and E1/E3-deleted human adenovirus type 5 (AdHu5), which are currently in use as vectors for several vaccines, were successfully stabilized by formulating with sucrose and trehalose together. They achieved complete recovery of viral titer and immunogenicity after storage at up to 45 °C for 6 months. The prototype product, HydRis®, is offered by Nova Laboratories Ltd. [17].

Successful commercialization of this technology will of course require development and scale-up of robust manufacturing processes and equipment for cleaning and sterilizing the fiber matrix, aseptically applying then drying the product solution, storing and testing the individual doses, and aseptically packaging and sealing the doses into the housings. Nova Laboratories is continuing development of this platform.

Aseptic Powder Filling

Sterile powders can be filled into pre-sterilized vials by commercially available equipment, and this practice has been in commercial use for decades [1, 13]. An example of a commercial sterile powder-filling line is shown in Fig. 6. The use of sterile powder filling enables conversion of a given product to an alternative to lyophilization without changing the primary packaging. However, the ability to manufacture sterile powdered drug product offers the advantage that novel, value-added primary packaging options can be considered. One can imagine powders being sterile-filled into empty single- or dual-chamber syringes.

Fig. 6 Sterile powder-filling machine by IMA Pharma (www.ima-pharma.com) (Image courtesy of IMA Life North America, Inc.)