVO

MAN

Ford

Mahindra

FIAT

Mercedes-Benz
Trucks you can trust

EICHER

TOYOTA

NPL

NPL BlueSky Plant Locations

- Strategically located 8 State-of-the-art manufacturing plants across INDIA
- VDA Certified as per ISO 22241 standards
- ISO 90001 :2015 | ISO 140001 : 2015 certified
- IATF 16949 : 2016 certified
- BIS certified : IS 17042
- Fully automated Manufacturing.,

VDA Certification

Website Screenshot, Certificate Screenshot and Audit Scorecard

AdBlue® - Certification Audit

VDA | QMC
Qualitäts Management Center im Verband der Automobilindustrie

Report no. of the Audit	0004005
Audit Start date	19.11.2018
Audit End date	19.11.2018
Certification party	VDA QMC
Department / Organization	AdBlue®-Auditing
Auditor / Name	Dirk Wetter
Audited / certified party	NPL BlueSky Automotive VAT-ID
Department / Organization	AdBlue Production and Handling
Responsible person / Name	N A Joshi (CEO)
Address / Street	Lotus Corporate Park B 601, Ram Mandir Lane, Goregaon
City / ZIP code	Mumbai-400063
Country / State	Maharashtra - India
Audited locations	Production plant Silvassa
Audited units	

Results	Valuated requirements	No. of red A req.	No. of red B req.	No. of yellow	No. of green
5.1 Basic requirements	4	0	0	0	4
5.2 Production process	7	0	0	0	7
5.3 Production equipment	4	0	0	1	3
5.4 Sampling and testing	7	0	0	1	6
5.5 Documentation of test results and certification	3	0	0	0	3
5.6 Administration, tracking, batch traceability and labeling	2	0	0	0	2
5.7 Handling, transport and storage	8	0	0	0	8
Total (max. 38):	35	0	0	2	33

Overall Result Fulfillment rate [%]: 96,3 green

Certificate

Qualitätsmanagement Center im
Verband der Automobilindustrie e.V.
Behrenstrasse 35
10117 Berlin
Germany

NPL BlueSky Automotive Pvt. Ltd.

Lotus Corporate Park, 601 B- Wing,
Ram Mandir Lane, Jai Coach Junction,
Western Express Hwy, Goregaon East
Mumbai 400063, Maharashtra

India

137)	**NPL BlueSky Automotive Pvt Ltd.** B 601 - Lotus coporate Park, Ram Mandir Lane Jay Couch Junction, Western Express Highway Goregaon - (E) - Mumbai 40063 India	W	A

AdBlue Distribution Channels

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Channels:

- OEM dealership/ franchise workshops
- OEM spare-part distributors
- Oil Distributors
- Aftermarket OES
- Fuel Retail Outlets

IndianOil

HP

VELVEX AdBlue is available at Major Fuel Retail Outlets in the country

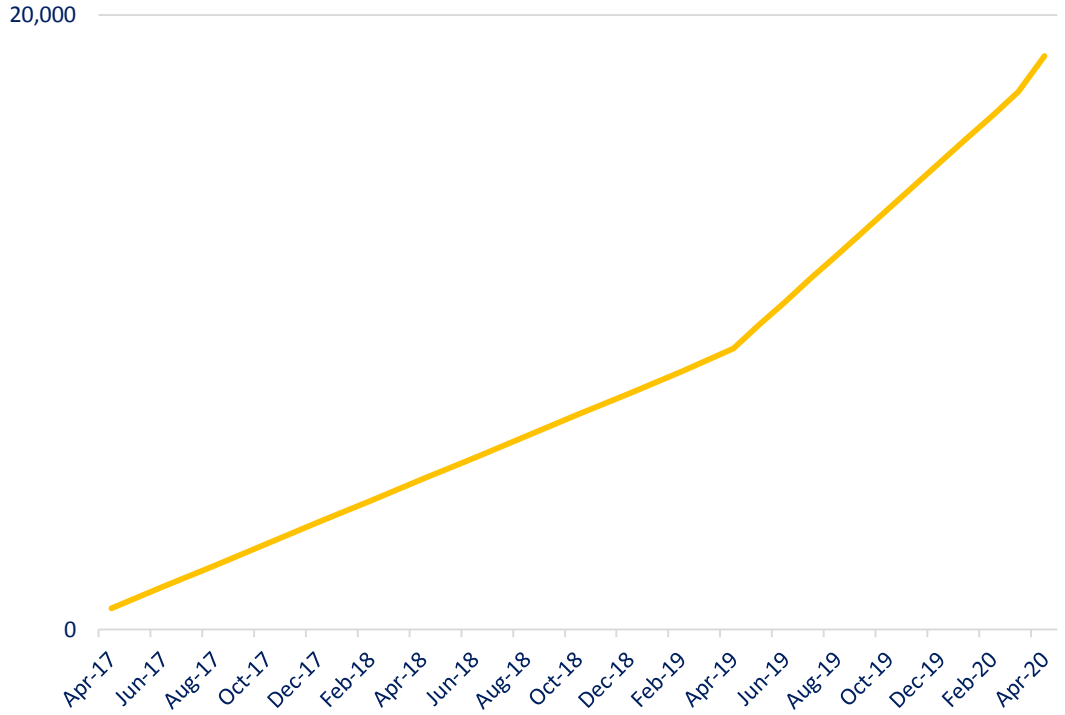
Pack sizes

- Pails/Drums (26L, 20L,10L)
- Barrels (210L)
- Intermediate bulk container (IBC)

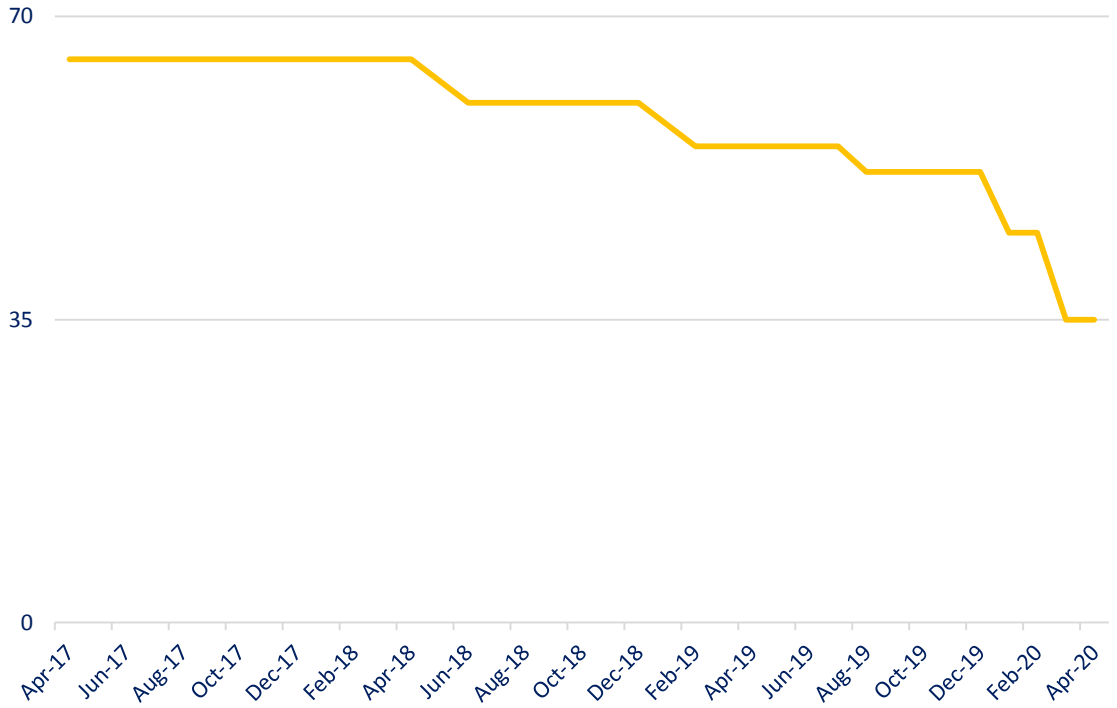
NPL

Market Trend : Volumes on the Rise, Price on the Fall

Per Month Volume in KL



MRP Price Per Litre in INR



Source: NPL BS Research

AdBlue demand for the next few years

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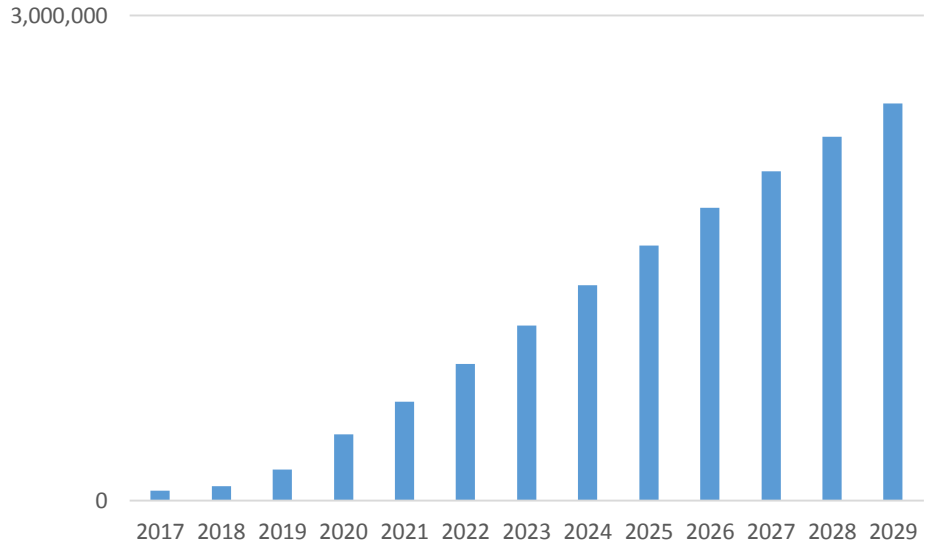
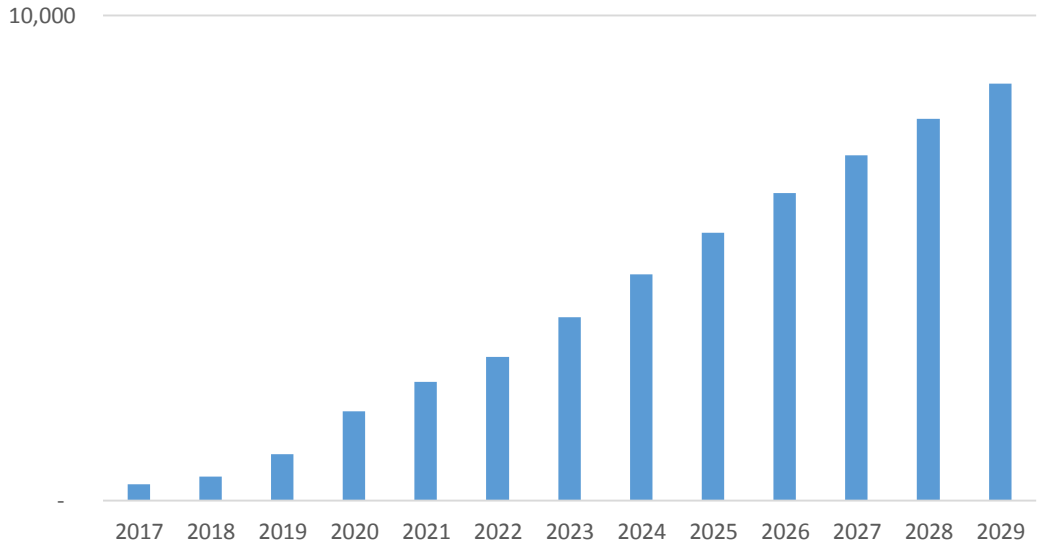
AdBlue Demand (KL / Year)



AdBlue Market Size in INR Crs



Source: Argus Media

Urea Policy – India

- Manufacturing of any Fertilizer grade urea is subsidized by the Govt of India
- Subsidies and low interest loans provided for plant and machinery procurements
- India is a net importer of urea.
- Urea manufacturers in India have to necessarily sell urea only for fertilizer applications.
- AGU needs to be imported from International markets which are having surplus capacity and will be able to cater to Indian AdBlue requirements.

Concerns for the market

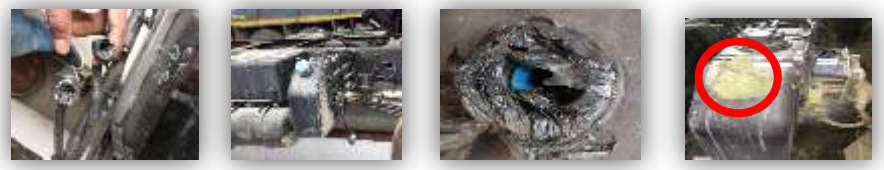
Sub-standard quality AdBlue/DEF is being sold in the market…

Major Reasons:

- Inferior quality of urea (industrial/fertilizer grade urea)
- Lack of proper manufacturing infrastructure
- Using AdBlue sub-license to promote product
- Lower concentration of urea to cut cost (less than 32.5%)
- Inadequate Laboratory equipment to test all parameters specified in ISO 22241

- **Off Spec products from the Market**

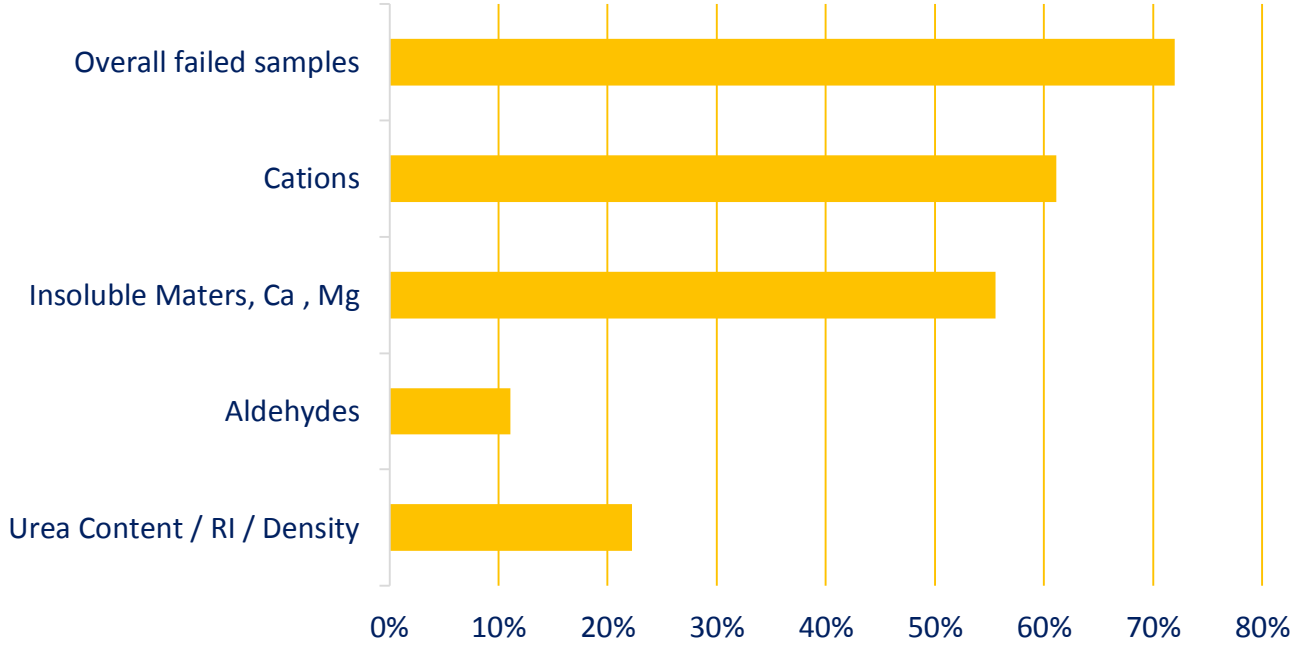
- **Improper handling of SCR systems**



Market Study

- Analyzed 50+ samples from the market, with approximately **72% of them being off spec**
- Many samples failed on basic requirement of Urea content along with other parameters
- Failures predominantly on Urea concentration, Sodium, Phosphates, Calcium, Potassium & Aldehydes levels
- Retail price for these off spec products are really low
- Spurious products of famous AdBlue/ DEF brands available in the market. Spurious/ local brands being sold in cash without GST invoice there by evading 18% GST on the product

Product failure - Category wise (Market samples)

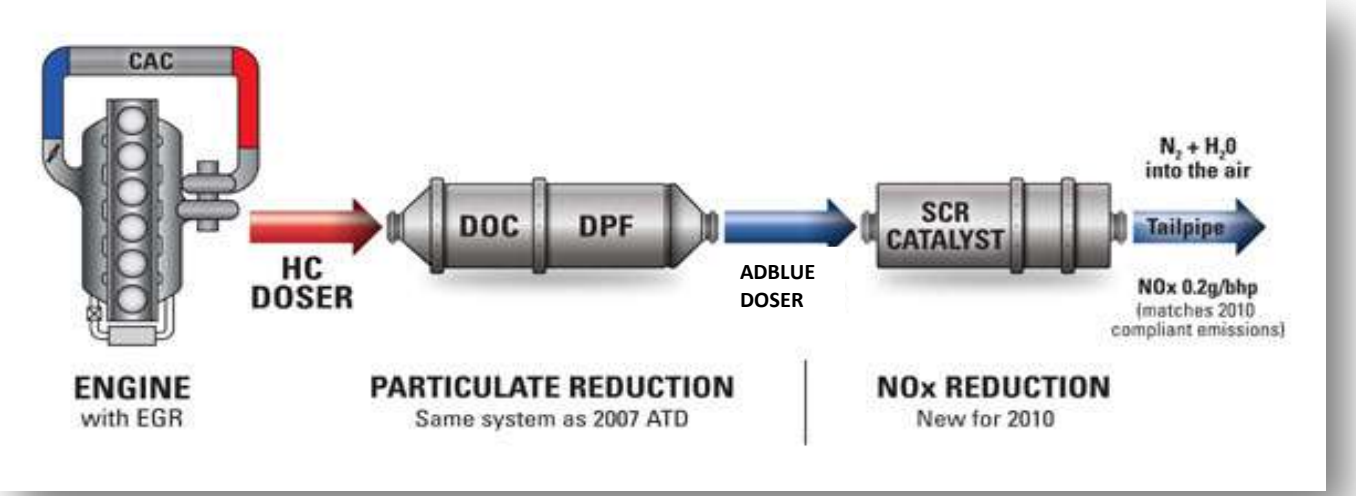


Implications of using wrong AdBlue

- Contaminants are the biggest cause of damage to an SCR System and the repair costs are expensive

- Major components that can be damaged include:
  - AdBlue Dosage Pump
  - Urea Injector
  - The Catalyst

- Effective NOx conversion does not take place which will lead to engine torque reduction



Damage to SCR system

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- Visibly **clogged strainer filter** clogged due to contamination
- Comparison of Contaminated and Regular filters

- AdBlue tank strainer **filter found detached** from the suction port leaving no filtration at the suction port.
- Risking reduced service life of main filter.

- **Damaged SCR systems**

Quality Parameters

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Characteristics	Unit	Limits		Test methods
		min.	max.	
Urea content [a]	% (m/m) [d]	31,8	33,2	ISO 22241-2 Annex B [e] ISO 22241-2 Annex C [e]
Density at 20 °C [b]	kg/m³	1 087,0	1 093,0	ISO 3675 or ISO 12185
Refractive index at 20 °C [c]	—	1,381 4	1,384 3	ISO 22241–2 Annex C
Alkalinity as NH_3	% (m/m) [d]	—	0,2	ISO 22241–2 Annex D
Biuret	% (m/m) [d]	—	0,3	ISO 22241–2 Annex E
Aldehydes	mg/kg	—	5	ISO 22241–2 Annex F
Insoluble matter	mg/kg	—	20	ISO 22241–2 Annex G
Phosphate (PO_4)	mg/kg	—	0,5	ISO 22241–2 Annex H
Calcium	mg/kg	—	0,5	ISO 22241–2 Annex I
Iron	mg/kg	—	0,5	
Copper	mg/kg	—	0,2	
Zinc	mg/kg	—	0,2	
Chromium	mg/kg	—	0,2	
Nickel	mg/kg	—	0,2	
Aluminium	mg/kg	—	0,5	
Magnesium	mg/kg	—	0,5	
Sodium	mg/kg	—	0,5	
Potassium	mg/kg	—	0,5	
Identity	—	identical to reference		ISO 22241–2 Annex J

Characteristicsc	Significance
Urea Content	It is very critical to be in the range as an ideal solution as it provides the lowest freezing point. Also, to get the optimum Nox reduction, the SCR system will be calibrated to 32.5% Urea content
Density @ 20°C Refractive Index at 20°C,	Product Identification and to check possible contamination
Alkalinity as NH3	To Determines its shelf life
Aldehyde	Form Deposits
Insoluble Matter, Calcium, Magnesium	Causing Injector Clog
Biuret , Phosphate (PO4) , Iron, Copper, Zinc, Chromium, Nickel, Alumunium, Sodium, Potassium	Poison to catalyst

Tampered SCR Systems

- SCR Equipment lines are removed from the system

- Use of OBD emulators, been observed across Europe as well.
- Ways to tamper SCR system as seen in Europe:
  - Remapping
  - OBD Plug
  - Can bus emulators
  - NOx sensor emulators
  - ”Old-school” modifications/tampering with signals from sensors with passive components
  - Additional tampering with DPF

- OBD emulators allows the emissions to bypass the SCR system

Reasons for Tampering

Reasons:

- Saving on the product cost
- Saving on maintenance costs
- Saving on the downtime which the SCR system could cause

Fight Against Tampering:

- There is an urgent need for a complete ban on emulators
- Also a need for an on-road emission testing or on-road vehicle inspection to negate the use of such cheat mechanisms.
- Fines on defaulters

Effects of Sub Standard Product

ENVIRONMENT:

- Increased NOx emissions in the environment equal to BS-I levels worsening air quality
- Purpose of BS-IV implementation at a huge investment is defeated

VEHICLE OWNER:

- Engine de-ration due to ineffective NOx conversion
- Repair costs post warranty
- Loss of business due to frequent breakdown

OEMs:

- Breakdown of SCR system leading to increase in repair costs
- Negative perception on BS-IV technology affecting OEM Brand Equity
- In addition there are cheat technologies called OBD Emulators available for sale on e-commerce websites.
- These devices bypass the SCR system to avoid usage of AdBlue, hence increasing NOx emissions.

Steps Taken in Other Countries

Europe: AdBlue is a registered trademark of VDA. VDA audits and certifies the manufacturing plants and certifies them to use the AdBlue trade name

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

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.

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

Way Forward

- BIS has adopted ISO 22241 standard and has published quality standard IS: 17042 for AdBlue/DEF
- An urgent need of having Government Agency like BIS to audit and license manufacturing units
- Government to issue Control Order Copy to mandate BIS audit and license for AdBlue/DEF manufacturing
- Accordingly only quality manufacturers will be allowed to supply product in the market
- Need to reduce GST from 18% to 5% to reduce price gap
- Ban on sale of OBD Emulators (these are also available on e-commerce websites in India)
- Since the development of the market for AdBlue is in its nascent stage , this is the right time to set up a regulatory mechanism in the country **to ensure that the emission norms are well and truly complied with and the citizens get cleaner air to breath**

Vehicles running without DEF are more harmful to the environment as they emit more NOx than BS I standard

Why NPL BlueSky

- Pioneer of AdBlue manufacturing in India
- Technical Joint Venture with Kruse Automotive
- Supplying to all major OEMs in India
- Primary VDA license holder & Plants audited by German Auditor
- Well equipped plant and laboratory
- PAN India manufacturing presence

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Thank You...!!

NPL