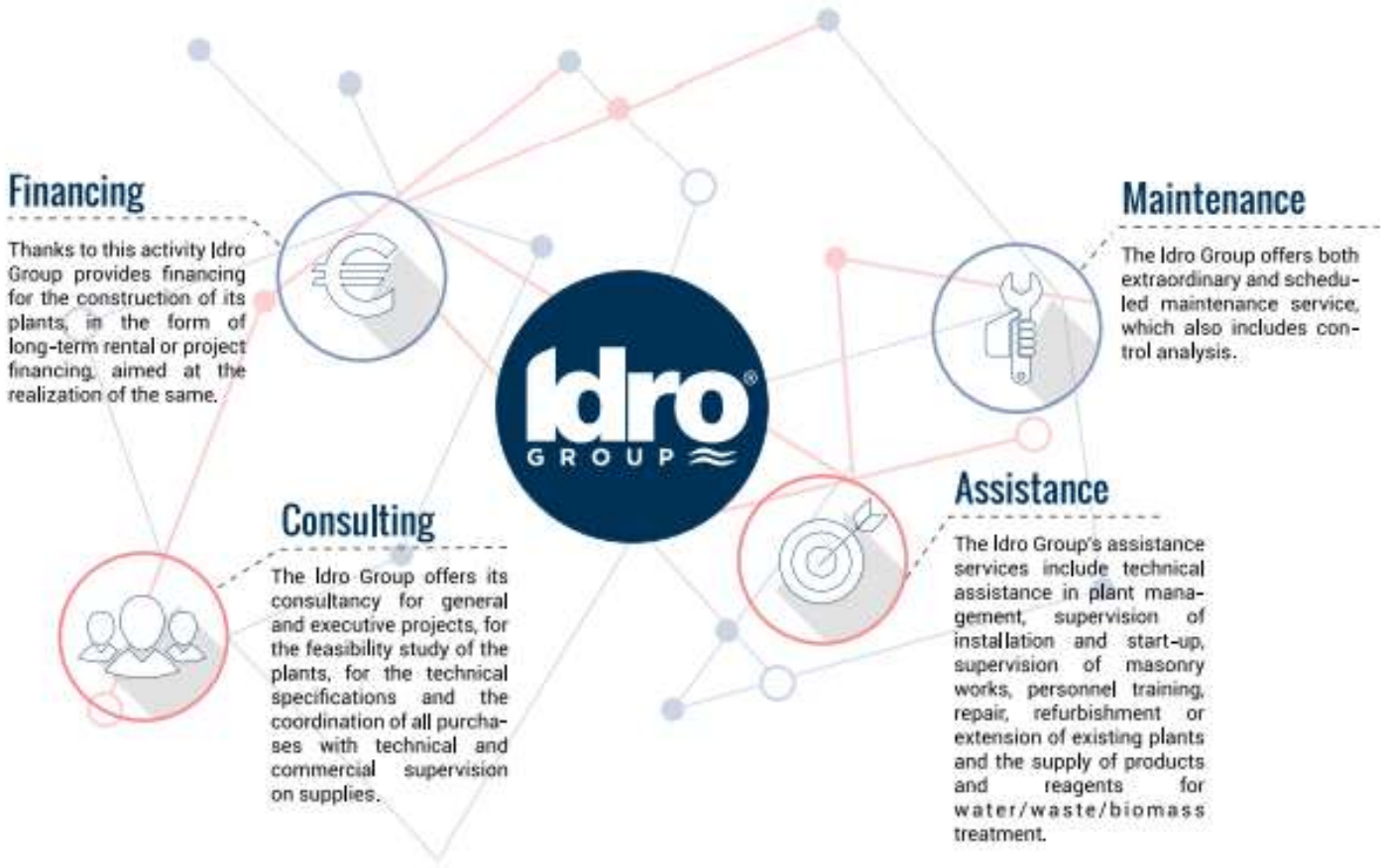
IDRO GROUP
Renewable energy: biogas and biomethane

Idro Group Srl
Via Comina 39
20831 Seregno (MB) ITALY
www.idro.net - info@idro.net

Expertise & technologies at the service of the enviroment

Idro Group has more than **40 years old experience** and is specialized in the design and construction of water treatment plants and clean energy production. By applying innovative technologies Idro Group develops: mobile and containerized plants, systems for water purification, civil and industrial wastewater treatment and reuse, air deodorization plants and **plants for biogas and biomethane production**.

OUR SERVICES



ENERGY division

In 1990 Idro Group srl started to build the first biogas plants for municipal purification plants.

The matrix used in the plants proposed by IDRO GROUP may come from:

- livestock farming and agricultural production
- organic waste fraction (FORSU)

The experience accumulated over these more than 30 years, through the use of cutting-edge technologies, has allowed the Group's Energy Division to become a recognized reality also at international level.

Water treatment plant 350.000 PE – Meran

The acquisition and development of **innovative patents** in **DESULPHURISATION** and **BIOGAS UPGRADING ,** allowed IDRO GROUP to start the design/construction of biogas-biomethane plants.

BOVIGAS - BIOGAS PLANT FROM AGRICULTURAL BIOMASSES

The plant has been designed to exploit the energy potential of waste from farms with an anaerobic digestion process for biogas production and related energy recovery.

1. PREPARATION OF THE SUBSTRATE

The incoming material is accumulated day by day and it is sent to a pre-treatment section in order to bring most of the organic fraction into solution and achieve an optimal homogenization of the incoming material.

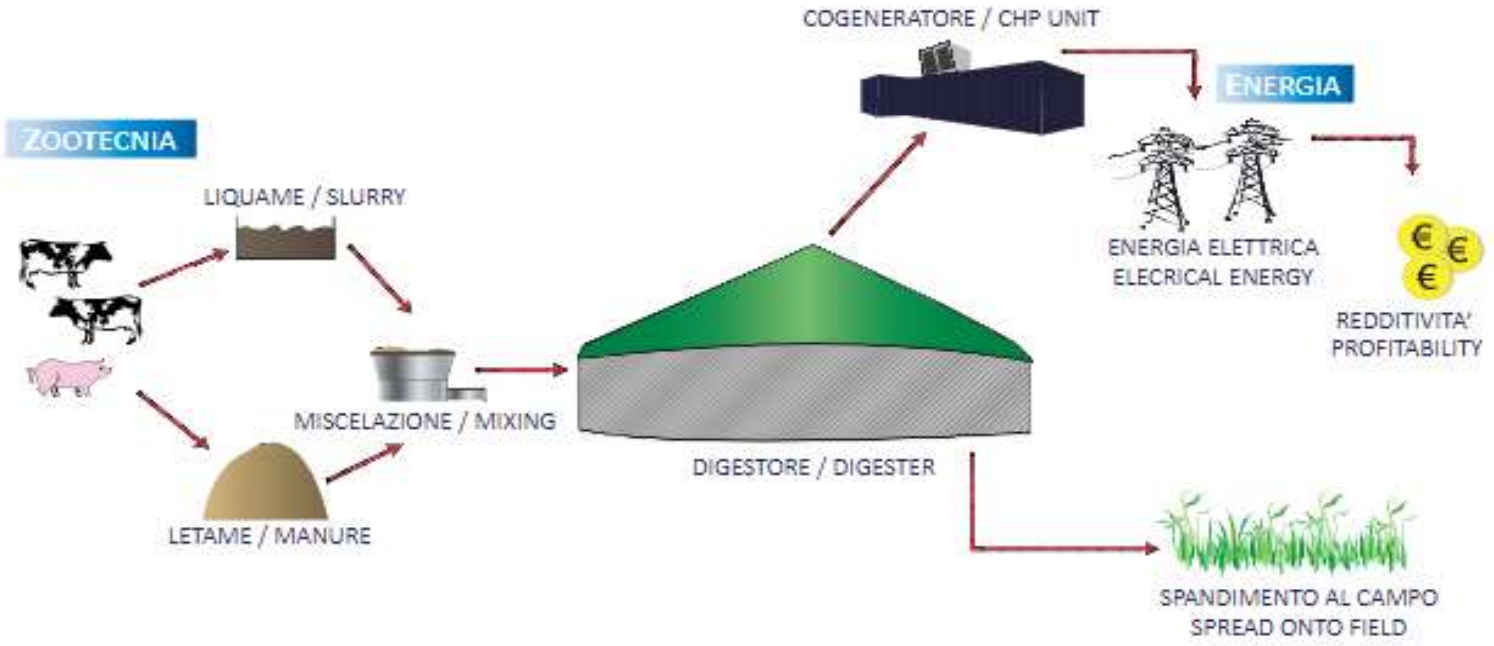
2. ANAEROBIC DIGESTION WITH BIOGAS PRODUCTION

The organic substances are degraded by micro-organisms in the absence of oxygen (anaerobic condition). The input biomass is pumped into a pre-treatment area to make a particular organic liquid mixture. The mixture then passes to a high-concentration, wet digestion process.

ANAEROBIC DIGESTER FOR BIOGAS AND ELECTRICAL ENERGY PRODUCTION FROM AGRICULTURAL **BIOMASSES**

BoviGAS - BIOGAS PLANT - AGROZOOTECHNICS

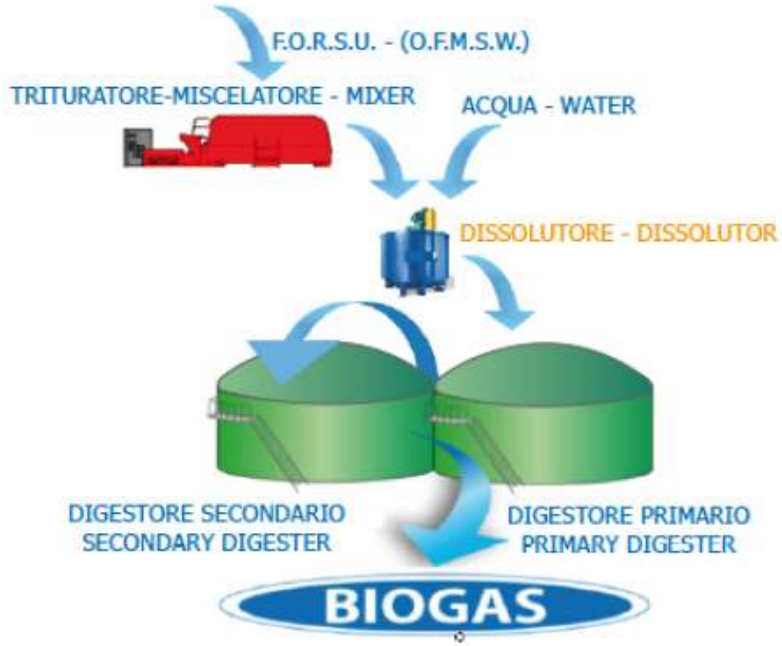
The biogas is fed to the CHP unit for the **thermal and electric power production**. The digester is equipped by a biological desul-phurization system carried out through control and adjustment of the oxygen concentration inside the gasholder chamber as well as taking roots dedicated supports for bacterium devo-ted to sulphury precipitation.



IdroGAS – BIOGAS PLANT FROM **ORGANIC FRACTION OF MUNICIPAL SOLID WASTE** (O.F.M.S.W.)

The plant has been designed to exploit the energy potential of the **organic fraction of waste.**

The waste is transformed into stable organic material, thus reducing the emission of odors and allowing to obtain in a subsequent aerobic composting a lower energy cost and a better quality product.



ORGANIC WASTE – FRUIT & VEGETABLE WASTE – FOOD & FARM WASTE – CANTEEN WASTE – BUTCHER WASTE – SEAFOOD PROCESSING WASTE– BLOOD – GENERAL FARM WASTE

ANAEROBIC DIGESTER FOR BIOGAS AND ELECTRICAL ENERGY PRODUCTION FROM **ORGANIC FRACTION OF MUNICIPAL SOLID WASTE** (O.F.M.S.W.)

COGENERATION UNIT

The output gas is sent to a cogeneration unit for the combined kickback of **electrical and thermal energy.**
The cogeneration unit is composed of an endothermal engine directly coupled with a powered unit.

Thermal energy is recovered from engine cooling cycle: it is in part used to heat the digesters and in part stored for other purposes.

IMPIANTI DI DIGESTIONE ANAEROBICA PER LA PRODUZIONE DI BIOGAS ED ENERGIA ELETTRICA
DA **RIFIUTI ORGANICI (F.O.R.S.U.)**

IdroMETHAN - BIOGAS BIOMETHANE PRODUCTION PLANTS

Biomethane is obtained from biogas produced by anaerobic digestion of organic waste (FORSU), agricultural biomass or agro-industrial by-products.

Raw biogas, which has a methane content of 55-60%, undergoes a refining and purification (UPGRADING) process that separates CO2 and transforms Biogas into a fuel with a high concentration of methane (BioMethan CH4>98%).

THE PRODUCED BIOMETHANE CAN BE PLACED IN THE NATURAL GAS NETWORK OR DISTRIBUTED BY ROAD AND ENTITLES TO INCENTIVES

IdroMETHAN - BIOGAS BIOMETHANE PRODUCTION PLANTS

The biomethane production process is carried out through a chemical washing of absorption-desorption of CO2, carried out in special contact columns, a process already extensively tested in upgrading plants with refinery amines) which uses, instead of amines, organic liquids that are neither toxic nor poisonous and that once exhausted can be regenerated and reused.

IdroDES – DESULPHURIZATION

THE CORROSIVE AGENT TO BE KEPT MOST UNDER CONTROL IS HYDROGEN SULFIDE (H2S).

The **IDRO.deS process** is an external **desulphurization** system of chemical-biological biogas and is based on hybrid filter technology with the addition of air in the raw gas.
The filter removes hydrogen sulfide from biogas through passage in the module.
This removal is achieved through an absorption process that occurs at the filtering material, UgnCleanPellets® S3.5.

The raw biogas, introduced from below after mixing in line with external air, passes through the filtering material and comes out from above, **purified**.
The module also provides a heating system with coils and a pellet humidification system in order to guarantee optimal conditions within the filter for the growth of microorganisms intended for the removal of sulfur.

A two-module version is also available to avoid any addition of oxygen in biogas, an indispensable solution for an upgrade to biomethane technology.

IdroDES – THE ADVANTAGES

- **Removal of H2S** up to levels below 5 ppm
- The pellets have a **high regenerating power and longer life** than competing systems
- Longer filtering material life
- Low management costs (low operating costs per kg of sulphur eliminated)
- Economic and environmental sustainability
- Avoid corrosion problems inside the digester
- It is not subject to corrosion as it is made from polyethylene reactor (PE)

Biogas desulphurization from anaerobic digestion percolate waste from an incineration plant Zona Erfurt - Gera

IDRO GROUP
Realizations

Biogas Plant 999kW – Az. Agricola Tosetto

PLACE
Limena (PD)

CLIENT
Azienda Agicola Tosetto

INPUT MATERIAL
Beef manure, agricultural biomass

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
999kW el.

Biogas Plant 999kW – Az. Agricola Ferrari Ciboldi Donata

PLACE
Casalmorano (CR)

CLIENT
Az. Agricola Ferrari Ciboldi Donata

INPUT MATERIAL
Beef manure, agricultural biomass

TYPOLOGY
Anaerobic digestion of livestock waste

POWER
999kW el.

Biogas Plant 249kW – Soc. Agricola San Salvatore

PLACE
Sospiro (CR)

CLIENT
Az. Agricola Ferrari Ciboldi Donata

INPUT MATERIAL
Pig slurry, additional biomass, agri-food residues

TYPOLOGY
Anaerobic digestion of livestock waste with system nitrogen abatement in the digestate

POWER
249 kW el.

Biogas Plant 999kW – Soc. Agricola AL.BE.RO.

PLACE
Borghetto (PC)

CLIENT
Az. Agricola Ferrari Ciboldi Donata

INPUT MATERIAL
Beef manure, agricultural biomasses

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
249 kW el.

Biogas Plant 999kW – Soc. Agricola Agriferr

PLACE
Rivarolo del Re (PC)

CLIENT
Soc. Agricola Agriferr

INPUT MATERIAL
Agricultural biomass, additional biomass, agri-food residues, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
999 kW el.

Biogas Plant 999kW – Soc. Agricola Cortetano

PLACE
Sesto Cremonese (CR)

CLIENT
Società Agricola Cortetano

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
999 kW el.

Biogas Plant 999kW – Soc. Agricola Eridano

PLACE
Piacenza (PC)

CLIENT
Soc. Agricola Eridano

INPUT MATERIAL
Agricultural biomass, livestock waste, agri-food residues, additional biomass

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass with drying of solid digestate

POWER
999 kW el.

Biogas Plant 150kW – Soc. Agricola Mariani Sante

PLACE
Dovera (CR)

CLIENT
Soc. Agricola Mariani Sante

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass with recirculation of solid digestate

POWER
150kW el.

Biogas Plant 250kW – Soc. Agricola Dedé Alberto

PLACE
Borghetto Lodigiano (LO)

CLIENT
Soc. Agricola Dedé Alberto

INPUT MATERIAL
Livestock waste, biomass
agri-food agriculture and by-products

TYPOLOGY
Anaerobic digestion of livestock waste, biomass , agri-food agriculture and by-products

POWER
250 kW el.

Biogas Plant 250kW – Stalla Sociale La Molinella

PLACE
Mira (PC)

CLIENT
Stalla Sociale La Molinella

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
250 kW el.

Biogas Plant 250kW – Stalla Sociale Fossalunga

PLACE
Fossalunga di Vedelago (TV)

CLIENT
Stalla Sociale Fossalunga

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
250 kW el.

Biogas Plant 250kW – Stalla Sociale Simeone

PLACE
Castelfranco Veneto (TV)

CLIENT
Stalla Sociale Simeone

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
250 kW el.

Biogas Plant 250kW – Coop. Agricola San Giacomo

PLACE
Galliera Veneta (PD)

CLIENT
Coop. Agricola San Giacomo

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste with system nitrogen abatement in the digestate

POWER
250 kW el.

Biogas Plant 200kW – La Battistei Stalla Sociale

PLACE
Cittadella (PD)

CLIENT
La Battistei Stalla Sociale

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
200 kW el.

Biogas Plant 999kW – Soc. Parazzoli Enrico

PLACE
Casalbuttano (CR)

CLIENT
Soc. Parazzoli Enrico

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Bovine livestock waste and agricultural biomass

POWER
999 kW el.

Biogas Plant 999kW – Soc. Asola Green Power

PLACE
Asola (MN)

CLIENT
Soc. Asola Green Power

INPUT MATERIAL
Livestock waste and agricultural and FORSU biomass

TYPOLOGY
Digestione anaerobica di reflui zootecnici e biomasse agricole e FORSU

POWER
999 kW el.

Biogas Plant 600kW – Coop. Bassa Bergamasca

PLACE
Romano di Lombardia (BG)

CLIENT
Az. Agricola Ferrari Ciboldi Donata

INPUT MATERIAL
Agricultural biomass, livestock waste

TYPOLOGY
Anaerobic digestion of livestock waste and agricultural biomass

POWER
600 kW el.

Biogas/Biomethan Plant 500mc/h – Indonesia

PLACE
indonesia
(project in progress)

INPUT MATERIAL
Bovine Manure

TYPOLOGY
Anaerobic digestion of livestock waste

POWER
1000 m3/h biogas – 500 m3/h methan

Via Comina, 39 - 20831 Seregno (MB) - Italy
VAT Number: 00762220960
Business Register: Milano-Monza-Brianza-Lodi
REA: 1558010
Share Capital.: € 100.000 (i.v.)
info@idro.net
Tel. +39 0362 2751.1