



Particulate Solid Research, Inc.

FLUIDIZATION SEMINAR AND WORKSHOP CHICAGO, ILLINOIS, USA FEBRUARY 6TH – 9TH, 2024

(ALL TIMES CDT)

TUESDAY

8:00 AM	REGISTRATION
8:15 AM	INTRODUCTION TO PSRI AND ITS TECHNICAL PROGRAMS
8:30 AM	A. INTRODUCTION AND OVERVIEW
	1. INTRODUCTION, TERMINOLOGY, AND PARTICULATE PROPERTIES
	2. FLUIDIZATION REGIMES AND TRANSITIONS
10:30 AM	BREAK
10:45 AM	3. HYDRODYNAMICS OF FLUIDIZED BEDS
	▪ EFFECTS OF TEMPERATURE AND PRESSURE
12:00 PM	LUNCH (PROVIDED)
1:00 PM	4. GAS AND SOLIDS MIXING
2:45 PM	BREAK
3:00 PM	5. GAS SOLIDS CONTACTING, REACTION, MODELLING AND SCALE-UP
	6. HEAT TRANSFER
5:00 PM	ADJOURN

WEDNESDAY

- 8:00 AM B. OVERVIEW OF INDUSTRIAL APPLICATIONS
- 9:00 AM C. GRIDS – GAS DISTRIBUTORS
- INTRODUCTION TO GRIDS (PRESSURE DROP ACROSS GRID)
 - DESIGN OF VARIOUS TYPES OF GRIDS
 - PERFORATED PLATE
 - PIPE/SPARGER
 - EFFECT OF SHROUDS
- 10:00 AM BREAK
- 10:15 AM C. GRIDS – GAS DISTRIBUTORS (CONTINUED)
- JET PENETRATION
 - EFFECTS OF TEMPERATURE AND PRESSURE
- 11:30 AM D. WORKSHOP ON GRID DESIGN
- 12:00 PM LUNCH (PROVIDED)
- 1:00 PM E. PARTICLE ENTRAINMENT & ELUTRIATION
- INTRODUCTION
 - MECHANISMS OF EJECTION INTO FREEBOARD
 - SOLID FLUX PROFILE AND TDH
 - ENTRAINMENT CORRELATION FOR BUBBLING & TURBULENT BEDS
- 2:00 PM BREAK
- 2:15 PM E. PARTICLE ENTRAINMENT & ELUTRIATION (CONTINUED)
- EFFECTS OF GEOMETRY
 - ENTRAINMENT FROM RISERS
 - EFFECTS OF TEMPERATURE AND PRESSURE
- 2:45 PM F. WORKSHOP ON ENTRAINMENT
- FCC/POLYETHYLENE EXAMPLES
- 3:15 PM G. CYCLONE DESIGN
- PRINCIPLE OF OPERATION
 - NON-UNIFORM CYCLONES
- 5:00 PM ADJOURN

THURSDAY

- 8:00 AM** **G.** **CYCLONE DESIGN (CONTINUED)**
- **DIPLEG PRESSURE BALANCE**
 - **FLAPPER & TRICKLE VALVES**
 - **EFFECT OF DIFFERENT CONFIGURATIONS**
 - **EFFECTS OF TEMPERATURE AND PRESSURE**
 - **DESIGN PROCEDURE**
 - **COLLECTION EFFICIENCY**
- 9:30 AM** **BREAK**
- 9:45 AM** **H.** **WORKSHOP ON CYCLONES**
- **CYCLONE DESIGN CALCULATIONS**
 - **CYCLONE VIDEOS**
- 11:30 AM** **LUNCH (PROVIDED)**
- 12:30 PM** **MODELING EXPANDED WITH CFPD SOFTWARE**
- 1:30 PM** **TOUR OF PSRI RESEARCH FACILITIES**
- 3:15 PM** **I.** **STANDPIPES**
- **THEORY OF OPERATION**
 - **TYPES OF STANDPIPES**
 - **AERATION EFFECTS**
 - **STANDPIPE CAPACITY**
 - **ANGLED STANDPIPES**
- 5:00 PM** **ADJOURN**

FRIDAY

8:00 AM	I.	STANDPIPES (CONTINUED) <ul style="list-style-type: none">○ STRIPPING○ NON-MECHANICAL VALVES○ STANDPIPE CALCULATIONS
9:45 AM		BREAK
10:00 AM	J.	DILUTE-PHASE PNEUMATIC CONVEYING AND CIRCULATING FLUIDIZED BEDS <ul style="list-style-type: none">▪ VERTICAL & HORIZONTAL FLOW PHASE DIAGRAMS▪ PRESSURE DROP CALCULATIONS▪ CALCULATION OF CHOKING, SALTATION, AND SLIP VELOCITIES▪ FAST FLUIDIZATION, CIRCULATING FLUIDIZED BEDS▪ BENDS▪ EFFECT OF DIAMETER▪ EFFECT OF PRESSURE▪ FEEDING CONSIDERATIONS
12:00 PM		LUNCH (PROVIDED)
12:45 PM	K.	DENSE-PHASE PNEUMATIC CONVEYING <ul style="list-style-type: none">▪ PACKED BED, FLUIDIZED-BED FLOW▪ SLUG FLOW▪ SELECTION OF EQUIPMENT TYPE
1:30 PM	L.	PARTICLE ATTRITION <ul style="list-style-type: none">▪ TYPES OF ATTRITION▪ ATTRITION TESTING AND MODELING
2:30 PM	M.	MODELING GRANULAR-FLUID SYSTEMS <ul style="list-style-type: none">▪ TYPES OF MODELS▪ COMMON PITFALLS
3:00 PM		BREAK
3:15 PM	M.	MODELING GRANULAR-FLUID SYSTEMS (CONTINUED)
4:30 PM		CONCLUSION OF SEMINAR