

# Ben Mitchell

- Product Segment Manager – Mixed Farming & Livestock - ANZ



# OUR COMPANY: SEGMENTS AND KEY FEATURES

## AGRICULTURE

Second largest manufacturer of agricultural machinery



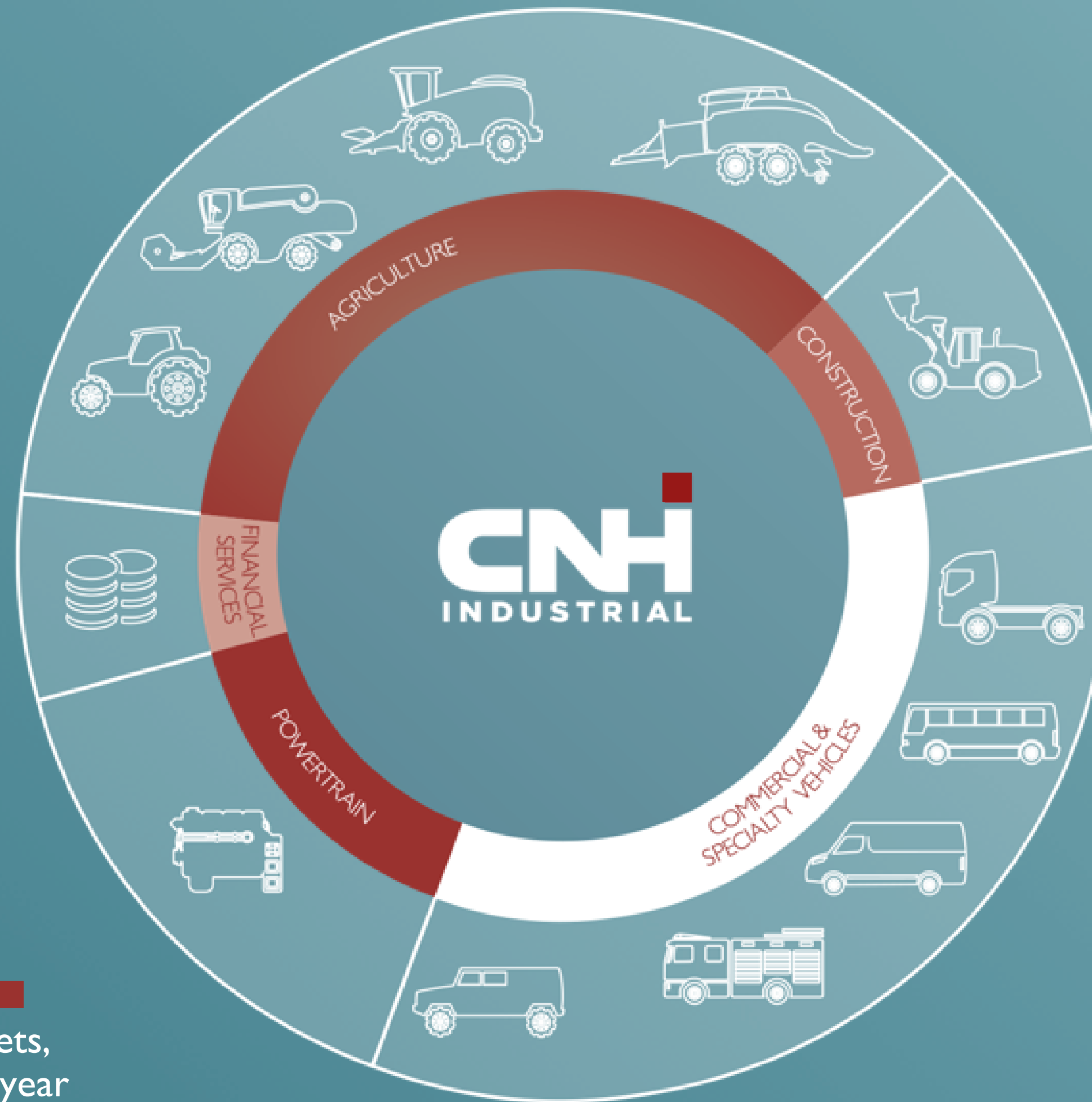
## FINANCIAL SERVICES

A global leader in equipment finance, supporting customers and dealers with tailor made solutions



## POWERTRAIN

Global number one in highly regulated markets, producing more than half a million engines a year and market leader in alternative fuels powertrains



## CONSTRUCTION

A global player in the manufacturing of construction equipment



## COMMERCIAL & SPECIALTY VEHICLES

Fifth largest manufacturer of commercial vehicles and the European market leader in natural gas commercial vehicles and buses



## NEW HOLLAND – THE BRAND



# New Holland

Innovative, intuitive and sustainable solutions to get the job done

Full-liner focused on small grains, livestock and H&F

Consistent dealer network strategy

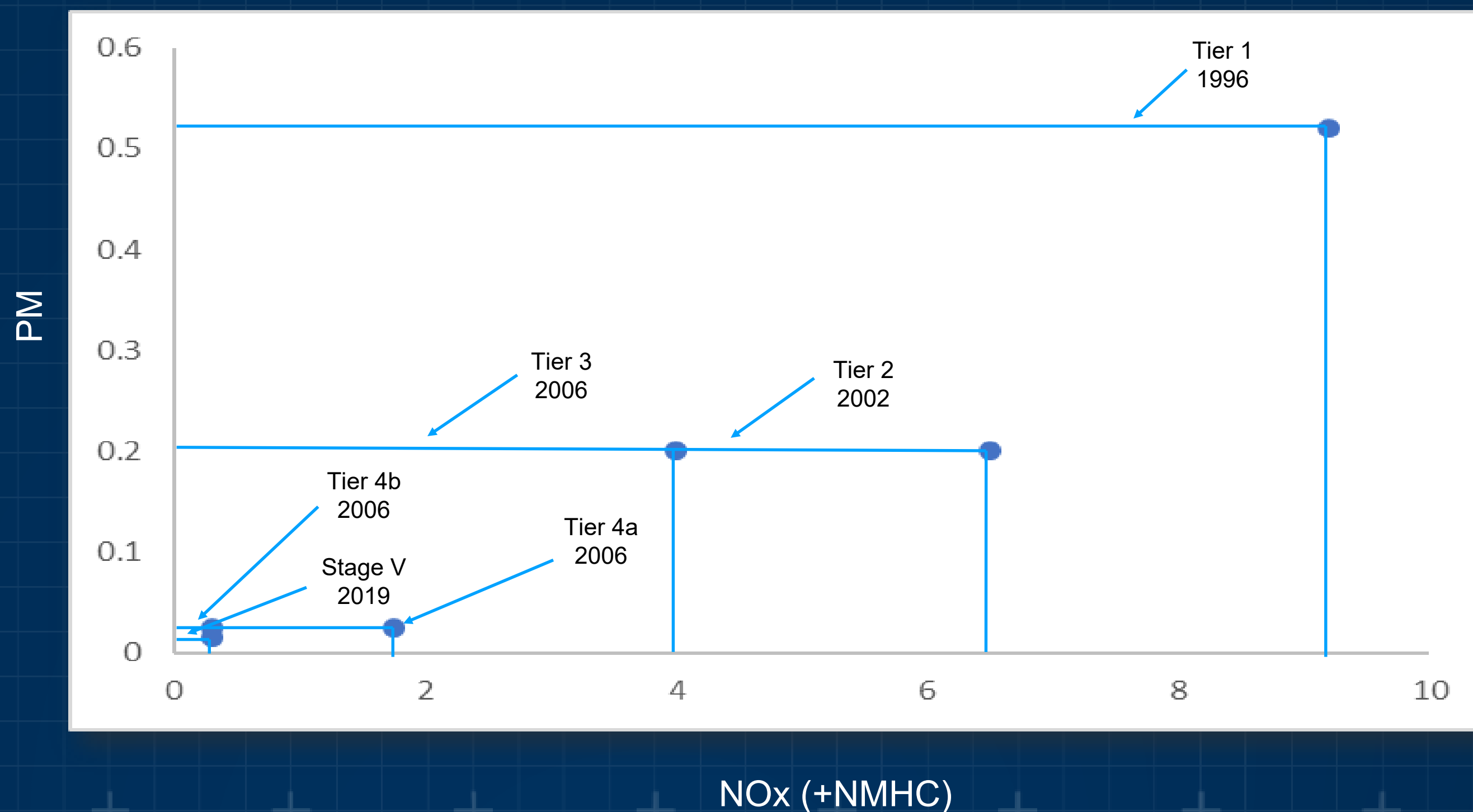
**Built on a well  
established  
Brand  
positioning**

# EMISSIONS LEGISLATION – EUROPE OFF-ROAD

- Engine emission legislation started in 1996 with the introduction of Tier 1
- 2002, Tier 2, the PM (Particulate Matter) and NOx (Nitrogen Oxides) were reduced
- 2006, Tier 3 brought a more stringent requirement to control NOx
- 2011, Tier4a brought a another big leap in emissions control reducing both PM and NOx
- 2014, Tier 4b, further tightened controls for NOx
- 2019, Stage V focused on PM and PM counting was introduced.

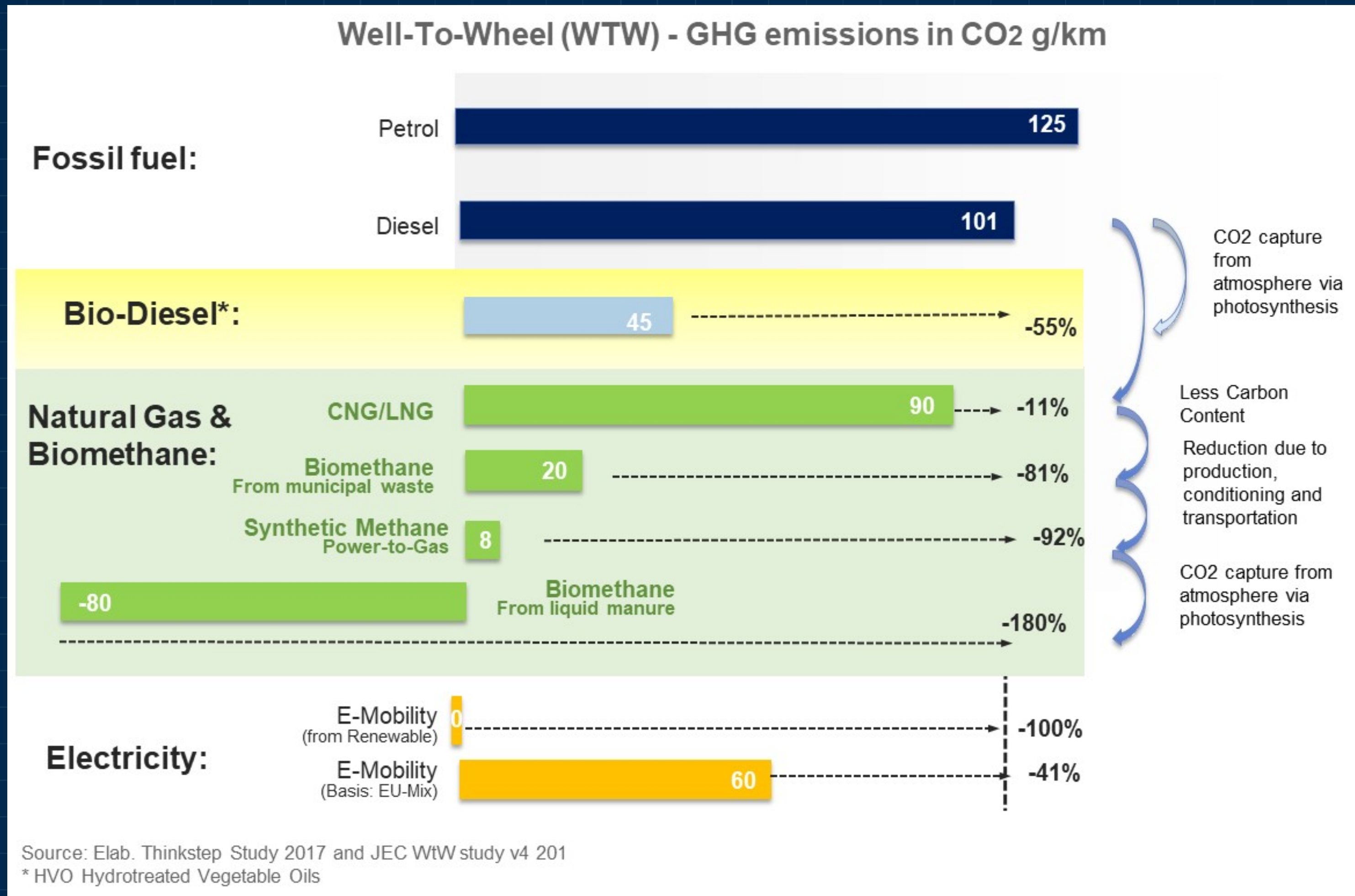


Before emissions legislation

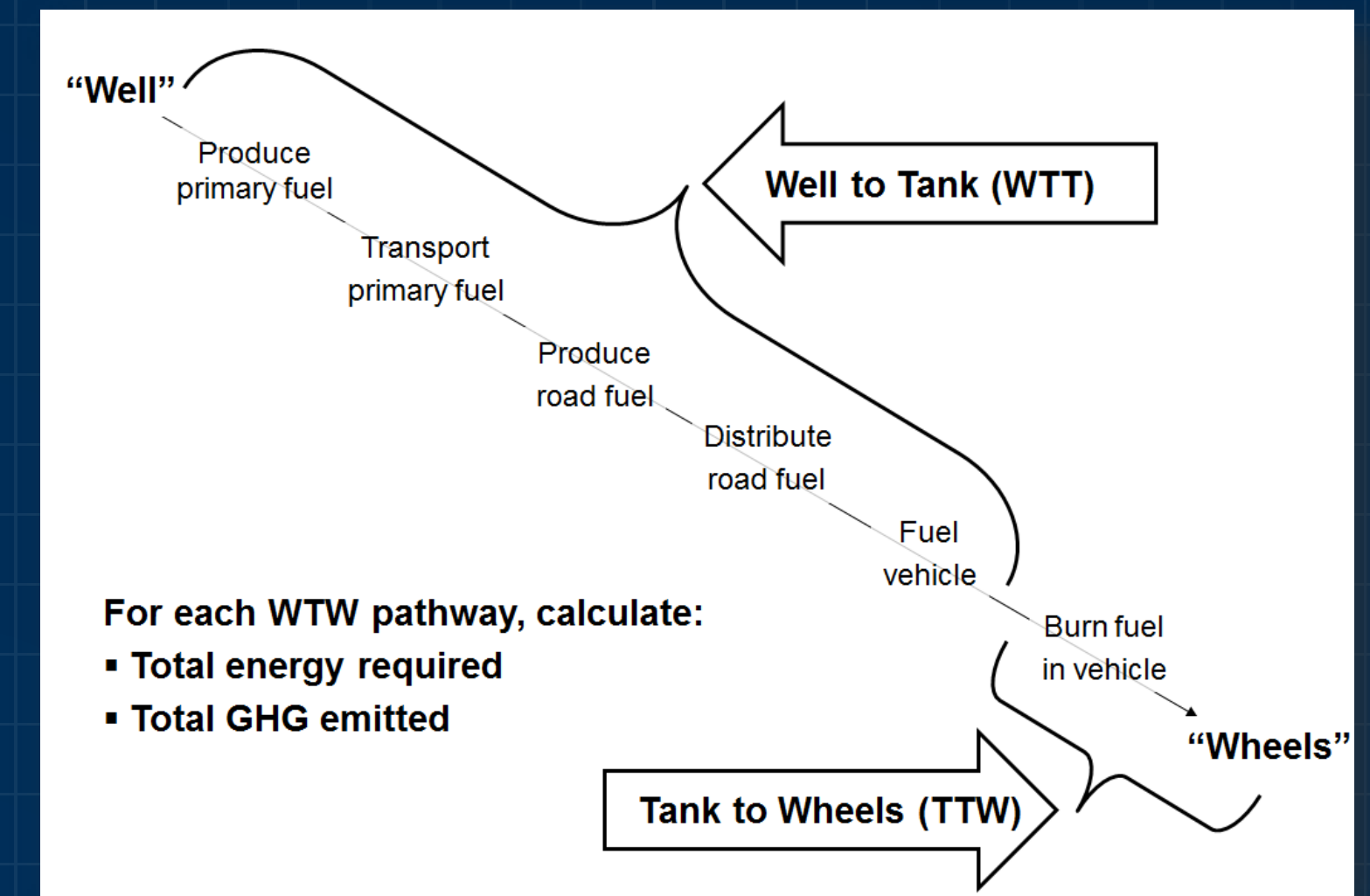


# ENVIRONMENTAL IMPACT VIEW – WELL TO WHEEL

## Green-House-Gas Emissions by Source – On-Road



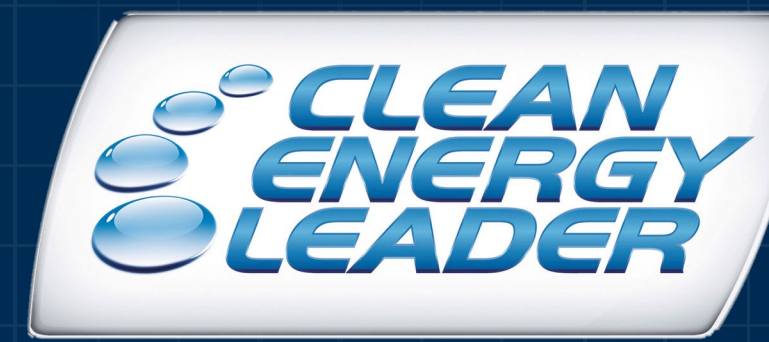
## Well to Wheel



## Natural Gas vs Diesel

- **Non-Renewable** Natural Gas has a significant reduction in CO<sub>2</sub> emissions vs Diesel (~11%)
- **Renewable** sources of Gas reduce CO<sub>2</sub> emissions even further vs Diesel
  - Between ~ 80% - 180% reduction depending on the source

# THE CLEAN ENERGY LEADER® STRATEGY SINCE 2006



**JULY 2006**  
THE BIRTH OF A NEW ERA  
CLEAN ENERGY LEADER® STRATEGY  
LAUNCHED



**NOVEMBER 2007**  
100% BIODIESEL  
ALL NEW HOLLAND ENGINES  
ARE 100% BIODIESEL  
COMPATIBLE



**NOVEMBER 2011**  
INTELLIGENT VITICULTURE  
ECOBRAUD AND SUSTAINABLE  
VITICULTURE WIN A SILVER MEDAL  
AT AGRITECHNICA



**FEBRUARY 2009**  
ZERO EMISSION FUTURE  
NH<sup>2</sup>™ HYDROGEN TRACTOR AND  
ENERGY INDEPENDENT FARM™



**SEPTEMBER 2012**  
A RENEWABLE ALLIANCE  
STRATEGIC PARTNERSHIP WITH  
GROWTH ENERGY TO PROMOTE  
ETHANOL



**NOVEMBER 2013**  
THE NEW FRONTIER  
1<sup>ST</sup> GENERATION T6 METHANE  
POWER TRACTOR LAUNCHED



**JUNE 2015**  
INNOVATION THAT WORKS  
2<sup>ND</sup> GENERATION  
T6 METHANE POWER



**AUGUST 2016**  
THE AGRICULTURE OF TOMORROW  
NH<sup>DRIVE</sup>™ CONCEPT AUTONOMOUS TRACTOR,  
UNVEILED AT FARM PROGRESS, USA.



**AUGUST 2017**  
METHANE CONCEPT TRACTOR  
REIMAGINES THE DESIGN  
AND REVEALS A CONNECTED  
AND SUSTAINABLE FUTURE



# IVECO NATURAL POWER VEHICLES

Two decades of continuous investments

## Developments within CNH Industrial

Methane engines, developed by FPT, have been available since 1997 from Iveco  
 In 2004 the methane-powered NEF engine was sold in the Eurocargo

# IVECO

## COMMERCIAL VEHICLES

LIGHT  
3,5 to 7,2t

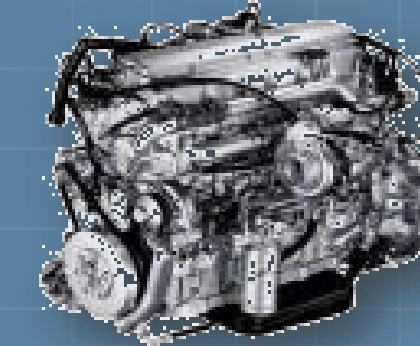
MEDIUM  
11 to 16t

HEAVY  
18 to 44t

BUSES  
10, 12 & 18m

ENGINES  
3L -16L

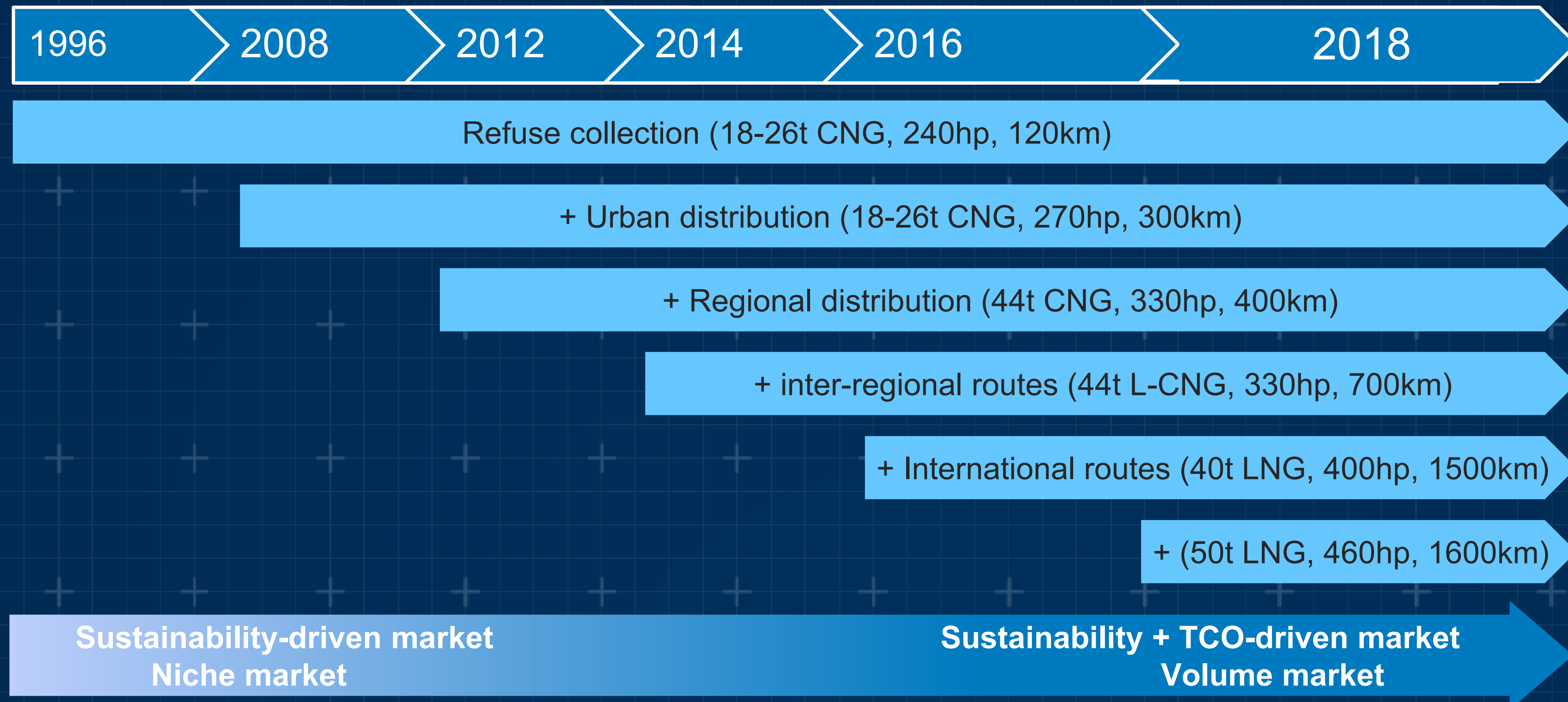
45.000 UNITS



1996	2000	2001	2007	2010	2012	2015	2016	2017
1 <sup>st</sup> buses 1 <sup>st</sup> trucks	1 <sup>st</sup> LCVs	1 <sup>st</sup> below EEV	1 <sup>st</sup> below Euro VI	1 <sup>st</sup> CNG Tractor	1 <sup>st</sup> LNG Tractor	1 <sup>st</sup> LNG Rigid Truck	C9 400HP Intercity distribution	C13 460HP Long Haul

# IVECO NATURAL POWER VEHICLES IN EUROPE

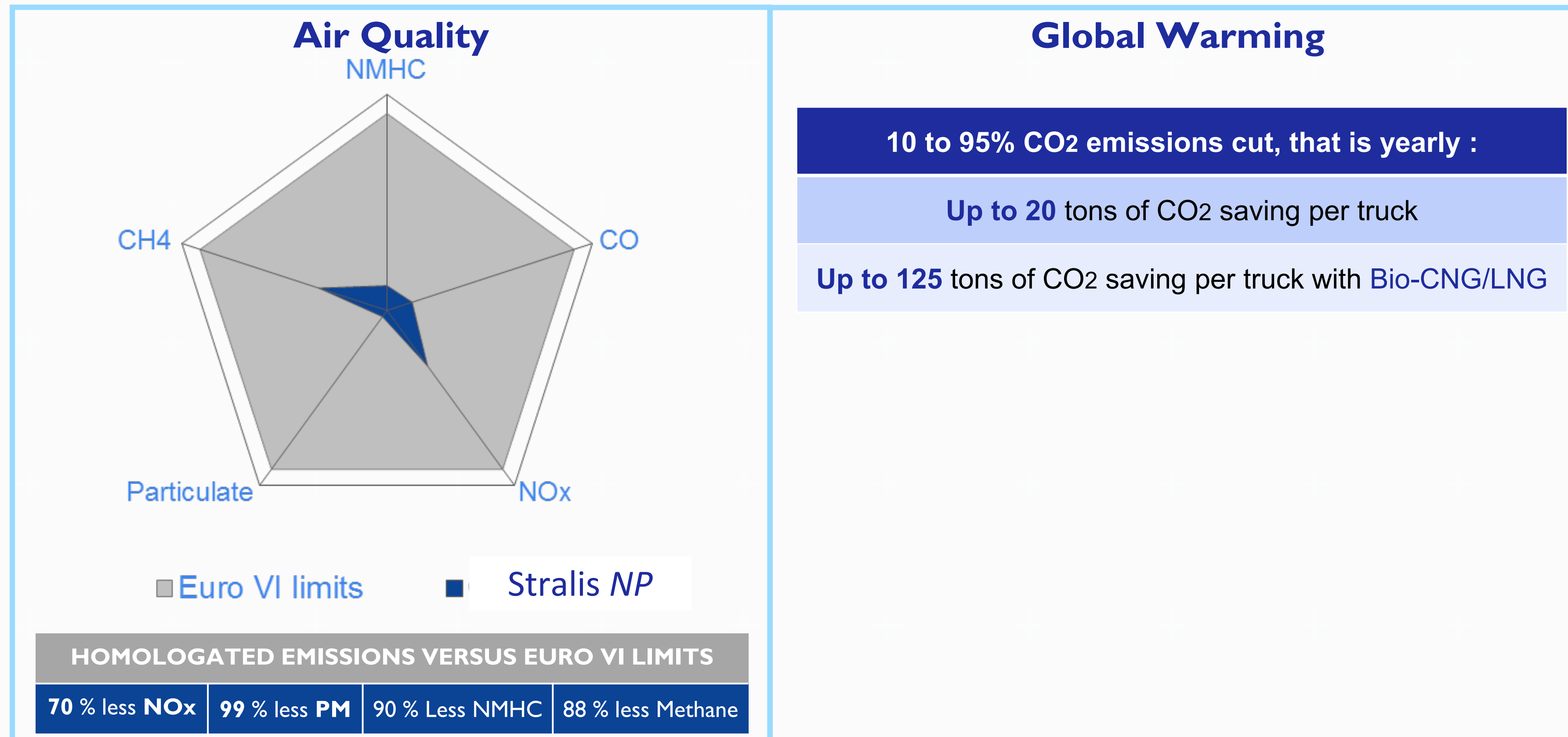
New market and size made possible thanks to product evolution





# IVECO NATURAL POWER TECHNOLOGY

The cleanest technology on the market and a global answer



# METHANE POWERED TRACTOR PROTOTYPE

- The methane prototype has been extensively tested in Europe and Brazil (Germany, France, Italy, UK, Spain, Denmark, Czech Republic, Belgium, Netherlands, Luxemburg)
- Engine derived from the **Iveco Eurocargo**

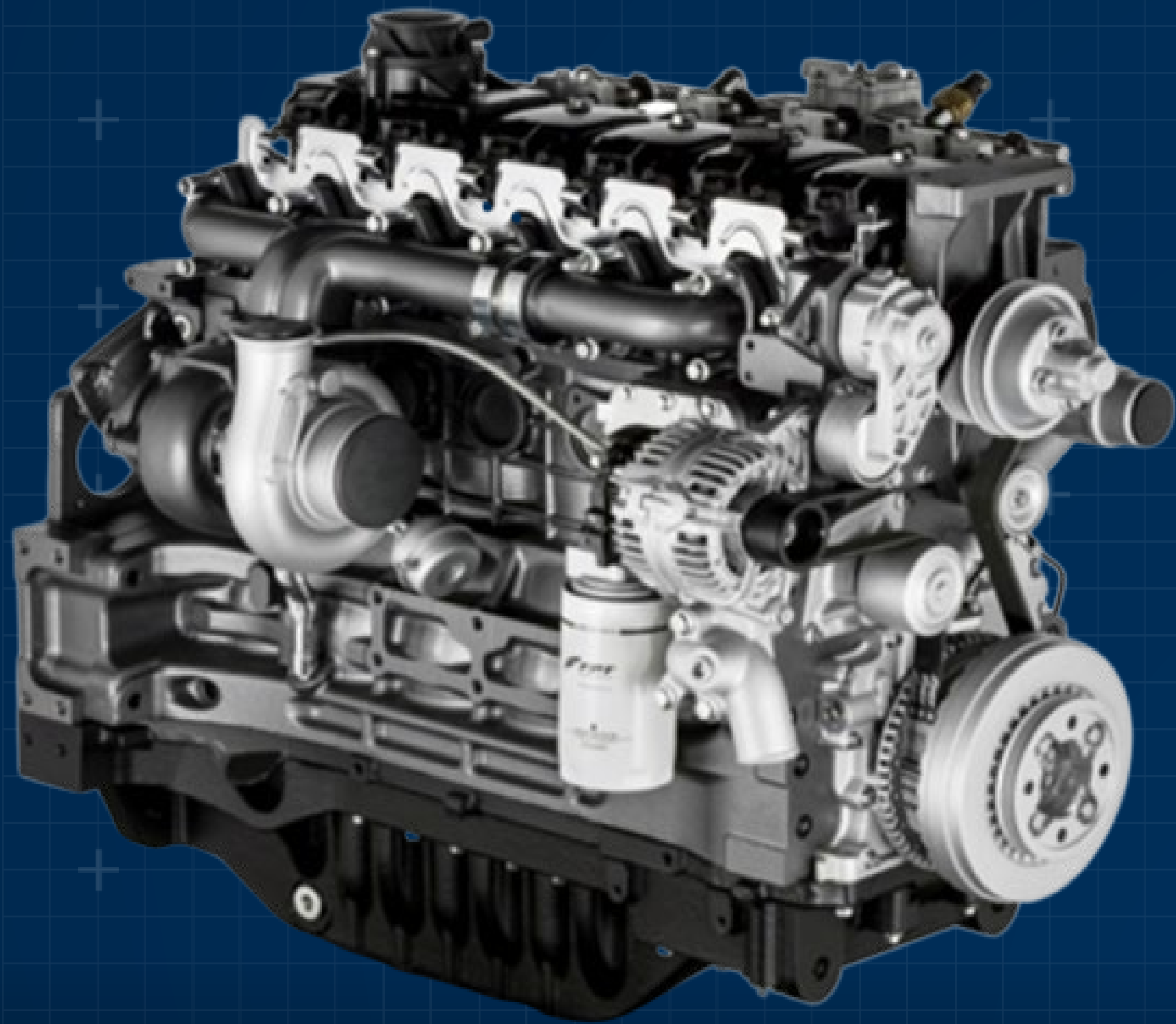
## METHANE POWER TRACTOR



### Main specifications:

Name: **T6.180 Methane Power**  
Engine family: **179hp 6-cylinder NEF**  
**100% Methane Powered**

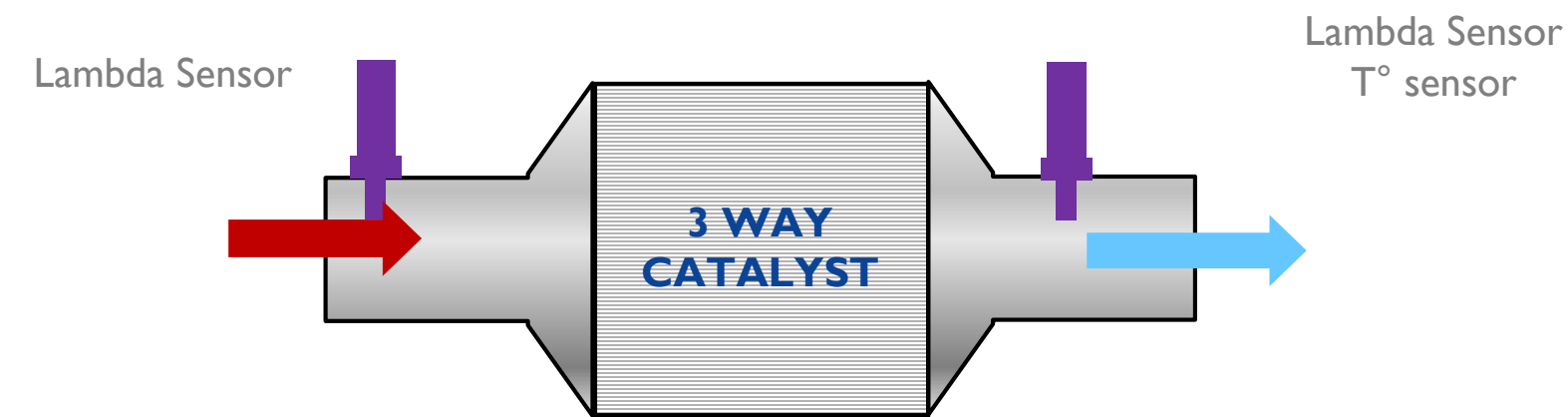
# FPT NATURAL GAS ENGINES – MAIN FEATURES AND BENEFITS



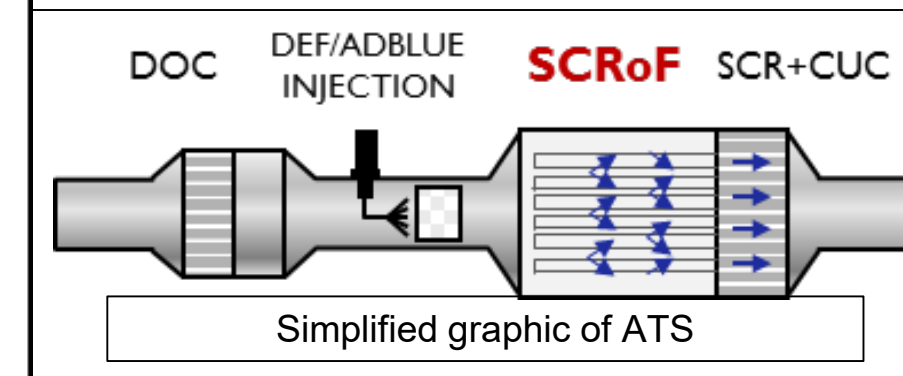
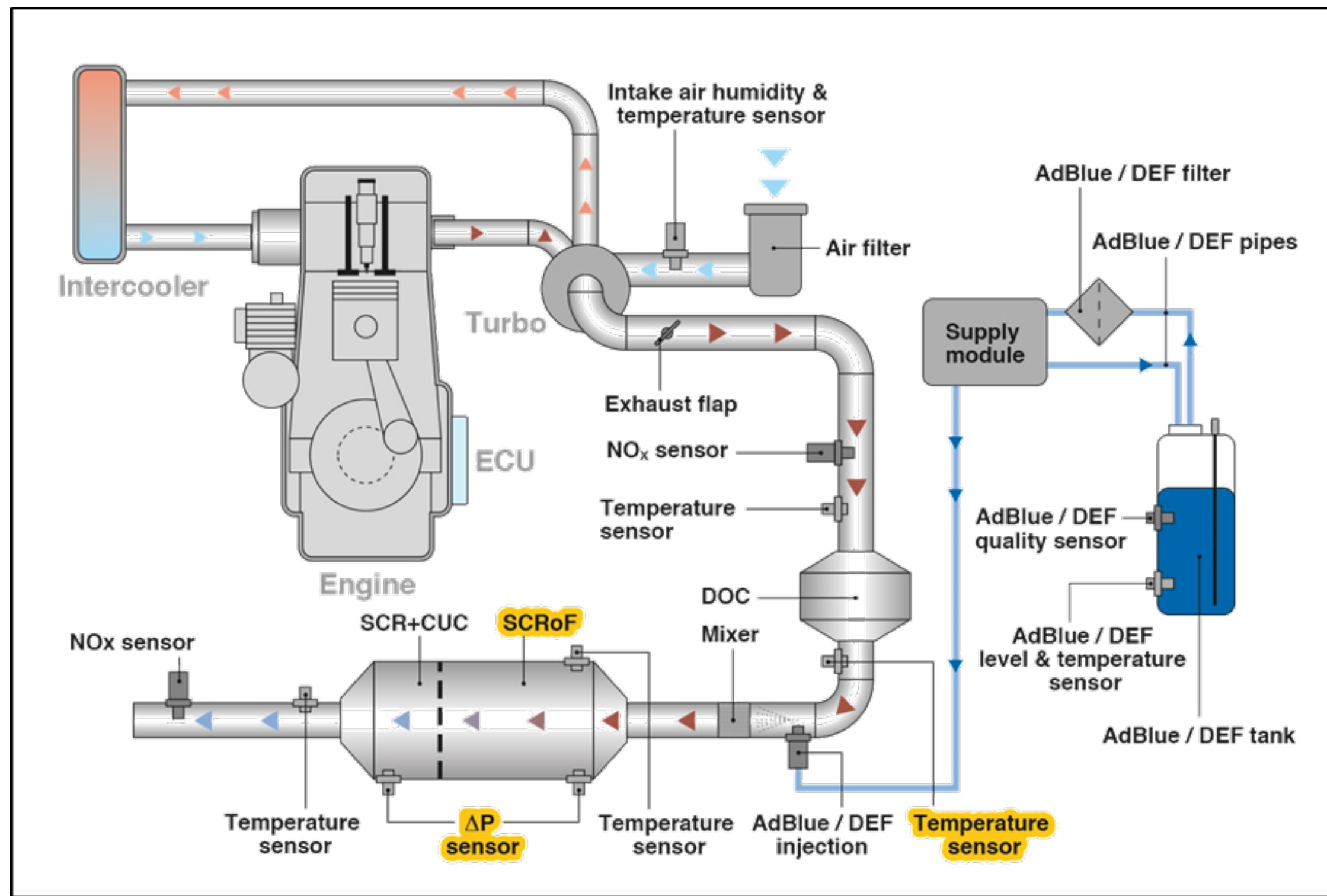
- **100% NATURAL GAS ENGINES WITH DIESEL-LIKE PERFORMANCE**
- **CNG, LNG AND BIO-METHANE COMPATIBLE**
- **STOICHIOMETRIC COMBUSTION STRATEGY PIONEREED FROM 1995 FOR CLEAN COMBUSTION AND LOW EMISSION**
- **MULTIPOINT INJECTION AND PROPRIETARY MODEL-BASED ENGINE CONTROL (PATENT PENDING)**
- **HIGH PERFORMANCE MATERIALS FOR MAXIMUM RELIABILITY**
- **HIGH RESISTANCE STRUCTURAL BLOCK AND OIL SUMP SPECIFICALLY DESIGNED FOR INSTALLATION ON TRACTORS**
- **REDUCED OPERATING COSTS AND LOW CO<sub>2</sub> EMISSIONS (NEARLY ZERO WHEN OPERATING WITH BIO-METHANE)**
- **SIMPLE 3 - WAY CATALYST FOR STAGE V EMISSION COMPLIANCE**
- **LOWER NOISE AND VIBRATION COMPARED TO DIESEL (5 DB)**

# SIMPLIFYING THE ATS

Gas Tractor



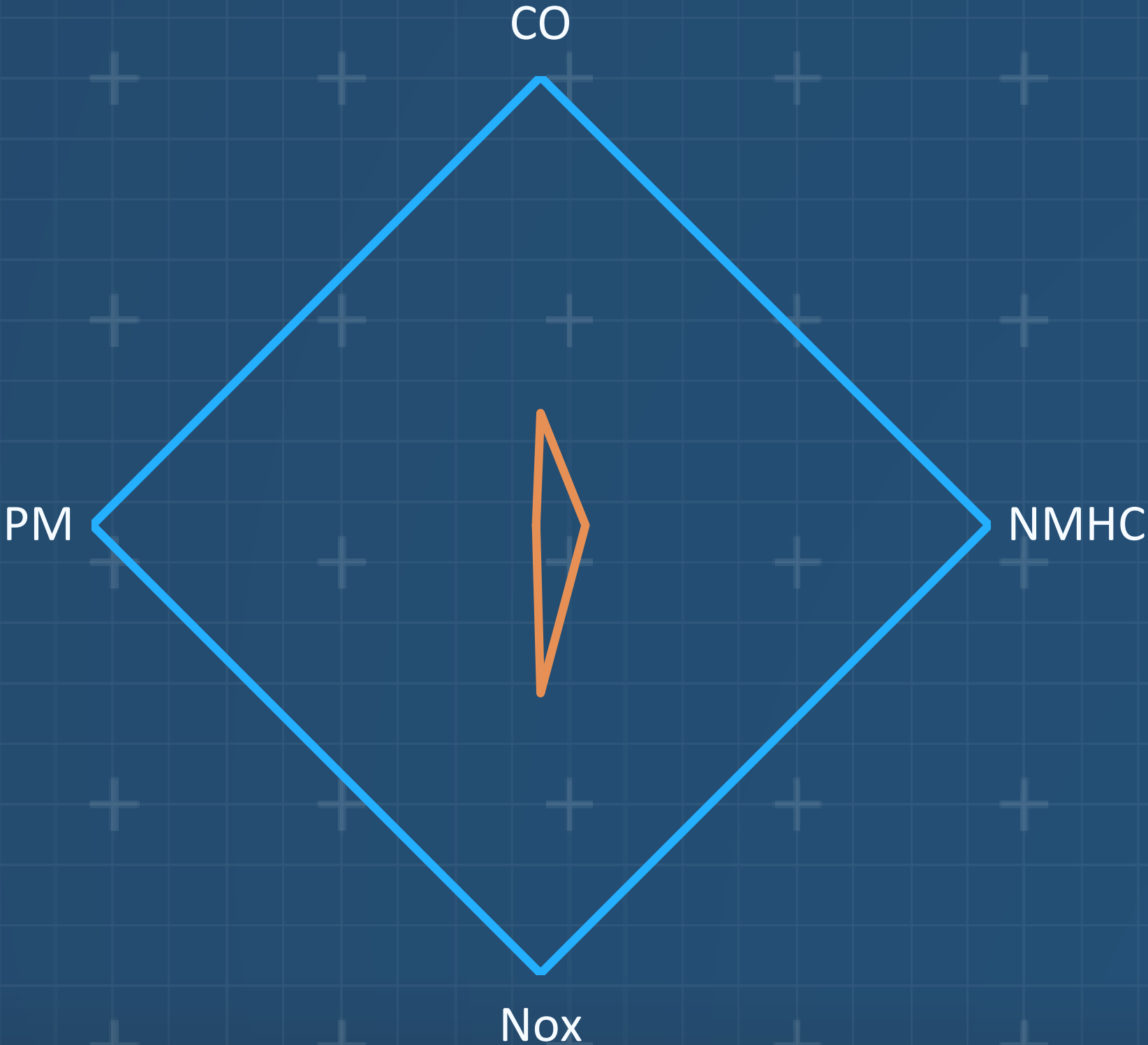
Stage V Diesel Tractor



# THE IMPACT OF METHANE TECHNOLOGY VS EMISSION LEGISLATION

## Emissions $56 \leq P < 130$ kW

— Stage V — Methane

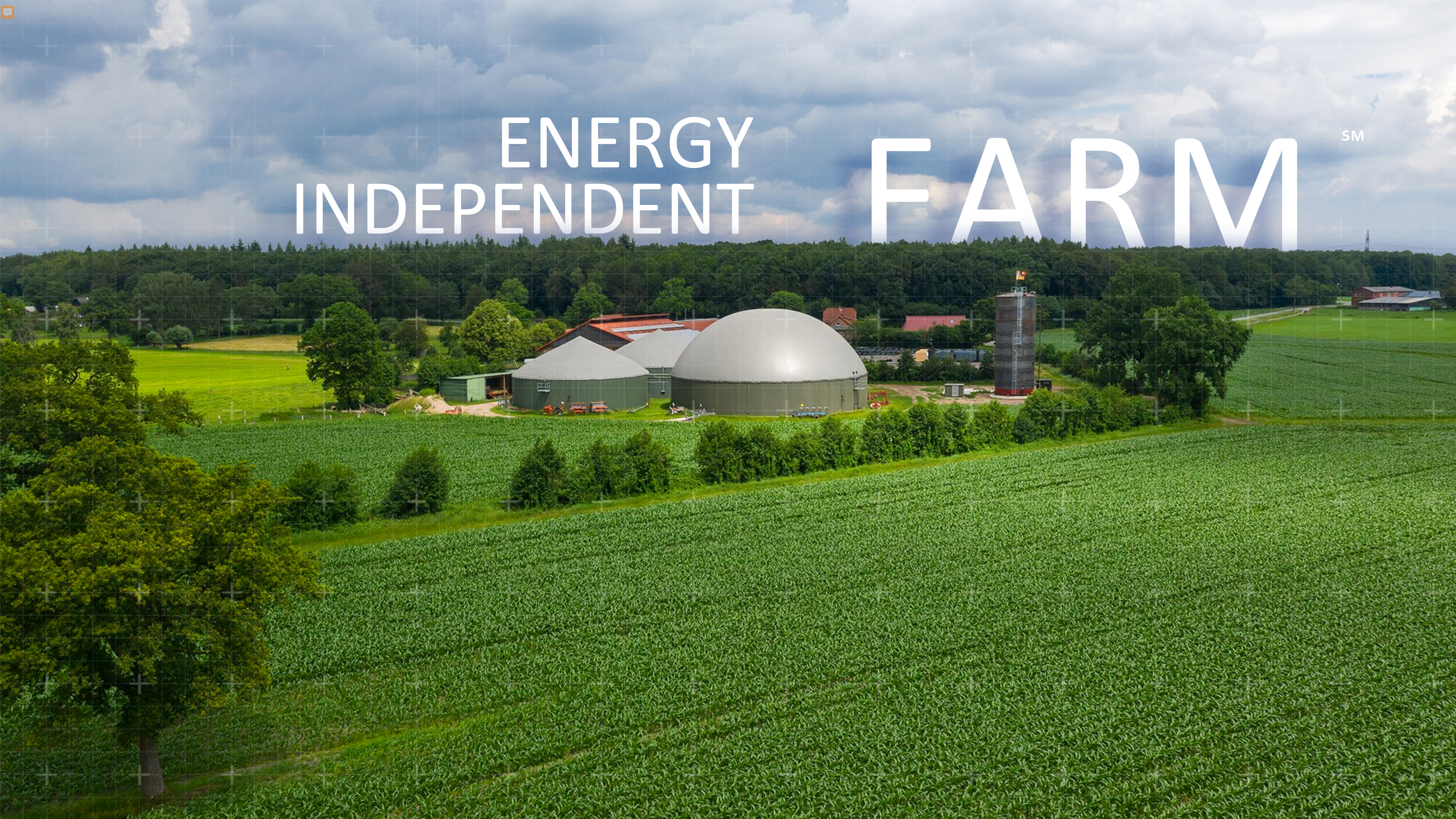


BY DEVELOPING A TRACTOR RUNNING ON METHANE, WE HAVE CHANGED THE GAME

### COMPARED TO STAGE V LIMITS:

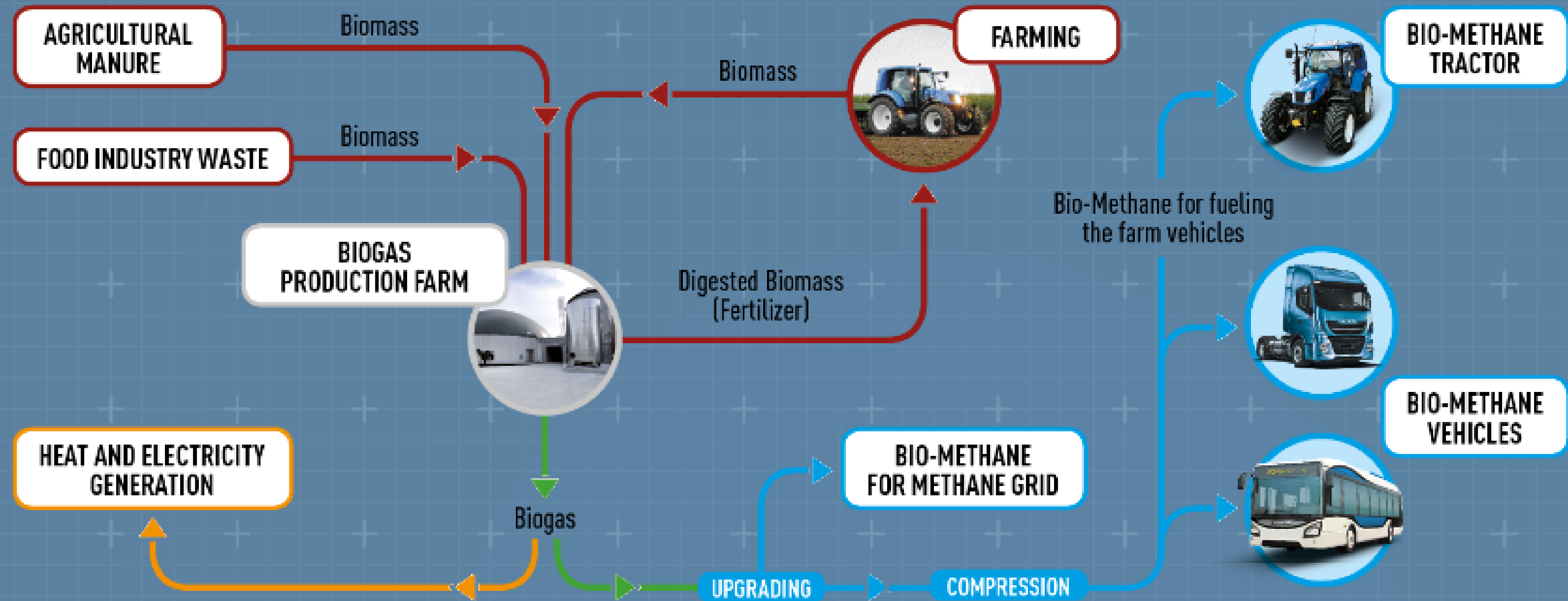
- **CO:** → REDUCED BY 75%
- **NMHC:** → REDUCED BY 90%
- **PM:** → REDUCED BY 98%
- **NOx:** → REDUCED BY 62%
- **CO<sub>2</sub>:** → - 10/15% (NOT PART OF STAGE V LEGISLATION)

# ENERGY INDEPENDENT FARM<sup>SM</sup>

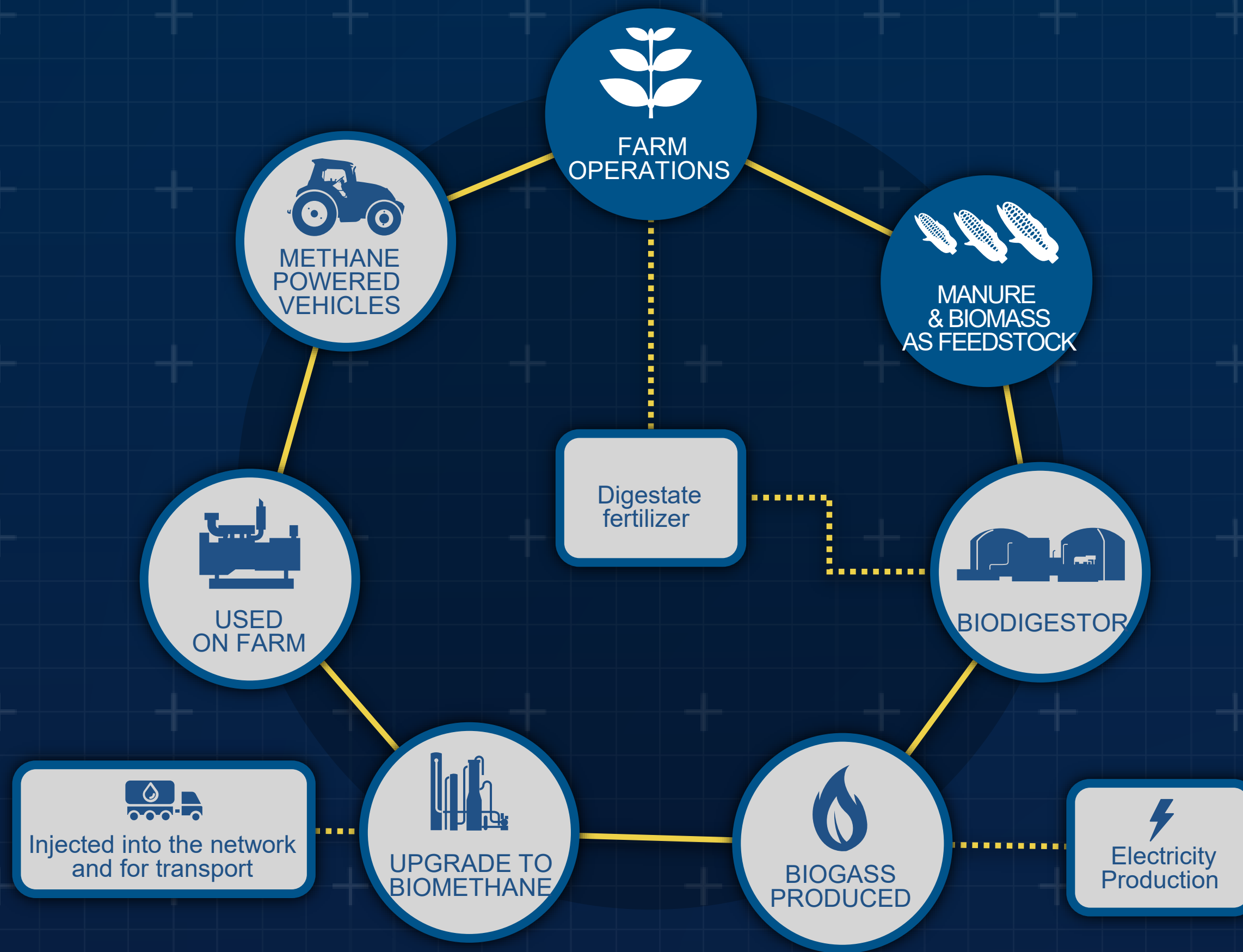


# THE ENERGY INDEPENDENT FARM<sup>SM</sup>

Growing energy



# ENERGY INDEPENDENT FARM <sup>SM</sup>



BIOMETHANE  
FROM WASTE AND ENERGY CROPS =  
NEAR ZERO CO<sub>2</sub> EMISSIONS

BIOMETHANE  
FROM MANURE =  
CARBON-NEGATIVE FOOTPRINT



# METHANE POWER TRACTOR

## Standard Diesel tractor vs Methane Power



# METHANE POWER TRACTOR

Standard Diesel tractor vs Methane Power

**50%** REDUCTION  
drive-by-noise

With methane

**-10%** CO<sub>2</sub>

**-80%** overall  
emissions

With bio-methane  
**Virtually Zero CO<sub>2</sub> profile**

# T6 METHANE POWER TRACTOR – A REALITY NOW IN 2020



# T6 METHANE POWER TRACTOR – PRESENTED AT AGRITECHNICA (HANOVER NOV. 2019)

**NEW HOLLAND**  
AGRICULTURE

DER WELTWEIT ERSTE ZU  
100% MIT METHAN ANGETRIEBENE  
SERIENTRAKTOR.  
WORLD'S FIRST  
100% METHANE POWERED  
PRODUCTION TRACTOR.

POWERED  
BY NATURE

BIOMETHANE  
TRACTOR

POWERED  
BY NATURE  
DAILY  
POWER

T6  
KRAFTSTOFF  
AUS DER NATUR

**T6 METHANE POWER**

METHANRECHNER

METHANE CALCULATOR

KRAFTSTOFF AUS DER NATUR  
Mehr sparen mit Methan - entdecken Sie, wie

POWERED BY NATURE  
Save more with methane, discover how



LÖSUNGEN FÜR DIE  
**ENERGIEUNABHÄNGIGE FARM™**

Die erste Kreislaufwirtschaftslösung im Markt mit der Serienanwendung des Methan-Power-Traktors im Handel erhältlich.  
Finden Sie heraus, warum Methan die beste Lösung gegenüber Diesel- und Elektroantrieben ist.

**ENERGY INDEPENDENT FARM™  
SOLUTIONS**

The true circular economy solution is now commercially available with the production Methane Power tractor launch.  
Find out why Methane technology is the best solution in Diesel and in Electric technologies.



NEW HOLLAND  
AGRICULTURE

READY FOR THE MARKET IN 2022\*

