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Non Thermal Plasma Plants: Experiences from the Industrial Praxis of Air Purification
Schematic depiction of the discharging vessel

Figure 1: Schematic depiction of the discharging vessel for cold sparks discharges

M = metalplate electrodes

s1 = 0.8–2.5 mm
s2 = 1–7 mm

4000–12000 V
400–8000 Hz
Design of a discharging vessel

Figure 2: Design of a discharging vessel with comb disk modules made off cordierite (three-ply)
NTP module

Figure 3: NTP module with glass barriers in operation
Homogenous discharge at barriers

*Figure 4: Homogenous discharge at barriers made off mullit ceramic (surface view)*
Focused discharge in partial barrier sections

*Figure 5: Focused discharge in partial barrier sections (surface view)*
Discharge in a plasma module

Figure 6: Discharge in a plasma module with plate barriers (top view)
Spot discharges

Figure 7: Focused spot discharges on a ceramic barrier material (surface view)
Degradation of different substances

Figure 8: Degradation of different substances and specific energy demand
Hair-pin discharging vessel

Figure 9: Hair-pin discharging vessel with titanium dioxide combs for using catalytic after-reactions
Efficiency of plasma sources

Figure 10: Efficiency of plasma sources for treating fumes (diesel exhaust air)
Catalytic supported NTP plant for 10,000 m³/h of waste air

Figure 11: Catalytic supported NTP plant for 10,000 m³/h of waste air behind flavouring processes for food
Results of the degradation of odour behind oil mills

Figure 12: Results of the degradation of odour behind oil mills (without catalyst)
Results of the degradation of odour behind fattening food production

Figure 13: Results of the degradation of odour behind fattening food production processes (without catalyst)
Diagram of a NTP plant

Figure 14: Diagram of a NTP plant for odour reduction in factories for producing fatting food and fish meal (very humid emissions)
Figure 15: Investment- and running cost comparison of waste air purification processes (50,000 m³N/h) for <100 mg VOC/m³ in the flavour processing industry
Thank you for your attention