Mater-Biotech

BIO-QED

Large scale demonstration for the bio-based bulk chemicals BDO and IA aiming at cost reduction and improved sustainability

WP 4: Scale-up: integration of fermentation and downstream processing

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Kick-off meeting, Novara,
February 25th, 2014

WP4 - General overview

Type of activity:	Demonstration
Start month:	4
End month:	48
Lead beneficiary:	Mater-Biotech

Type of activity:	Person-month per partecipant
Novamont	28
Lubrizol	7
(Uhde) ?	7
Mater-biotech	26
Cargill	4
TNO	22
FHG	42,5

WP4 - Objectives

- To provide information for integration of fermentation and downstream section to produce BDO and IA
- Test engineering concepts from WP2-WP3 up to industrial scale
- Demonstrate technical feasibility of developed processed with demo-scale productions

WP4 - Tasks

- 4.1: Scale-up of BDO and IA production up to 1 m^3
- 4.2: Scale-up of BDO and IA production up to 10 m^3
- 4.3: Scale-up of BDO and IA production up to 80 m^3
- 4.4: By-products valorization (waste water, anaerobic digestion, energy)

WP4 – Main expected results

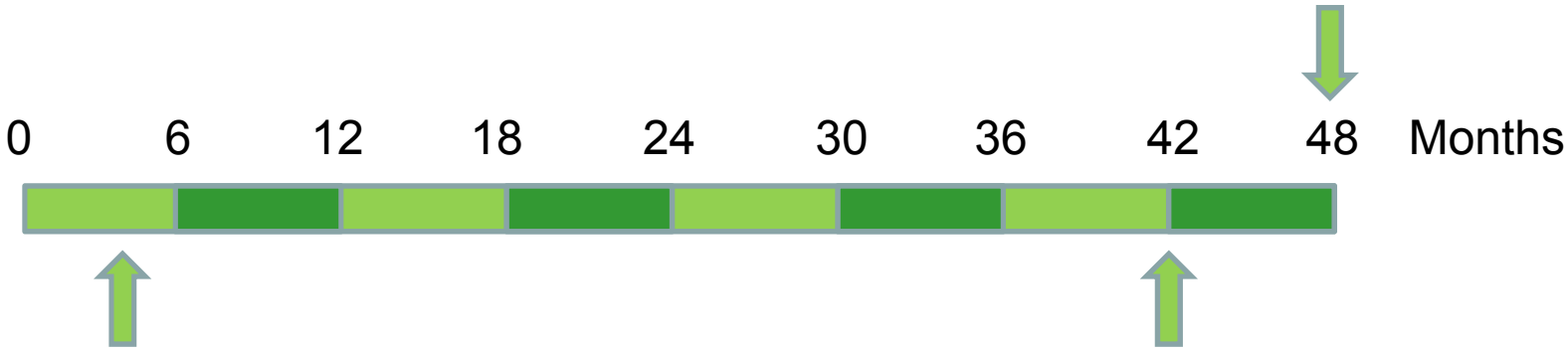
- Confirmation of selected concept at demonstration scale
- Validation of scale-up parameters and methods
- Generation of complete production dataset of the applied new concepts
- Full comparison of the new concepts vs the existing processes

WP4 – Description of deliverables

- D4.1: Protocol and mass balances of feasible process up to 1 m^3 (month 42)
- D4.2: Protocol and mass balances of feasible process up to 10 m^3 (month 42)
- D4.3: Protocol and mass balances of feasible process up to 80 m^3 (month 42)
- D4.4: Protocol of by-products valorization (month 48)

WP4 – Time scheduling

D4.4 – protocol of by-product valorization



Month 4:
WP4 start

D4.1 – protocols and M&H balances up to1 m^3
D4.2 – protocols and M&H balances up to10 m^3
D4.3 – protocols and M&H balances up to 80 m^3
MS7 – Proof of concept up to1 m^3
MS8 – Process validation up to10 m^3
MS9 – Process demonstration up to 80 m^3

WP4 – Task 4.1

Task 4.1: Scale up of BDO and IA production up to 1 m^3

- Sugar production for test (Cargill, FhG)
- Check of scale up parameters and methods according to novel concepts developed in WP2 and WP3 (Novamont, Materbio, FhG, TNO)
- Set up of pilot plants and production test (Materbio, Novamont, TNO, ?)
- Production of chemical for application development in WP5(Lubrizol, Novamont)

WP4 – Task 4.2

Task 4.2: Scale up of BDO and IA production up to 10 m^3

- Sugar production for test (Cargill, FhG)
- Check of scale up parameters and methods according to novel concepts tested during task 4.1 (Novamont, Materbio, FhG, TNO)
- Set up of pilot plants and production test (Materbio, Novamont, FhG, TNO, ?)
- Production of chemical for application development in WP5(Lubrizol, Novamont)

WP4 – Task 4.3

Task 4.3: Scale up of BDO and IA production up to 80 m^3

- Sugar production for test (Cargill, FhG, ?)
- Check of scale up parameters and methods according to novel concepts tested during task 4.2 (Novamont, Materbio, FhG, TNO)
- Set up of demo plants and production test (Materbio, Novamont, FhG, TNO, ?)

WP4 – Task 4.4

Task 4.4: By-product valorization

- By-product characterization (Materbio, TNO)
- Technologies scouting and process development (Materbio, TNO)
- Selected routes test and validation (Materbio, TNO)

WP4 – first 6 months' planning

Work package starts on month 4th.

- Collection of data from WP1/WP2/WP3
- Preparation activities for task 4.1:
  - Protocols definition
  - Preliminary process flow schemes arrangement
  - Identification of pilot units
  - Pilot units arrangement design
  - Test planning
- Start test up to 1 m^3 capacity