



FEDERATION EUROPEENNE DE LA MANUTENTION
SECTION II
CONTINUOUS HANDLING

FEM
2 563

**QUESTIONNAIRE AND CHECK-LIST FOR THE STUDY
OF CONTINUOUS BULK HANDLING SYSTEMS**

pneumatic handling - specific part

original D
edition E
April 1994

INTRODUCTION

This specific part is a supplement to the questionnaire for the study of continuous bulk handling systems "Problems common to mechanical handling, pneumatic handling and silo storage (document FEM 2 561, April 1994)". It records the specificities of pneumatic bulk handling.

This questionnaire is intended for pneumatic handling systems to be built as individual systems or as complex systems combined in a technological way. It covers the technical design, manufacturing, assembly and commissioning stages.

CONTENTS

1 - SUMMARY OF THE CONTENTS OF THE QUESTIONNAIRE FEM 2 561 OF APRIL 1994 "PROBLEMS COMMON TO MECHANICAL HANDLING, PNEUMATIC HANDLING AND SILO STORAGE" :

- 1.0 introduction
- 1.1 project designation
- 1.2 data on the bulk material to be conveyed
- 1.3 operational data
- 1.4 system configuration
- 1.5 electrical general characteristics
- 1.6 Data on control and automation
- 1.7 auxiliary services

2 - QUESTIONNAIRE "SPECIFIC PART" :

- 2.1 specific characteristics of bulk materials of major importance for pneumatic handling
- 2.2 special requirements related to design, construction and maintenance
- 2.3 specific environmental requirements

3 - CHECK-LIST :

- 3.1 additional questions regarding the definition of the technical handling problem
- 3.2 specific installation requirements
- 3.3 interfaces and connecting conditions
- 3.4 supply limits

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2 - QUESTIONNAIRE "SPECIFIC PART"

2.1 Specific characteristics of bulk materials of major importance for pneumatic handling and the resulting marginal conditions

The precise knowledge of the bulk material characteristics is essential for the design and safe operation of pneumatic handling systems. This implies close cooperation between the manufacturer and user to collect relevant information. The following documents are helpful to seek basic information.

- FEM 2 581/2 582 : general properties of bulk materials and their symbolization
- FEM 2 421 : influence of the characteristics of bulk materials on the design of pneumatic handling systems
- FEM 2 481 : special characteristics of bulk products transported in pneumatic conveyors - definition and determination of the methods of measurement

Should the user be unable to give the important characteristics of the bulk material, it would be necessary for the manufacturer to carry out documented laboratory tests. Depending on the manufacturer's assessment, handling tests would need to be agreed.

- Wall friction angle
(for the materials of the relevant pipes)

Al-Mg alloys :
 Steel :
 Special steel :

Type of shearing equipment used :

- Internal friction angle :

Type of shearing equipment used :

- Modulus of elasticity : N/mm²

- Melt-flow index (for plastics and bulk materials with a melting point lower than 120°C)
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- Fluidising capacity : good / average / bad / non fluidising
or according to Geldart diagram (A.....D)

- Ability to retain air : good / average / bad

- Tendency to pack in the handling pipe : yes / no

- Any other information on the bulk material :

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