



CASE STUDY

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# Process intensification for a pharmaceuticals major for significant improvements in extraction of an API



# All round improvements and process simplification by using continuous extraction

## Case Study | Pharmaceutical Industry

The client had standardised a two step batch extraction process for one of its important APIs. 2000 litres of water was used over 4 washes to remove impurities from 1500 litres of product. Over 16 hours of contact resulted in loss of product in the water phase in the second step, the lost product was recovered from the wash water in another kettle by using about 1000 litres of MDC.

The customer approached Technoforce to explore continuous extraction. Being an API, **batch to batch integrity** and **ability to clean the equipment** between batches were important criteria for the equipment selection. Technoforce suggested their **Centrifugal Extractor (CE)** as it has a contact time of a few seconds, and a very small holdup which helps in quick cleaning and switchover.

Trials on the centrifugal extractor in the **Technoforce pilot plant** gave a pleasant surprise. Contact time of a few seconds eliminated loss of product to water phase and therefore there was no need for subsequent extraction of wash water with another solvent to recover the lost product.

The scaled up continuous centrifugal extractor was able to finish the whole batch of 1500 litres within an hour. The quantity of wash water was reduced from 2000 litres to 900 litres. The liquid holdup of less than 10 litres in the extractor resulted in an ease of cleaning between batches.

*"We would have happily switched over to the centrifugal extractor long ago, had these dramatic improvements been known to us"* was the reaction of the customer.

[www.technoforce.net](http://www.technoforce.net)

### Our Expertise

Evaporation

Drying

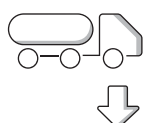
High Vacuum Distillation

Extraction

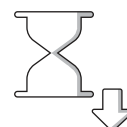
Crystallization

Zero Discharge Systems

**TECHNOFORCE™**



**55 %**  
Less solvent used



**99.9 %**  
Less contact time