

# Case study

## Characterisation-directed kilo catalyst scale-up

### Problem

A leading European research institution required manufacturing 10 kg of bespoke catalyst for a pilot test. The catalyst preparation procedure was based on a 10 g laboratory-scale process that required developing a scale-up approach.

### Is the 10 kilo scale a problem?

Bespoke catalysts on a multi-kilogram scale are usually impossible to procure from major suppliers due to:

- (i) 10 kilo scale is too small for commercial production, and
- (ii) the catalyst preparation recipe is often not directly scalable.

Stoli offered a service to **develop a scale-up procedure, validate that the catalyst meets specifications, and manufacture** the required catalyst amount.

### What did we do?

Firstly, we adapted the lab-scale catalyst preparation procedure for the large-scale manufacture. We obtained samples of catalysts using both procedures.

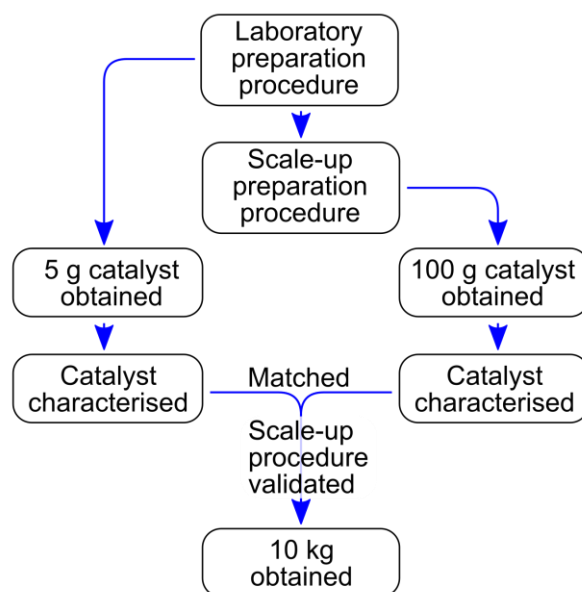
**A detailed characterisation of the lab-scale recipe and a small amount catalyst produced with the kilo-scale recipe confirmed identical characteristics.**

Once the scaled-up manufacturing procedure had been validated with characterisation, we rapidly prepared 10 kg of catalyst.

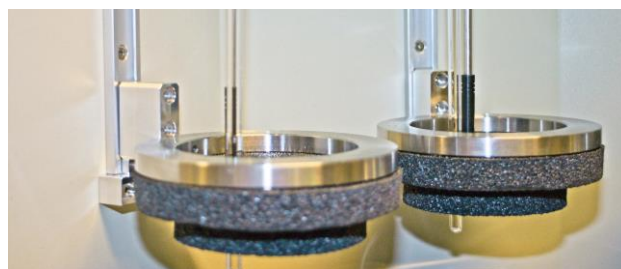
### Outcome

Stoli met the customer requirements and shipped the catalyst to the customer within weeks. The catalyst was successfully demonstrated in a biofuel production process.

**The catalyst recipe and method developed by Stoli could be used directly for commercial-scale production.**



**Scheme of catalyst scale-up procedure development and validation.**



**BET surface area and porosity analysis as one of characterisations performed.**



**Scaled-up catalyst extrudate.**