INTEGRATED APPROACH OF SUSTAINABLE SOURCING, PRODUCTION AND TECHNOLOGIES

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NOVAMONT is the international leader in the bioplastics sector and in the development of biochemicals and bioproducts obtained from the integration of chemistry, agriculture and the environment. It promotes a model of the bioeconomy as a factor of territorial regeneration, based on three pillars:

1. **Regeneration of Deindustrialised Sites**
   - Reindustrialisation of no longer competitive sites thanks to proprietary technologies first in the world in order to create "bioeconomy infrastructure", integrated with the territory and interconnected.

2. **Integrated Agricultural Value Chain**
   - Development of low impact value chains through the valorisation of marginal land not in competition with food production, integrated in local areas and connected with the bioeconomy infrastructure.

3. **Products Conceived as Solutions**
   - Products and value chains are conceived and designed to provide unique and sustainable solutions for specific environmental and social problems. Elements of a system with broader impacts of the single product.
**OUR DNA**

**NOVAMONT: A GROUP WITH A TRIPLE VOCATION**

**INDUSTRIAL STRUCTURE**
- Turnover: 170 mln/€
- 600 people (+9% vs 2014)
- 4 production plants
- 7 compounding lines
- 4 discontinuous and 1 continuous polymerization lines

**RESEARCH & DEVELOPMENT**
- 6.4% of investments compared to 2015 turnover
- 20% of people dedicated to research, development and innovation activities
- 4 world-first technologies
- 1.000 patents

**TRAINING CENTER**
- Over 300 training activities since 2000 for young researchers and experts
- 40 multidisciplinary training paths activated on complex projects

Data to 31/12/2015
A COMPANY WITH ROOTS IN THE TERRITORY

THE NOVAMONT GROUP IN ITALY

HEADQUARTER AND RESEARCH CENTRE
Novara - Piedmont

MATER-BIOTECH (100% NOVAMONT)
BIOBDO PRODUCTION
Adria (RO) - Veneto

MATER-BIOPOLYMER PRODUCTION ORIGO-BI
BIOPOLYMERS
Patrica (FR) - Lazio

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MATRÌCA
PRODUCTION OF CHEMICAL INTERMEDIATES FROM RENEWABLE RESOURCES
Porto Torres (SS) Sardinia

BIOTECHNOLOGY RESEARCH CENTRE
Piana di Monte Verna (CE) - Campania

HEADQUARTERS

PRODUCTION SITES

R&D CENTRES

EXPERIMENTAL FIELDS

NOVAMONT'S SITES

SUBSIDIARY COMPANIES

JV NOVAMONT/VERSALIS
THE BIOREFINERY INTEGRATED IN THE LOCAL AREA

OUR DEVELOPMENT MODEL

Dedicated to the production of a range of bioproducts (bioplastics and biochemicals) with high added value

Development of innovative agro-industrial value chains starting from local raw materials (low input crops, scraps)

Respect of local specificities and development of abandoned and marginal land

Reconversion of deindustrialized sites through proprietary technologies first in the world

Creation of new opportunities for the entire value chain and collaboration with the actors of the territory: agriculture, researchers, industrial partners, local institutions, citizens and associations
THE BIOREFINERY INTEGRATED IN THE LOCAL AREA

OUR DEVELOPMENT MODEL
Joint venture 50:50 NOVAMONT/Versalis (Eni)

Biorefinery integrated in the local area born from the partial conversion of a no more competitive industrial site

NOVAMONT proprietary technologies first in the world for the production of high added value bioproducts

Bioproducts for many different market segments: bioplastics, biolubricants, personal care products, plant protection products and additives for the rubber and plastics industry

Development of an agro-industrial value chain in the territory together with local farmers

Partnerships with universities, research institutes, schools and local institutions
2015: **NOVAMONT, Coldiretti** and **Consorzi Agrari d’Italia** (CAI) agreement, for the creation of innovative agro-industrial value chain of bioplastics and bio-based products

New model of cooperation between an innovative industry and the local farmers for the territorial regeneration

>5 years of experimental activities on aridoculture: agronomic protocols, mechanization, logistics, genetic improvements, etc.

**Cardoon** (Cynara cardunculus L. var. Altilis): pluriennial low-input crop suitable to the Mediterranean climate, requires no irrigation and grows on arid land inappropriate for traditional crops

Added value for the players in the sector, cascading use of resources and development of new innovative products
THE DIFFERENT USES OF CARDOON

CASCADING USE OF RESOURCES

- OILS
- PROTEIC FLOUR
- ACTIVE MOLECULES

- ENERGY
- OTHER CHEMICALS

- ORGANIC SUBSTANCES
- OTHER CHEMICALS

OPPORTUNITIES FOR FARMERS, SHEPHERDS AND OPERATORS THANKS TO THE CARDOON VALUE CHAIN ...

- Exploitation of marginal areas
- Local production for protein for animal feed
- Efficiency and energy independence
- Supplementary income for farmers

.... AND TO THE BIOPLASTICS AND BIOCHEMICALS VALUE CHAIN

- Reduction of environmental impact for soil, water and air though the use of:
  - biodegradable mulch films
  - pelargonic acid for weed control
  - biolubricants
First dedicated industrial plant at world level for the production of butanediol (1,4 BDO) directly from sugars

Regeneration of the former BioItalia/Ajinomoto site in Adria, after the shut-down of the fermentation plant in 2006

Integration of Novamont’s know-how and competences in the development of low-impact production processes through an innovative technology developed by Genomatica, leader in the industrial biotechnologies

Investment > 100 million euro

300 people and 100 companies engaged in the reconversion plant (2014-2016)
WHAT IS THE BIO-BUTANEDIOL?

- Chemical intermediate obtained from renewable raw materials (sugars)
- Main uses: chemical industry, textile, automotive, electronics, production of consumer goods
- Building block for the production of NOVAMONT’S bioplastics
- Production of MATER-BI 4° generation with a higher content of renewable raw materials and a further reduction in greenhouse gas emissions and dependence on fossil raw materials
FROM NOVAMONT RESEARCH IT BECOMES MATER-BI
THE CONTROLLED, INNOVATIVE, GUARANTEED BIOPLASTIC

RENEWABILITY
Use of renewable raw materials (dedicated crops, scraps)

BIODEGRADABILITY AND COMPOSTABILITY
Biodegradable with the possibility of the organic recycling (composting and anaerobic digestion)

- Solution for specific environmental problems
- Added value both in use and in the end-of-life
- Biodegradation in composting, soil and marine environment
- Accredited and certified by international bodies as conforming to European standard EN 13432
- Controlled bioplastic as a result of a constant innovation towards attaining the highest and most stringent quality standards
TAILOR-MADE APPLICATIONS
WHERE BIODEGRADABILITY AND COMPOSTABILITY REPRESENT AN ADDED VALUE
NEW BIOPRODUCTS FOR NEW MARKETS
NOT ONLY MATER-BI: CUSTOMIZED SOLUTIONS IN SENSITIVE SECTORS: THE ENVIRONMENT AND HEALTHCARE

MATROL-BI

- Biolubricants and greases rapidly biodegradable from renewable resources
- Optimal solution for environmental and sensitive areas such as agricultural, forest, marine or urban areas
- Website: www.novamont.com/matrol-bi

CELUS-BI

- Innovative and sustainable products for cosmetic sector and for personal care
- Made through low impact production processes and with raw materials from European value-chains
- Website: www.novamont.com/celus-bi

BIOHERBICIDES

- Solutions for the management of weed control that combine productivity, safety and respect for the environment
- Based on pelargonic acid from vegetable origin for the non-selective control of vegetation
- Website: agro.novamont.com
PRODUCT FOR COSMETIC

Novamont Cosmetics Products

Azelic Acid
Pelargonic Acid
Glycerin

Emollient Ester of Pelargonic Acid

Bio-Based Thickeners

Exfoliating Products

Starch-Based Microsphere

Starch-Based Microsphere
Water Dispersion
Azelaic acid, Pelargonic acid and Glycerin

- Very high purity
- High production capacity
- Vegetable origin
- Respect for local biodiversity
- Fully European products
- Sustainable Production Processes
Esters of pelargonic acid

Multi functional esters oils, suitable for different applications

- Skin care
- Sun care
- Hair care
- Toiletries
- Make-up
"The challenge of our millennium is in the balance between the technical means that humanity possesses and the wisdom in how we will make use of them"  
UMBERTO COLOMBO