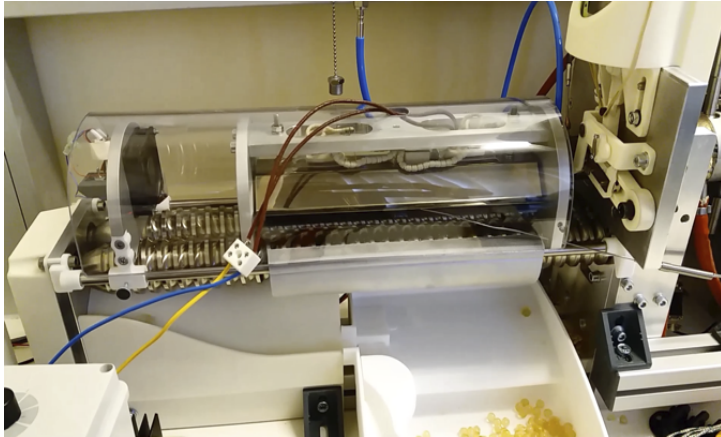


# Thermoforming apparatus for continuous production of solid oral dosage forms



**Fig1: Thermoforming apparatus prototype. Connected to HME, this equipment enables the continuous production of solid oral dosage forms which fulfill the European Pharmacopean requirements.**

Pharmaceutical sector has to face with always higher quality requirements while reduced operating costs are needed. Continuous manufacturing process implementation can help in facing this dual challenge. Indeed, continuous manufacturing has the potential to improve the assurance of quality and consistency of the drug, enabling quality to be directly built into the process (integration principle, elimination of dead zone, ability to maintain steady state of control...), whilst it provides a significant reduction of operating costs because of its increased production yield, its versatility and its ease of scaling up.

The patented technology relates to a thermoforming apparatus to be used downstream of standard hot melt extruder and which enables continuous formation of solid oral dosage forms. Directly connected to the extruder, the apparatus enable full continuous production of final drug which fulfill the requirements of the European Pharmacopeia.

## KEY ACHIEVEMENTS

Prototype of thermoforming apparatus connected to commercially available extruder enabling production of stable and uniform solid oral dosage forms at a frequency of 1 form/second.

## UPCOMING CHALLENGES

- Commercial : finding the right partner
- Market : change of Pharmaceutical sector from batch to continuous process

## KEY COMPETITIVE ADVANTAGES

- Advantages of the hot melt extrusion process compared to a classical batch approach
- Obtention of a product with a constant quality and purity profile in compliance with the European Pharmacopeia requirements

## INTELLECTUAL PROPERTY

- Patent application pending CN201780062223.2, AU2017344325, EP17784214.3, US16/340,625, JP2019-519280
- Patent granted BE2016/5752

## BUSINESS MODEL

- Collaboration with company
- Licensing

## FINANCIAL NEED AND REQUIRED EXPERTISE

Looking for a partner specialized in pharmaceutical equipment development and commercialization and/or a pharma partner interested to implement the technology in its production facilities.

## MARKET

- Pharmaceuticals market : from 968 billion in 2012 to 1138 billion in 2016
- Market by region : USA 45,3%, EU 22,1%, Asia 27% (with high compound annual growth rate in China, Russia and India)