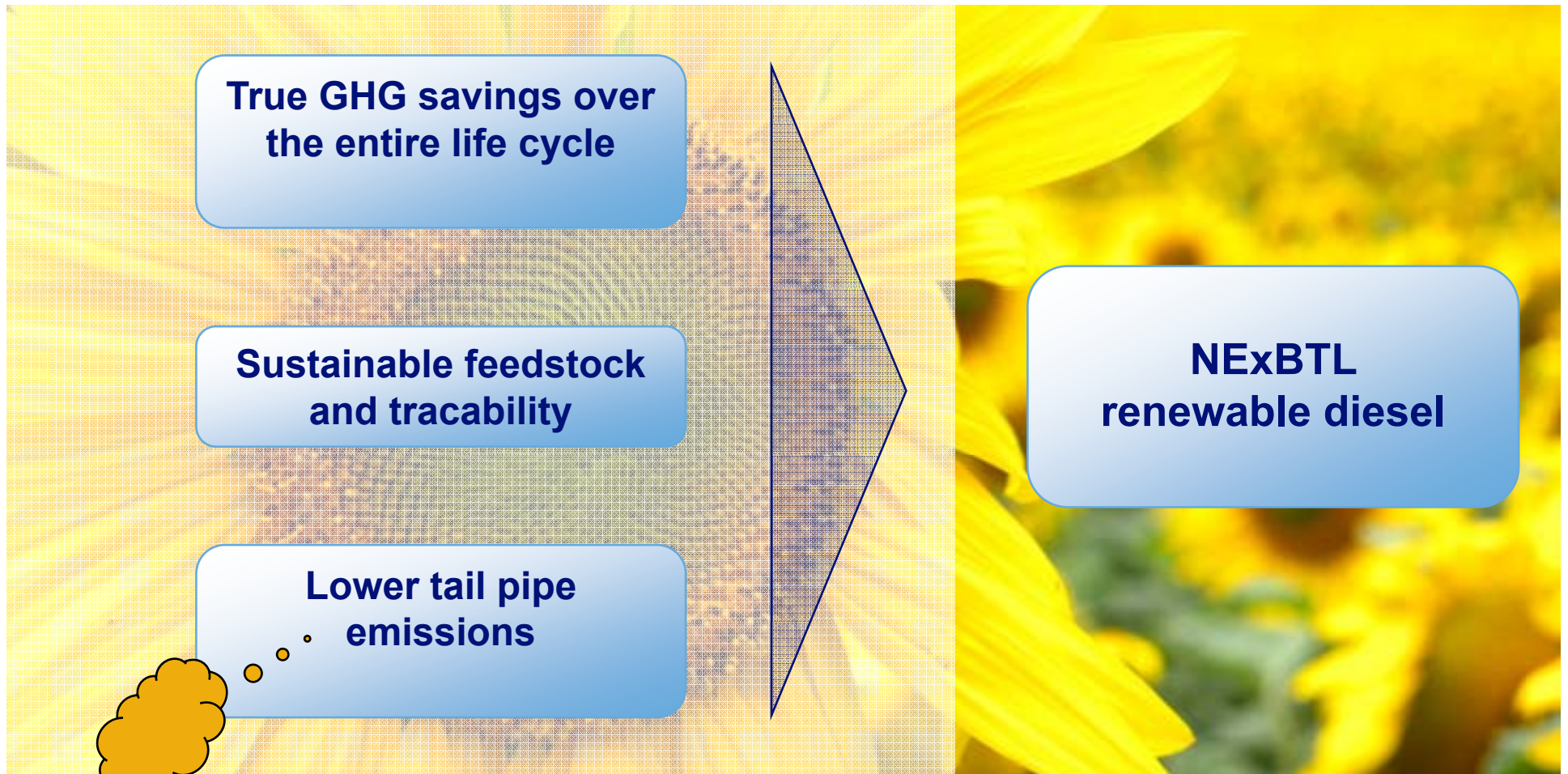


Advances in Energy-efficient Transport Technologies – Renewable Fuel as an Enabler

Discussion comment
Leipzig May 28, 2008
Harri Turpeinen

NESTE OIL

Neste Oil's approach on sustainable biofuels

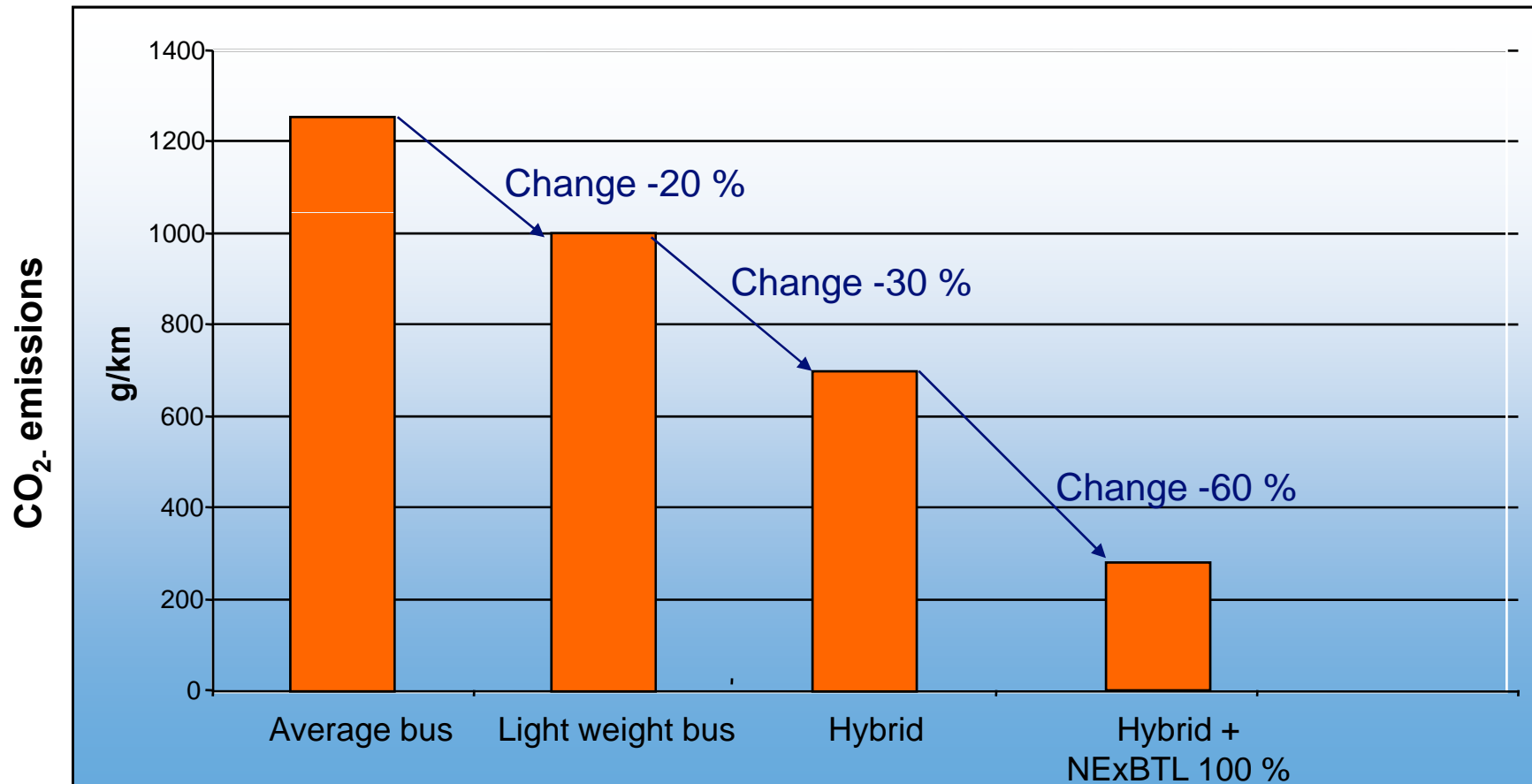


We measure the impacts of the product over the whole life cycle
We are committed to continuous improvements of every aspect of NExBTL life cycle



Environmental impact: Reduction of CO₂ emissions

Efficient combination: Hybrid bus and NExBTL



Source: VTT, Kabus Oy
Keski-Uusimaa 1.12.2007

May 28, 2008

Harri Turpeinen



(NEx)BTL in a heavy duty diesel engine with different fuel injection settings

Engine

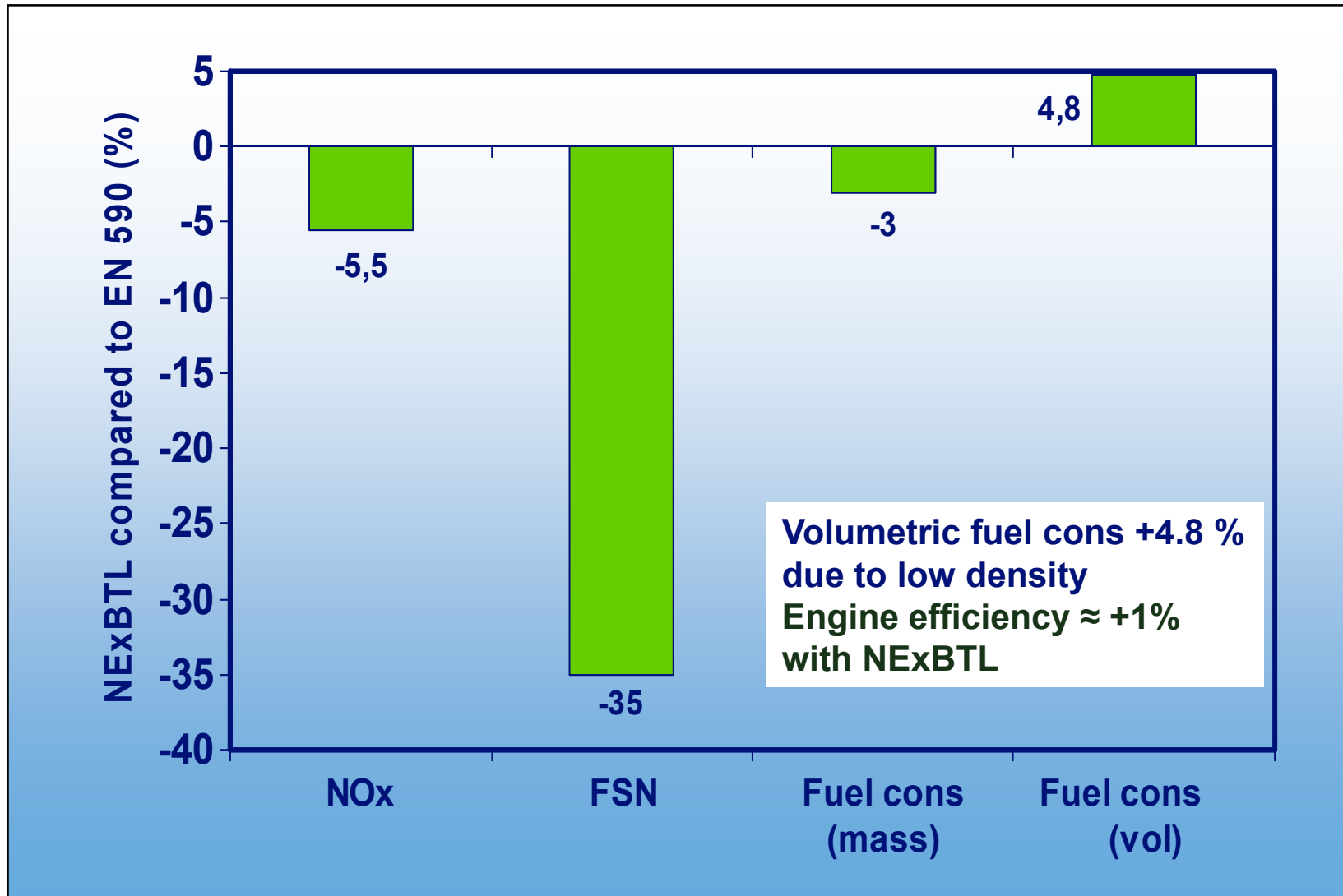
8.4 l turbocharged, charge air cooled heavy duty diesel engine
Common Rail fuel injection system
no exhaust aftertreatment, no EGR

Source:

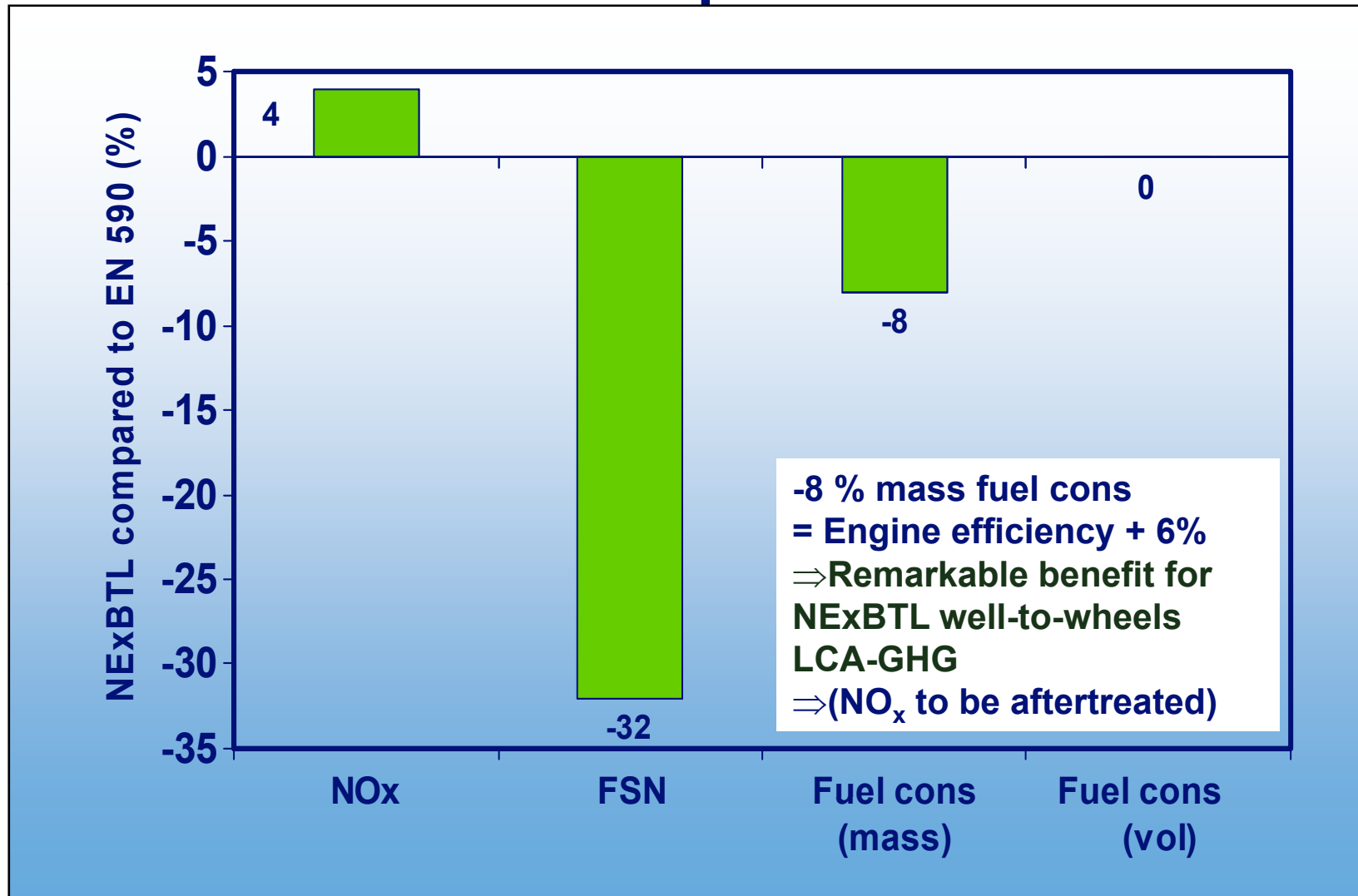
Hannu Aatola, Hydrotreated Vegetable Oil as a Fuel for a Non-Road Diesel Engine. Helsinki University of Technology, M. Sc. (Mech. Eng.) Thesis, March 2008



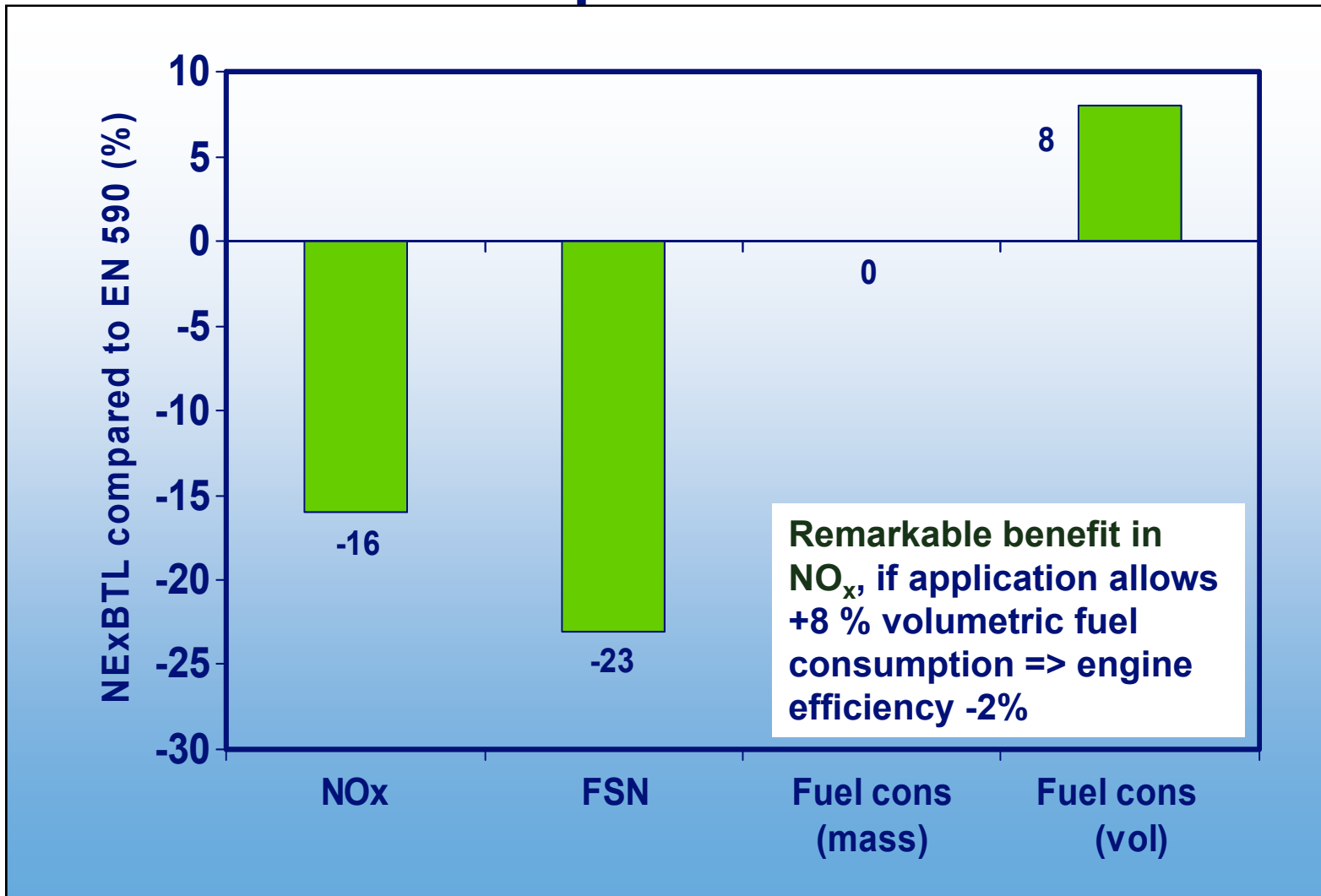
Average with original settings



Average when engine tuned for constant volumetric fuel consumption



Average when engine tuned for constant mass fuel consumption



Conclusion

- Combining energy efficient vehicle design, more efficient powertrain and advanced renewable fuels can result in remarkable GHG-savings
- Use of (NEx)BTL diesel offers remarkable benefits for reducing harmful exhaust emissions and/or well-to-wheels GHG-emissions.
- Opportunity available for dedicated fleet operators like city buses or mine vehicles
- Not possible for standard engines today since engines or vehicles must be certified with reference fuels representing average market fuel qualities.
- Future option: diesel engines equipped with automatic closed-loop settings like otto engines today?

