SPISE TWG 8 activity for defining advice on functional inspection of dusters

P. Balsari, E. Gil
>200,000 dusters estimated used to apply sulfur dry powder in South Europe vineyard farms

SUD → Mandatory their inspection

NO STANDARD AVAILABLE

No for new brand duster requirements

No for in use duster periodical functional inspection performance methods and requirements
A) First draft of SPISE advice on duster functional inspection following, when coherent, EN ISO 16122-1-3

B) First practical use evaluation of the draft SPISE advice (see also poster “Assessment of the applicability of a test protocol for the inspection of duster in use”)

6TH European Workshop on Standardized Procedure for the Inspection of Sprayers in Europe – SPISE 6 -
A) FIRST DRAFT SPISE ADVICE ON DUSTER FUNCTIONAL INSPECTION

Visual test
(ISO 16122-1-3)

Functional test
- Dust dosing system
- Air speed uniformity on both duster sides
Visual test

Due to no reference standard for brand new dusters it is difficult to ask requirements for dusters in use

Eg. 1: - “The lid shall be tightly sealed to prevent any dust dispersion and shall avoid unintended opening”
Visual test

Due to no reference standard for brand new dusters it is difficult to ask requirements for dusters in use

Eg. 2: - “Device for adjusting the dust rate shall be provided with clear indications (marks) to select the intended rate”
FUNCTIONAL TEST
(dust dosing system)

- Few information are generally available (also for brand new dusters) concerning the dosing rate achievable (Kg/min) at different position of the control system (average rate from 0,4 to 15 kg/min)

Possible big differences in dosing rate results due to:

- Environmental condition (temperature and humidity)
- Amount of dust in the tank
- Dust type
FUNCTIONAL TEST (dust dosing system)

**Ventilated (Mormino) sulfur dust**

- Effect of dust type and the amount of dust in the tank on dust rate
  (DiSAFA- University of Turin-Tests 2016)

- **Triple ventilated (Zanuccoli) sulfur dust**

  \[ y = 0.0749x - 0.0659 \]
  \[ R^2 = 0.8402 \]

  \[ y = 0.1096x - 0.1468 \]
  \[ R^2 = 0.9462 \]
FUNCTIONAL TEST (dust dosing system)

Difficulties (impossible??) to practically make functional test

DiSAFA (University of Turin) experience
FUNCTIONAL TEST (air speed uniformity)

Session 7

6TH European Workshop on Standardized Procedure for the Inspection of Sprayers in Europe – SPISE 6 -

SPISE 6, 13 to 15 September 2016 Barcelona (Spain)
FUNCTIONAL TEST (air speed uniformity)

Air speed uniformity at spout outlet (DiSAFA tests)

<table>
<thead>
<tr>
<th>Air speed difference between two sides (%)</th>
<th>MB G 300</th>
<th>Cima S420</th>
<th>VMA Rodeo 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>0,2</td>
<td>24</td>
</tr>
</tbody>
</table>

Acceptable value for dusters in use??

Future ISO standard request for brand new dusters (0,2%) ??
Some considerations and proposals of further activities

At present it is really difficult for SPISE TWG8 to define an appropriate test protocol for duster functional inspection.

Need to have soon an international standard with requirements for brand new dusters.

Promote the research and innovation on this type of machine.
Some considerations and proposals of further activities

SPISE TWG8 will go ahead in these directions, asking for an EN/ISO standard for brand new dusters and continuing the research activities on this topic