NEXTCHEM CORPORATE PROFILE

Barbara Masciocchi
Technology Senior Process Engineer
Bio-based Solutions
MAIRE TECNIMONT GROUP AT A GLANCE

OPERATING COMPANIES

- Tecnimont
- KT
- Stamicarbon
- Met Development
- NextChem
- Neosia Renewables

PRESENCE IN THE WORLD

- ~9,300 employees & professionals
- 50 operating companies
- 45 countries

FY 2019 RESULTS

- €3.3 BLN revenues
- €235.6 MLN EBITDA
- €6.4 BLN backlog
MAIRE TECNIMONT GROUP GLOBAL & TECHNOLOGICAL LEADERSHIP

**CORPORATE PROFILE | GROUP OVERVIEW**

**PETROCHEMICALS**
- WELL ROOTED TECHNOLOGY ORIENTATION: MARKET LEADER (#1) FOR INSTALLED CAPACITY (last 10yrs)
- 30% MARKET SHARE IN POLYOLEFIN PLANTS
- 50% MARKET SHARE IN LDPE PLANTS

**FERTILIZERS**
- MARKET SHARE IN LICENSING UREA PLANTS TECHNOLOGY (#1 worldwide)*
- 54% MARKET SHARE IN LICENSING UREA GRANULATION TECHNOLOGY (#2 worldwide)*
- 34% MARKET SHARE IN LICENSING UREA PLANTS**

**OIL & GAS REFINING**
- WELL RECOGNIZED LEADERSHIP IN LICENSING HYDROGEN TECHNOLOGY AND IN/licensing sulphur recovery and tail gas treatment technology
- WORLD CLASS TRACK RECORD IN LARGE GAS TREATMENT PLANTS AND REFINERY PROCESS UNITS
- Since 1971 MORE THAN 172 AMMONIA AND UREA PLANTS**
- Since 1971 MORE THAN 250 HYDROGEN AND SULPHUR RECOVERY UNIT PROJECTS**

**POWER**
- 7th RANK ENR WORLD TOP-10 POWER MARKET ENGINEERING COMPANIES 2016
- 21GW INSTALLED WORLDWIDE
- Since 1962 MORE THAN 280 POWER GENERATION PROJECTS

**RENEWABLES & GREEN CHEMISTRY**
- TECHNOLOGIES FOR ENERGY TRANSITION:
  - 5 PROPRIETARY
  - 3 OVER 20 WITH A ROLE OF INTEGRATOR & EPC
  - RESEARCH PROJECTS:
  - OVER 10 WITH A ROLE OF PARTNER / COORDINATOR
- DEVELOPED more than 1,000 MW wind
- MANAGED more than 500 MW wind
- BUILT more than 480 MW wind
- DESIGNED more than 560 MW wind
- MANAGED more than 300 MW solar
- BUILT more than 150 MW solar
- In Green Acceleration (last 5yrs)
- 1,492 Cumulated Patents
- Strong commitment to technology development
- €56 MN INVESTED IN INNOVATION
- 70 R&D PROJECTS
Maire Tecnimont is a multicultural and multinational Group

Maire Tecnimont in the World

~6,350 employees worldwide

+3,000 professionals in Electrical & Instrumentation

Total employees: 6,347

Average age: 41.7 years
Approx. 68% graduates

Data as of 31/12/2019
NEXTCHEM SPA AT A GLANCE

- **8** controlled companies
- **90** employees
- **€23 MLN** net worth

Data as of 31/12/2019
**NEXTCHEM PLAYING FIELD**

**Create**
- 1st Generation Bio-Fuels
- 2nd to 3rd Generation Bio-Fuels
- Bio-Polymers for High Added Value Applications

**Improve**
- Plastic Waste Upcycling (Mech. Recycling)
- Integrated recycling (Mechanical & Chemical)
- Waste to Fuels
- Waste to Chemical

**Reduce**
- Renewable energy to chemicals & fuels
- Enabling Natural Gas Industry

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**Green Green**
(use biological components as feedstock)

**Circular Economy**
(waste recycling)

**Greening the Brown**
(industrial processes pollution reduction)
ON-GOING R&D PROJECTS

**CO₂ valorization**

- DistributEd Chemicals And fuels production from CO₂ in photoelectrocatalytic Devices
  - H2020
  - Role: Partner

**Chemical recycling**

- Modular, scalable and high-performance DE-polymerization by MicrowavE Technology
  - H2020
  - Role: Coordinator

**Syngas/Chemicals**

- Renewable Power generation by Solar Particle Receiver Driven Sulfur Storage Cycle
  - H2020
  - Role: Partner

**Waste streams valorization**

- WINe GrEen Distillery, development of a technological platform for biorefineries in the wine sector
  - POR FESR Lazio 2014-2020
  - Role: Partner

**CORPORATE PROFILE | NEXTCHEM R&D PROJECTS**
CLOSED R&D PROJECTS

**CO₂ valorization**
- CO₂ electrocatalytic reduction by nanostructured electrodes
- POR FESR Lazio 2014-2020
- Role: Partner

**H₂ production**
- Compact Multifuel Energy to HYdrogen Converter
- EU FP7
- Role: Partner

**Waste streams valorization**
- Sistema di Trattamento Reflui con recupero di Energia, Acqua e Materia
- POR FESR Abruzzo 2014-2020
- Role: Partner
- Glycerol Biorefinery Approach for the Production of High Quality Products of Industrial Value
- EU FP7
- Role: Partner
- Waste bio-feedstocks hydro-valorisation processes
- EU Capita EraNet
- Role: Partner
# NEXTCHEM ROLE IN R&D PROJECTS

## R&D Project Development (12-48 Months)

### Management (If Coordinator)
- Process Scheme Development
- Basic & Detailed Design of Pilot Plant

### Pilot Plant Construction
- Pilot Plant Start-Up
- Tests
- Results Analysis
- Design Optimization
- Process Scheme Development for Large-Scale Industrial Plant
- Scale-Up

### Preliminary Economic Analysis and Benchmarking

### Final Economic Analysis and Benchmarking

### Business Plan
NEXTCHEM ACTIVITIES IN ALGAE PROCESSING

ALGAE PROCESSING: Combination of TECHNOLOGY and INNOVATION

Maire Tecnimont decided to orient a segment of its business to R&D projects on microalgae processing also through the creation of a dedicated start-up (BIO-P) controlled by NextChem. This long-term investment that combines technology and innovation is now focused on the production of high-value added compounds from algal biomass.

PAST EXPERIENCES IN ALGAE PROCESSING

2009/2010 - Development of the detailed engineering of the oil extraction section (based on ENI proprietary technology) of the ENI pilot plant for microalgae cultivation and oil extraction, located in Gela - Sicily (1 ha).

2011/2013 - R&D project in collaboration with Co.Pro.B. (the biggest sugar producer in Italy) and the University of Padua for the cultivation of freshwater algae (using wastewater and CO₂ from production plant) and oil extraction for energy production. A pilot plant for algae cultivation and dewatering was realized and operated for about 1 year.

2012/2015 - R&D project in collaboration with University of Pisa for cell lysis and oil extraction using ionic liquids (patented).

2015/actual - R&D project in collaboration with the University of Rome La Sapienza for biopolymers production from algae (integrated cultivation system patented).
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