INJECTABLE VACCINE PRODUCTION PROCESS FLOW

LYOPHILIZATION
- Washing
- Depyrogenation

VACCINE LYOPHILIZATION
- Optimized cycles to maximize production output
- Titer requirement fulfilment
- Efficiency and quality through Controlled Nucleation
- Use of Natural Gases maintaining the performance
- Combination of efficiency/productivity without compromising safety

LYOPHILIZATION PROCESS KEY ADVANTAGES:
- Suitability for temperature sensitive and thermolabile products
- Sterile production
- Stability in time (long shelf life)
- Stability at standard environmental conditions
- Enhanced regulatory stability requirements (37°C for 7 days)
- Keeping desired potency (titer)
- Easy and fast reconstitution

CLASSIFICATION OF VACCINES
- VIRAL
  - Whole virus
  - Split virus
  - Subunit (surface antigen)
  - Live attenuated
- BACTERIAL
  - Attenuated ("Live") Generally to preserve the life of the antigen
  - Inactivated ("Killed") Generally when liquid solution has low stability
  - Complete
  - Fraction

LIFE SCIENCE EQUIPMENT
YOUR VACCINE PRODUCTION PARTNER

WEBINAR: HOW TO IMPROVE THE EFFICIENCY OF VACCINE PRODUCTION? Due to increased public demand for vaccines to prevent COVID-19, and other diseases, manufacturers are under pressure to increase output. But this goes hand in hand with maintaining safety and quality. Telstar will provide you with specific optimization solutions that will help you save money and time. More information on this Webinar can be found: Telstar.com Webinar

VACCINE PRODUCTION PROCESS
Formulation & Blending
- Production & Purification of Antigen
- Filling
- Capping
- Inspection
- Secondary Packaging

BACTERIAL CLASSIFICATION
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LIFE SCIENCE EQUIPMENT

Isolators / c-RABS o-RABS

- Grade A (ISO 5) Unidirectional laminar airflow and negative pressure for product, operator and environment protection
- Standardized models and also tailor-made solutions
- Bag-In Bag-Out filtration system option
- Several standard accessories (containment screens, work benches,...)

Downflow booths

VACCINE PRODUCTION EQUIPMENT

- Dry heat sterilizers for depyrogenation
- Moist heat sterilizers for infeed sterilization, decontamination (dedicated effluent discharge/CIP) and terminal sterilization
- Automatic Loading/Unloading integrated solutions

Sterilizers

- Safe pass-through for transferring materials between classified areas
- Standardized models and tailor-made solutions
- Bio-decontamination systems available

Pass-Boxes

Isolators / c-RABS o-RABS

- Grade A (ISO 5)
  unidirectional laminar airflow
- Physical barrier for product protection
- Isolator suitable for product & operator protection
- Customized solutions to integrate with the complete line
- Bio-decontamination systems available
- Sterility Test isolators

OTHER TELSTAR SERVICES :

- Complete line solutions
- Lyophilization and Sterilization process optimization/development services
- Consultancy, Engineering, Construction, Validation, Customer Service
- Calibration services
- Customer Service (including Equipment upgrade, retrofit & refurbishment)

Dry heat sterilizers

Moist heat sterilizers

Automatic Loading/Unloading integrated solutions

Cleaning and Bio-decontamination (CIP/SIP) cycles

Product, operator and environment protection

Effluents suitable treatment

Lyophilizers

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