

VERT Association Road Map

6th VERT Forum

March, 20th 2015
Dübendorf/Zürich
Volker Hensel

Created to eliminate particle emissions
from internal combustion engines (ICE)
by means of best available technology

VERT Association Road Map

Mission

Facilitation and boost of BAT¹⁾ to eliminate harmful substances from internal combustion engines. Efficient standards and procedures to achieve sustainable results with verified and reliable products. Focus on PN²⁾ with effective measurements to support legislations with best cost-effectiveness.

Verification of technical equipments and products. Global recognition of these products. (e.g. filter listing)

Collaboration with institutes and public authorities to develop efficient rules to minimize emissions.

Development of markets for BAT suppliers. Introduction of technologies and quality control concepts

Raising of awareness in general public thru pilot projects, public statements and high reputation in technical competence

Broad industrial membership of OEMs, engines, systems and technology suppliers. Vital international network which covers a broad range of technologies from medicine to aerosol physics to comprises intensive knowledge exchange.

VERT Association Road Map

Key aspects of activities

key aspects of activities 2015

EPA research program fine particles in the ambient air

Retrofit Project Israel

Public Private Partnership

OE Legislation in Iran

Support retrofit phase in Bogotá

Increase quality of inspection + maintenance in all VERT markets e.g. by particle number counting in the field

CRC Meeting Participation

Support of construction program in Berlin

Workshop in Iran

Workshop in Israel

...

2016 key aspects of activities

Roll out standards in interantional legislation

Internatinoalisation of VERT test centres

Start VERT support offices

Introduction of Safty features

Particle filtration for gasoline engines

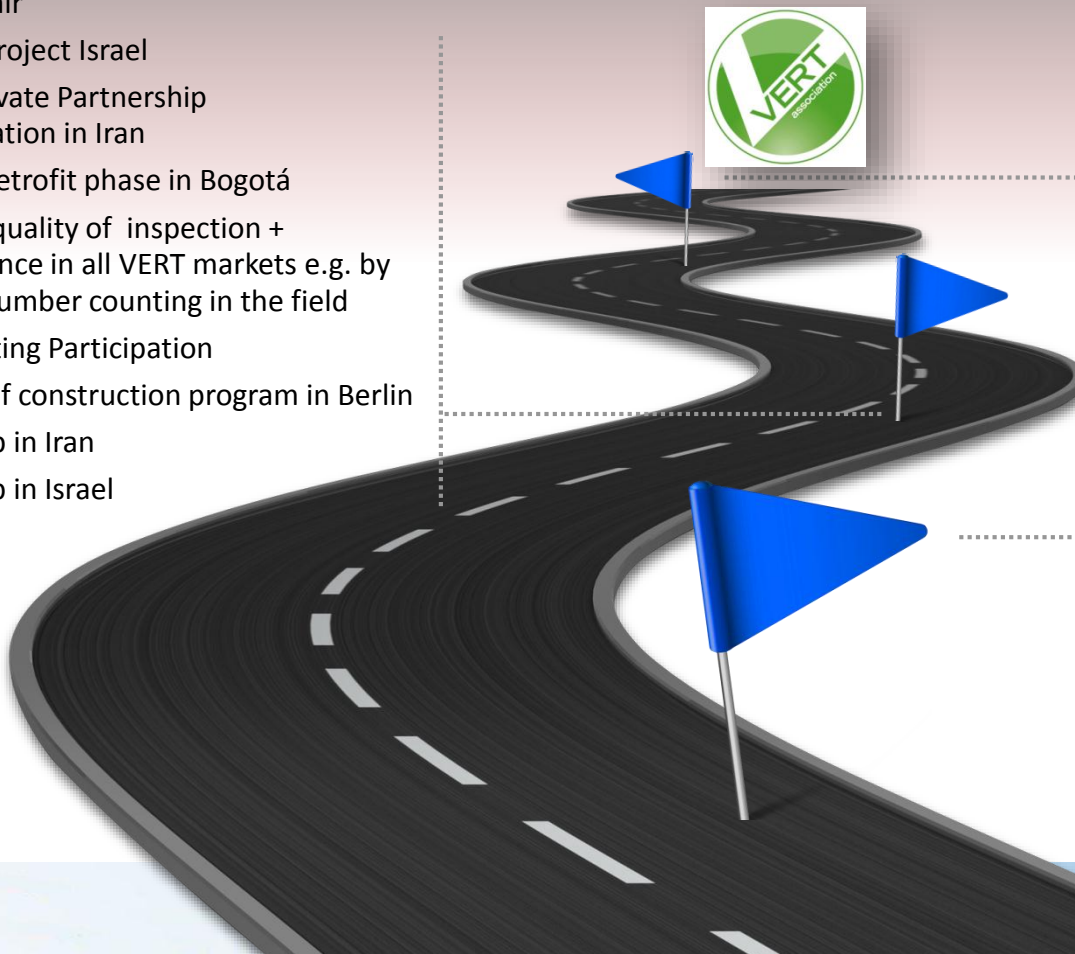
Research for basic emission technologies

2017 key aspects of activities

Develop new retrofit, option fit and first fit markets with best available technologies

Work on solutions for membership beyond DPF retrofit markets

Targeting of the Megacities regarding Air pollution reduction concepts



VERT Association Road Map

VERT Support for legislation with BAT

China, Bogotá, Tehran, Tel Aviv...

Demonstration of DPF efficiency, pilot tests, public authority support, guidelines for Air Quality



Euro 6 Regulation bei PN



Chile

DPF regulation for Euro III buses



USA/California

CARB Show Case
New York City

Switzerland

PM Legislation for construction equipment



Past

VERT ww recognition

Switzerland: BAFU, SUVA, ASTRA
Austria: AUVA; Tyrol construction
Germany: BG Bau; UBA; TRGS 554
USA: MSHA; NY City; CARB partly
Netherlands: VROM
Italy: alto Adige
Canada: Mining
UK: London TFL and LEZ
Denmark: for all applications
Chile: Santiago Bus, Gensets
China: Hong Kong busses; Beijing UN-ECE

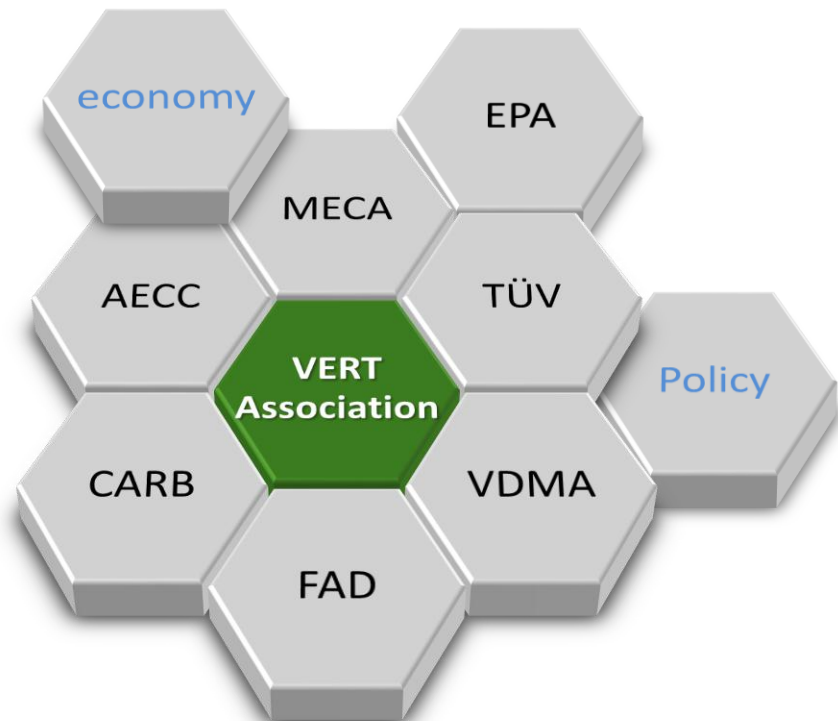
Present

VERT Association Road Map

VERT Network

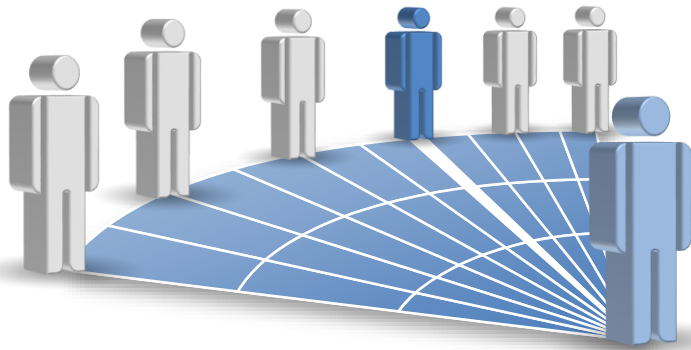
VERT-network is worldwide and covers all technologies, includes all levels of research from medicine to aerosol physics. This wide dialog comprises knowledge to exchange with governmental policy.

Within the next years VERT will intensify exchange with associations linked to exhaust aftertreatment and mobile combustion driven equipments and vehicles



VERT Association Road Map

○ Growth of membership for growth of markets



2016

Goal: 50 members

2015

Goal: 40 members

Current

34 members

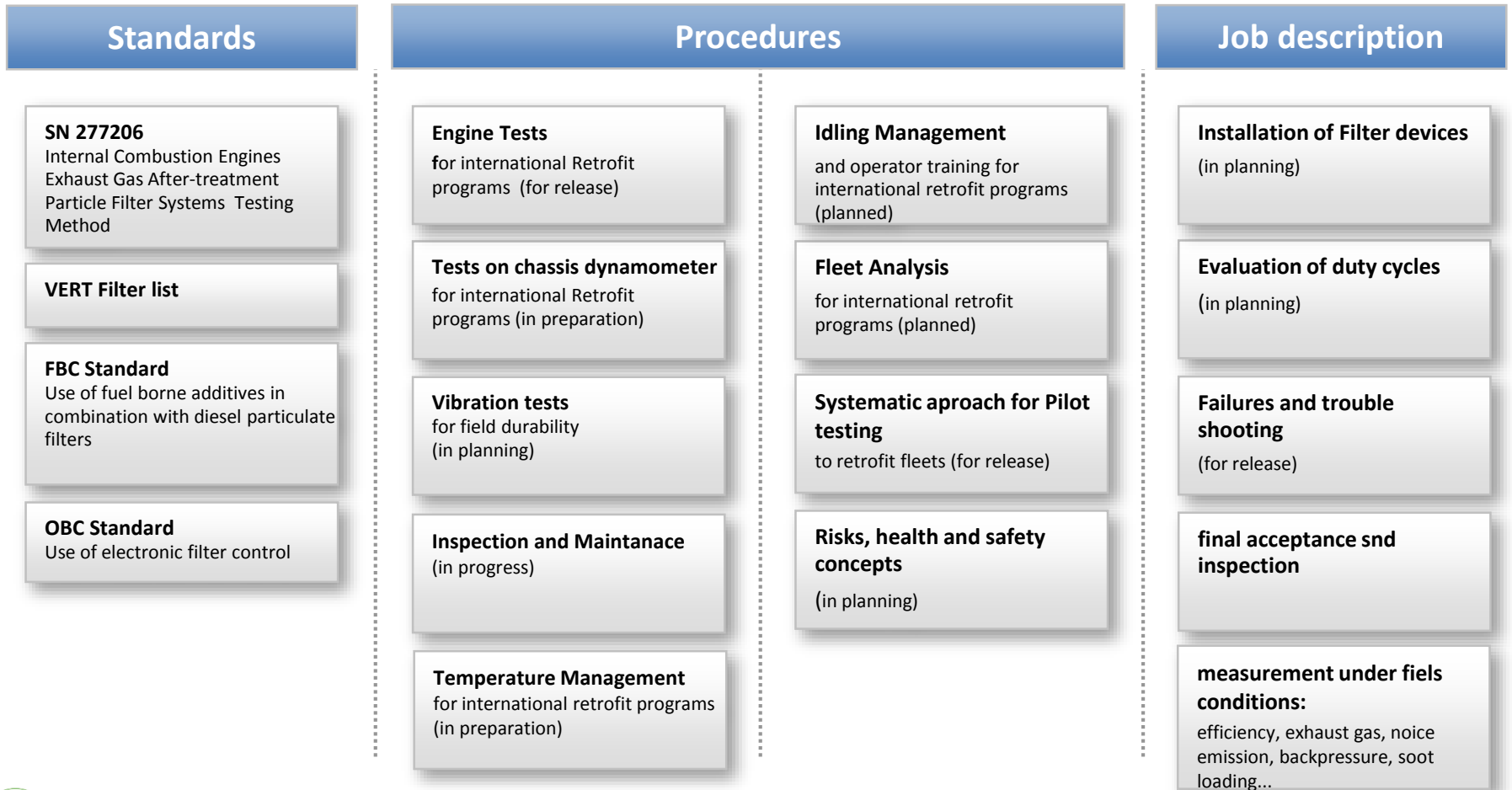
2015 (March)

34 members:

AIRCLEAN Consulting AG; BAUMOT AG; Baumüller&Partner GmbH; BERSY SRL; CDTi; CPK Automotive GmbH & Co KG; DINEX A/S; EHC Tecnic AG; EMINOX; esytec AG; Green Urban Technologies Ltd.; HJS Fahrzeugtechnik GmbH & Co. KG; HUG Engineering AG; HUSS Technologies Holding AG; Infineum UK Ltd; Innospec Deutschland GmbH; IMET; Kailong High Technology Co. Ltd.; Kistler Work & Trade; Lars Christian Larsen; Liebherr Machines Bulle SA; LiqTech A/S; NGK Europe GmbH; PNE; Physitron GmbH; Pirelli & C. Ambiente S.r.l.; Pure Clean Air AG; PURITech GmbH & Co. KG; Tehag AG; Testo AG; TSI GmbH

VERT Association Road Map

Work on Standards and procedures



VERT Association Road Map

○ Conclusion

Currents VERT projects in emerging and home markets open lots of opportunities
We will focus on this to turn chances into results

VERT works on **accelarating the market introduction of BAT** like SDPF, filters for gasoline engines and more

To realize this **we need a broad membership** of system and filter suppliers, equipment and engine manufacturers and a healthy financial basis to realize continuously the projects and activites