CMC Strategy Forum Europe 2021

Agile (aka Autonomous & Portable) manufacturing with specific focus on Aseptic Modular Chamber

Karoline Bechtold-Peters on behalf of the MQEG Agile Manufacturing Workstream, 18th Oct 2021
Can biomanufacturing be inspired by technological advances and be transformed?

Courtesy Nitin Rathore
Autonomous & Portable Manufacturing

- Technologies are evolving at a rapid pace, and innovative pharmaceutical companies invest significantly in the modernisation of their manufacturing and supply operations towards more agile processes and methods that includes ‘Autonomous & Portable’ solutions.

- These provide unique opportunities to enhance consistency, in relation to traditional scale up, especially when moving from clinical to initial commercial supply or subsequent transfer/addition of manufacturing sites due to the consistency of equipment, procedures and Quality systems. Higher production volumes can more easily be reached through scale-out, in comparison to a traditional scale-up approach, and can overall enable more rapid response to patients’ demands.

- This reflection paper serves to initiate a dialogue with Regulators to introduce the concept in a way that ensures regulatory standards continue to be met, and products’ Quality preserved, as these remain the innovative industry driving manufacturing principles....

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Innovations 2010 – 2020 in „Agile“ Aseptic Manufacturing of Steriles
(the pictures/machines given here are not exhaustive, only examples)

Innovation 1.0: Highly Modular

Innovation 2.0 NOW: Gloveless, fully automated and autonomous

Just plug in!
Advantages of „Agile“ Aseptic Manufacturing of Steriles using Autonomous Aseptic Workcell Concepts

- Increasing the throughput by scaling out
- Potential for Connectivity DS-DP
- Agility in adding new lines
- Flexibility in Dosage Forms and Fast Changeover (hours instead of days)
Scale-out definitions

General remark: also Scale Down is easier compared to fast running machines (in case product needs go down)
In order to really end up at «Agile» Aseptic Manufacturing more than the technical equipment needs to be provided...here some guiding questions

Let us assume a multitude = “fleet” of those “agile work chambers” at a company

• Can some elements of the qualification/validation be transferred and only a confirmation run be performed if machines identical?
  o Examples:
    ▪ VHP cycle (one machine as a pilot, the other machines just make a confirmation run)
    ▪ Alarm testing (first machine full testing, further machines only critical tests)
    ▪ VHP residual amounts or CIP/SIP or...(one machine as a pilot, the other machines just make a confirmation run)
    ▪ FAT/OQ (full program for first machine, further machines only check parts of the circuit diagram and of the P & I scheme)
    ▪ Matrix of media fills across sites

• To accelerate acceptance, do all fleet machines need to be specified at the time of registration or is the term “or equivalent” acceptable?

• Multi-product facility – does the design allow for more flexibility as regards a multi-product manufacturing compared to conventional lines because of the increased closure and reduced likelihood of spills?

• Microbial monitoring
  ▪ How can we make best use of upcoming technologies of rapid testing?
  ▪ What can we omit/not do with an acceptable rationale? E.g. settle plates

• Value of data in case of non-conformity to guidelines not addressing the specificity of such autonomous work chambers? Can agencies be „convinced“ by data?
  ▪ Non-conformity may comprise
    ▪ Air flow
    ▪ Kind and positioning of robot
    ▪ Environment of work chamber
    ▪ Monitoring concept
Current Sub-Team on *Agile manufacturing with specific focus on Aseptic Modular Chamber*

Andrea Kurz, Roche  
Karoline Bechtold-Peters, Novartis  
Michel Eppink, Byondis  
Nitin Rathore, Amgen  
Yemi Babatola, Amgen  
Arnab Ganguly, Amgen  
Lucy Chang, MSD  
Ana-Silva Nita, MSD  
Joerg Zimmermann, Vetter  
Dieter Bachmann, J&J  
*NN from Novo*  
*NN from Bayer*