Understanding the Total Cost of Ownership – *how to avoid future problems and buy bulk solids handling equipment intelligently*

Wednesday 26 and Thursday 28 October 2022, 13:00 – 17:00 UK TIME ONLINE

DAY ONE: Nature of the Problem
Wednesday 26 October 2022: 13:00 – 17:00 GMT

Day One Course Leader's Introduction
Professor Mike Bradley BSc Hons, PhD, Director, The Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich and Chairman, SHAPA ±10 minutes

The Hall of Shame – *examples of projects that have gone off the rails to greater or lesser degree*
Many troubleshooting projects, both large and small, arrive at the door of The Wolfson Centre, invariably having a history which has landed them in trouble. A number of examples will be examined to show how the well-intentioned ignorance of engineers, designers and project managers have led to severe difficulties.
Professor Mike Bradley ±25 minutes

Quantifying how high the risk is – *a review of the Rand Report findings*
This report analysed cost over-runs and performance shortfalls on 40 new process plants. It showed that plants operating with bulk solids feedstocks have a very bad track record, and exposed the reasons. The findings will be reviewed, including the lessons to be learned about the need to apply more attention to the solids flow and handling aspects of plant design and procurement.
Professor Mike Bradley ±25 minutes

Break ±20 minutes

Understanding why technical risk is so high with bulk solids handling projects
To contain technical risk, project managers and engineers need to understand what the risks are and why they arise. With Bulk Solids Handling not being taught as a subject during the education of most engineers, in general they are unaware of the dangers, let alone how to control them. This session will use case studies of problematic projects to expose the matter and show to spot and control potential sources of technical risk, including:

- Unexpected materials behaviour
- Unforeseen difficulties arising from the operating context
- Lack of clarity in user expectations
- Whose responsibility it is to manage the risk
- Laying-off of risk down the project chain
- "Value Engineering"
- Changing source and quality of feedstock supply

Professor Mike Bradley ±60 minutes

Know your enemy – *materials for design and for controlling technical risk*
Reliable discharge of bulk solids can be a big challenge especially when material characteristics change. This session will introduce the audience to

- Material characterisation
- Importance of material characterisation
- Effect of change in material characteristics on flow behaviour and hence the equipment design

Dr Baldeep Kaur BSc, MSc, PhD, Research Fellow, The Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich ±40 minutes

Discussion groups – *delegates break into groups under the supervision of the course tutors to discuss how well they now understand the problems*

- Report back
- Analyse and gather lessons learned
- Actions to take away

± 60 minutes

17:00 Close of day one

DAY TWO: Learning the Lessons and Applying Best Practice
Thursday 28 October 2022

13:00 Day Two Course Leader's Introduction
Ian Birkinshaw MSc, General Secretary, Solids Handling & Processing Association (SHAPA) ±10 minutes

Practical approach to design to accommodate material characteristics
Solids handling is one of the largest and most common processes in many industries though it is often impeded by problems that arise in the storage and handling of bulk solids. This session will provide guidance for the effective handling of bulk solids.

- Some of the problems that are often encountered – arching, ratholing, etc
- Characterisation needs for storage, flow and handling including flow property tests
- Design of hoppers for reliable discharge – mass flow
- Interfacing of feeders for enhancing flow, focusing on screw feeders
- Offer some retrofit options where performance is poor
- CASE STUDIES solving real plant operating problems

Dr Eddie McGee, Managing Director, Ajax Equipment Ltd ±35 minutes

The virtue of the bespoke suit over *prêt-à-porter*
Standard off-the-shelf equipment may be more readily available and initially cheaper but think carefully before buying. There are hidden costs associated with the integration and performance that may be compromised, and the results may not be quite as expected. Bespoke equipment may offer a more cost-effective solution that provides better performance.

- Off the shelf is not designed for your purpose
- The importance of quality
- Spending time and money on good design is time and money well spent

Speaker to be confirmed ±35 minutes

Break ±20 minutes

A project management approach is not enough – *understanding the true cost of a solids handling system to a business*
Without a though understanding of the true cost of a solids handling system to a business, a project management approach is not enough. One of the primary constraints of the process which will be identified in the project documentation and created at the beginning, will be the budget. Without a full understanding of the true costs the budget figure cannot be accurately set.

- Down-time
- Energy
- Maintenance
- Manning
- Purchase price
- The problems with competitive tendering and turnkey projects.

Charles Williams, Director, Promtek and Chairman, Technical Committee, SHAPA and Dr Eddie McGee ±45 minutes

CASE STUDY: Drax Power Ecostore Project – *a challenging project where some of the best practice techniques were used*
Professor Mike Bradley ±35 minutes

Discussion groups – *delegates break into groups under the supervision of the course tutors to discuss how well they currently apply best practice, what they can improve for the future and the difficulties to be overcome*

- Report back
- Analyse and gather lessons learned
- Actions to take away

±60 minutes

Course Leaders' Conclusions
Professor Mike Bradley and Ian Birkinshaw ±5 minutes

17:00 Close of day two