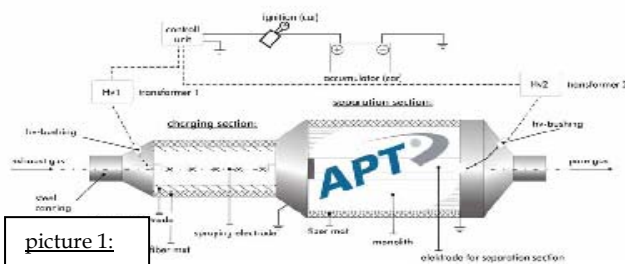


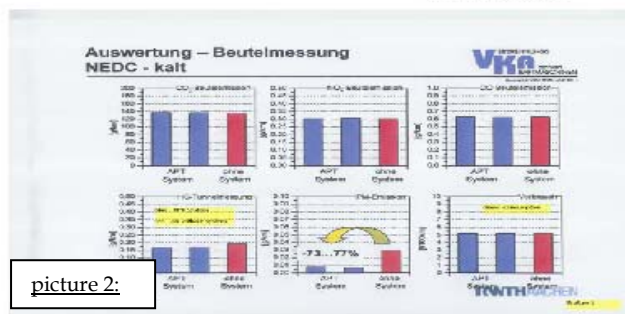
APT - PLASMA SOOT CONVERTER

APT plasma soot converter



picture 1:

- ➔ open system generation 2
- reduction of nanopartikulates
- conversion rate up to 80 % (NEDC)
- low energy consumption (< 80 W per unit)
- no secondary emissions
- no engagement in motor management (usable for retrofit)
- continuous soot oxidation
- low regeneration temperature



picture 2:

The APT-Plasma soot converter consists three main components.

The charging section, separation section and the electronic control unit with the high voltage transformers (see picture 1).

In the charging section the soot will be charged by electrons from the spraying electrode. In the following separation section the charged soot particulates separate on the electropositive wall of the ceramic monolith.

During these steps runs the continuous plasma regenerated oxidation of the soot with start temperatures near 150 °C by generating a weak plasma inside the monolith (filter trap), using Richardson electrons and photo electrons by quantum radiation. The oxidation equilibrium depends on the soot concentration and waste gas temperature (see picture 5).

Because the weak plasma is generated without ionisation of gas, it is possible to avoid secondary emissions of NOx and Ozone, too (see picture 2, 3, NEDC)

Therefore we can reduce the energy consumption of the system to acceptable values (see picture 2, fuel consumption, NEDC).

Measurements of generation 2 show the reduction of soot concentration and particulate number (see picture 2, 4) of the "flow through system".

The last pictures show the new generation 3 with modified electronic and geometry (see picture 6, 7, internal measurements, NEDC).

Here it is possible to reduce the system size during increasing the efficiency of soot conversion.

By the use of this principle we have an instrument with continuous regeneration at low temperature level, for operation in city driving cycles without forced regeneration.

Therefore the plasma regenerated diesel particulate filter is a closed unit for closed and open systems and retrofit, too.

A benefit is the combination with other tail gas cleaning systems (Denox, ...). Because of low start temperature of regeneration it is contingent to use it as an end of pipe system.

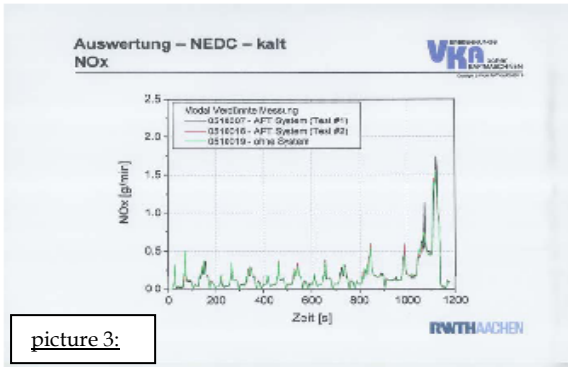
APT Automotive Plasma Technology GmbH

Reininghausstrasse 13

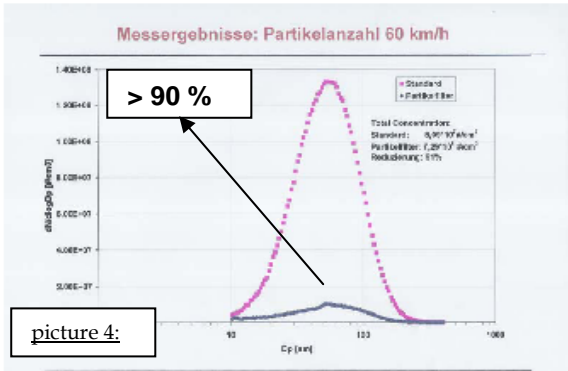
A-8020 Graz

www.plasma-apt.aon.at

author: Siegfried Figoutz

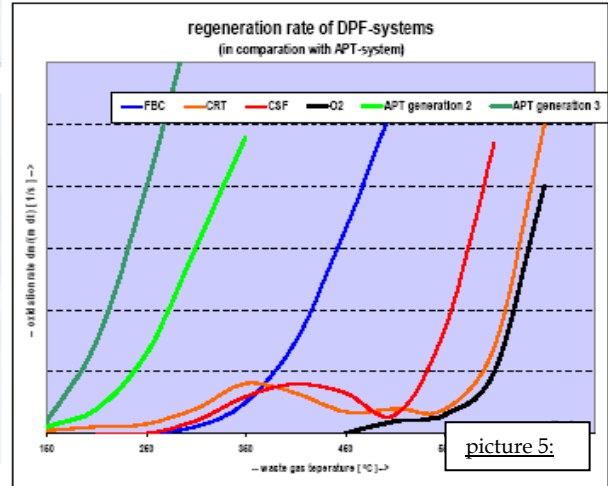


picture 3:



picture 4:

test car:
 VW Golf 1,9 ltr. TDI; 66kW
 90.000 km
 testing equipment:
 LPS 2020 „CARTEC“
 gas analyser:
 CET 2200 „CARTEC“
 opazimeter:
 DT „CARTEC“
 NOx-converter:
 „typ JNOX-CV/C“

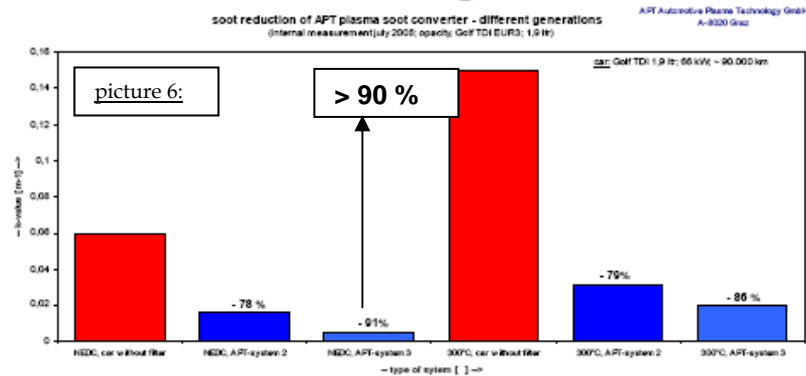


picture 5:

PLASMA SOOT CONVERTER – generation 3

→ benefits:

- higher efficiency
- (up to 90 %)
- higher conversion rate
- lower regeneration temperature
- smaller design

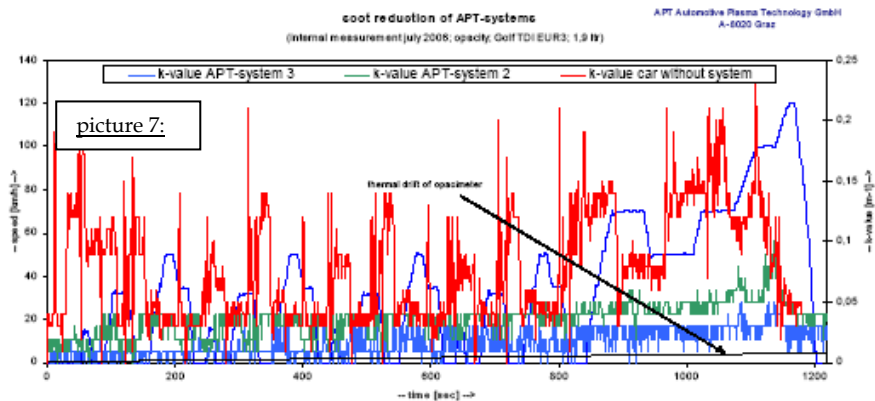


picture 6:

> 90 %

literature/pictures:

- 1... test of system RWTH Aachen October 2005
 - 2... test of system RWTH Aachen October 2005
 - 3... data's of FAD workshop 2006, Meissen
- others... test of system by APT 2005/06



picture 7:

APT Automotive Plasma Technology GmbH
 Reininghausstrasse 13
 A-8020 Graz
www.plasma-apt.aon.at

author: Siegfried Figoutz