POSTER 4

Process activities to develop a Digital Twin MMIC GC1: Introduction and activities

Carlota Mendez Torrecillas, Martin Prostredny, Michael Devlin, Ecaterina Bordos, John Robertson

Abstract:

The **Medicines-Manufacturing-Innovation Centre (MMIC)** is a joint industry-government-academic venture to create state of the art, pharmaceutical manufacturing facilities to enable new process technologies to be developed and deployed for commercial end use.

The founding consortium comprises CPI, University of Strathclyde, Astra Zeneca and GlaxoSmithKline. Companies such as Pfizer, Gericke, PEL, and Perceptive have joined as the program expands and grows. In addition to the underpinning infrastructure, the initial investment is focused upon two key processing technologies – Continuous Direct Compression and Just in time automated pharmacy. Also known as MMIC grand challenge 1 and 2. **University of Strathclyde** is leading the technical delivery of **grand challenge 1** - development of a state of the art digital twin of continuous direct compression.

Developing a digital twin comprises the understanding of the various unit operations in isolation as well as operation in the range of configurations to obtain a complete picture of the system. In the current phase, the bulk materials transfer, feeding and blending units can be operated in a range of modes as well as integrated. In the next phase the current system will be integrated with additional compression technologies in the new MMIC facility.

Some examples of the current work packages at CMAC are highlighted below:

- Materials properties impact on bulk transfer and feeder performance
- Extent of mixing example Continuous RTDs
- Continuous lubrication
- Repeat Mini Batch to Fully continuous
- PAT & Process control

Figure 1. MMIC Feeding and Blending Unit