



Hot-Dip Galvanizing Example

Uwe Jordan, District Government Darmstadt

TA Luft Workshop, 26. April 2017
Activity 1.6





Project: Permit for substantial Changes

- renewal of dipping bath enclosure
- increase of waste gas volume flow by 65%
- new filter unit
- new stack
- extension of operating time





Starting Point: Diffuse Emissions





Starting Point: Diffuse Emissions

- massive problems with diffuse emissions
- complaints from the neighbourhood
- clogging of fabric filter because of condensation
 - clogging even with precoating of filter bags
 - insufficient efficiency of blower
 - insufficient extraction of waste gas from existing enclosure
 - change of filter bags every 6 months
- insufficient maintenance of blower and filter system





Conditions: Air Pollution Control

- enclosure of hot-dip bath
- minimum extraction volume flow during dipping process ($2,000 \text{ m}^3/\text{h} \cdot \text{m}^2$ acc. VDI-guideline 2579)
- increase of volume flow if necessary
- enclosure closed completely before surface contact until dipping process is completed and all emissions are extracted
- after opening another 3 minutes at minimum volume flow





Conditions: Air Pollution Control

- ELVs according TA Luft:
 - total dust 5 mg/m³ (5.4.3.9)
 - HCl 10 mg/m³ (5.4.3.9)
 - Pb 0.5 mg/m³ (5.2.2)
 - Cd 0.05 mg/m³ (5.2.7.1.1)
 - TOC 50 mg/m³ (5.2.5)
- frequent maintenance of waste gas treatment facility + documentation





Conditions: Air Pollution Control

- breakdown/malfunctions of waste gas treatment:
 - before start of dipping: inhibition of start by technical measures until failure is corrected
 - during dipping: termination as fast as possible or interruption
- stack height 22 m, discharge vertically upwards





Project: New Filter Unit / New Stack



insulated piping and filter house to prevent condensation of waste gas humidity





Measurement Conditions

- initial measurements after 3 – 6 months
- repeated measurements every 3 years
- conduct according TA Luft
- information about date 14 days before incl. measurement planning for approval
- measurement report 2 month after measurement





General Conditions

- original or certified copy of permit on site
- installation according application documents if not otherwise stipulated in permit
- notification of start of operation 2 weeks before
- information about any significant malfunctions
- information about malfunctions of the waste gas treatment facility no later than next working day and immediate corrective measures
- presence or immediate availability of responsible person during operation





General Conditions

- operating log at least with following data:
 - time and duration of galvanizing processes
 - galvanizing of oversized workpieces
 - breakdowns, malfunctions, maintenance, repairs
 - temperature and HCl-concentration of pretreatment baths
- log temper-proof, accessible on request, central retention for 5 years, electronic system possible
- operating instructions for all emission relevant processes, training of staff with documentation, central filing





Results

- no diffuse emissions
- no neighbourhood complaints
- endurance of filter bags 3 years
 - far less repairs

Problems solved.

Thank you for your attention!

