
PURE
BIO
COATINGS

The sustainable choice for latest generation wood, metal and plastic materials production

Pure Bio Coatings is the green range of

- coatings with raw materials from renewable sources
- coatings with raw materials non-issued from hydrocarbons
- zero emissions of volatile organic compounds coatings

Pure Bio Coatings range is Renner Italia engagement **against climate change**. A **concrete** and **immediate** response, offered to latest generation **wood, metal and plastic materials industries**. These institutions cannot postpone the appointment with sustainability challenge.

Pure Bio Coatings products guarantee top features in the fields of **protection, resistance and design**. Concerning performances, these products can be compared to Renner standards, but they can boast the most advanced technologies aimed at **preserving the environment**.

Comparison of coating process in domestic space

Why to prefer Pure Bio Coatings to products with petroleum derivatives

To design and to make a building in a **sustainable** and **efficient** way make it a **green building**. The architecture, focusing primarily on the **wholesomeness of housing**, bases the coating process on Pure Bio Coatings.

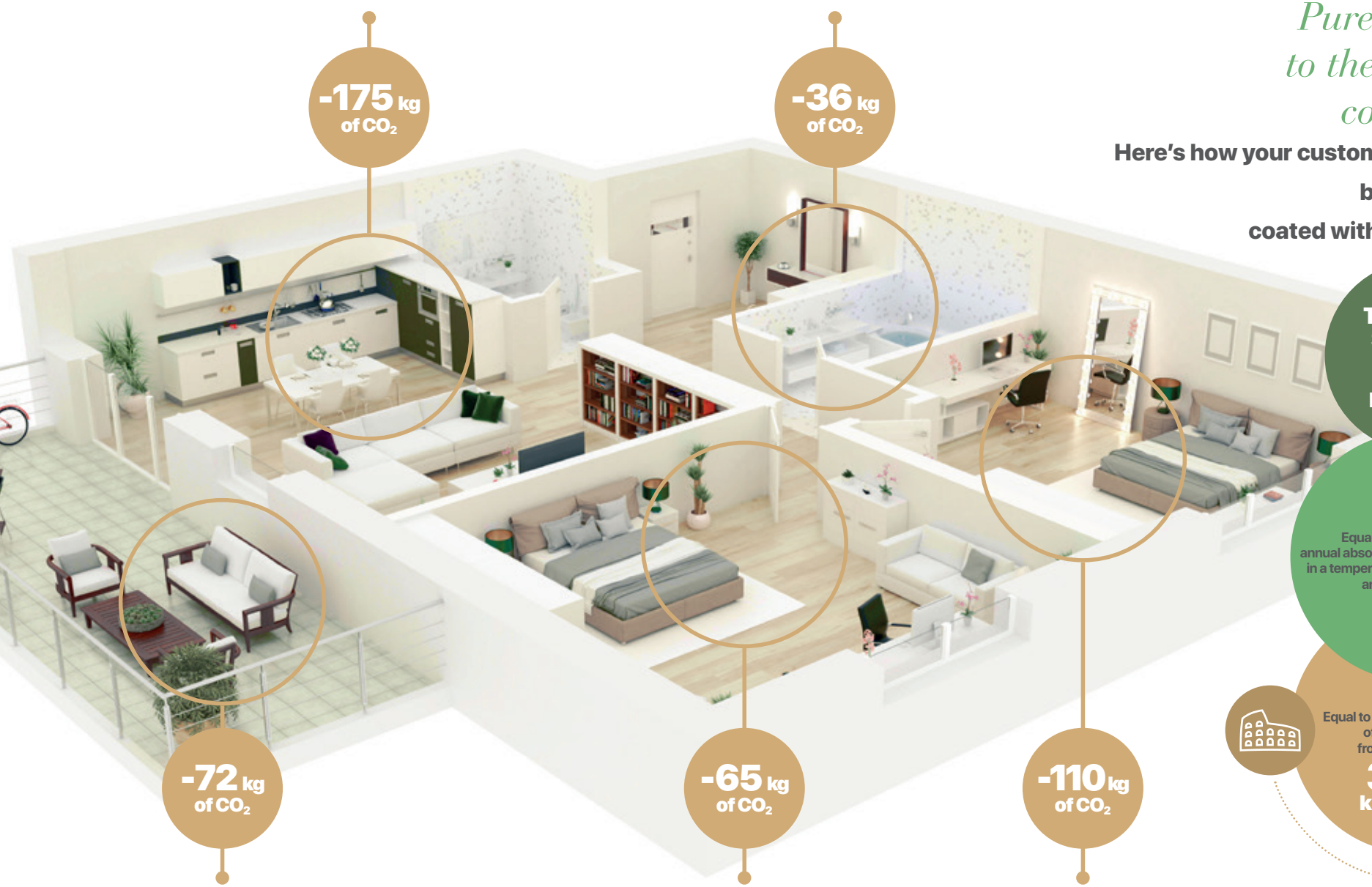
There are more and more architects and designers highlighting their activity with choices of high energy and environmental standard. The coatings don't avoid green building rules.

In a market, which is more and more aware, forward-looking and demanding, Pure Bio Coatings range protects and decorates furniture, floorings, claddings, doors and windows, by drastically reducing the environmental impact and aiming at the **well-being of people**.

Anticipate and explain your green choice.

CO_2 emissions savings in a house, preferring Pure Bio Coatings to the conventional coating systems

Here's how your customer helps the planet by choosing a house coated with Pure Bio Coatings.



TOTAL CO_2 SAVINGS
-485 kilograms

Equal to the average CO_2 annual absorption of a thicket, situated in a temperate climate urban context and composed by
32 trees

Equal to the average emissions of a car, travelling from Rome to Cairo
3833 kilometres

Waterlike and lacquered, for interior and for exterior:

Pure, the high technology green coatings

Renner Italia mission is **to protect the beauty of the world that surrounds us**. This is the reason why all our coatings are created respecting man and nature. We're aware of the role played by industry in the challenge of control of climate changes.

Pure Bio Coatings range is composed of water-based and solvent-based coatings, both for interior and for exterior. It includes matt and glossy, waterlike and pigmented basecoats and topcoats.

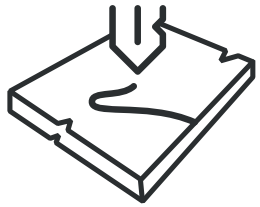
Pure Bio Coatings range aims at

- reducing carbon dioxide emissions
- reducing petroleum derivatives
- using raw materials from recycling processes
- increasing indoor air quality
- creating healthier and more liveable places
- reducing natural resources consumption
- eliminating wastes
- developing circular economy systems

The green perspective does not waive the performances.
Pure Bio Coatings still increase the top features
of Renner range.

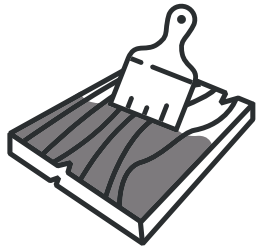
Easy application and speedy drying

Thanks to the special bioresins in their composition, Pure Bio Coatings are able to adapt to every application need over industrial lines. The speed of drying of this range keeps the production processes and the stackability time of wood, metal and PVC objects efficient.



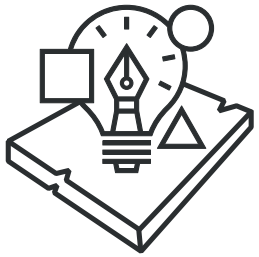
Resistances and hardness

Pure Bio Coatings products are tested inside Renner Italia hi-tech laboratories and are a benchmark in the fields of chemical resistances and resistances to light and to atmospheric agents. They also shield wood, metal and PVC, in particular, from the harmful UV radiation. Pure Bio Coatings hardness is sometimes higher than the one offered by products containing petroleum derivatives. The advantages in terms of resistance to scratches, impacts, strikes, heat and every other stress source are evident.



Non-yellowing power

Latest generation resins, used inside Pure Bio Coatings, are the final answer to yellowing phenomenon. In other words, they're the best ally to respect and keep the aesthetic result, studied by interior designers.



Creativity and beauty

To satisfy intellectual design and the creative activity of designers, just like all Renner products, Pure Bio Coatings range can boast endless aesthetic solutions, by means of the most sough-after shades and special effects.

For interior

- 80% renewable, eco-friendly and plant origin (water + bioresins) raw materials
- No emissions* or with very low VOC content
- CO_2 emissions reduction
- No formaldehyde
- No heavy metals
- Waste reuse and introduction into circular economy
- Chemical resistances
- Mechanical resistances
- Waterproofness and hydrophobia
- High covering power
- 40% renewable content over the resin solid content
- Softness
- Non-yellowing power
- Application in all plant lines/typologies
- Ultra-speed drying
- Industrial work and production efficiency

**Exclusive feature of PG-xxYO product range. VOC are compounds which have high volatility.*
To learn more about the zero emissions products, consult the focus on the following pages.

THE BEST PERFORMANCES. ALWAYS

For exterior

- 80% renewable, eco-friendly and plant origin (water + bioresins) raw materials
- Very low VOC content
- CO_2 emissions reduction
- No formaldehyde
- No heavy metals
- Waste reuse and introduction into circular economy
- Resistances to degrading atmospheric agents and to pollution
- Chemical resistances
- Mechanical resistances
- Waterproofness and hydrophobia
- High covering power
- 40% renewable content over the resin solid content
- Elasticity
- Application in all plant lines/typologies
- Ultra-speed drying
- Industrial work and production efficiency
- Easy overcoating or without sanding

Choose the eco-friendly product, suitable for your needs

There are many added values of
Renner Italia eco-friendly products.
Choose the most suitable formula for your needs.
Ask for more information to the coating experts
of our technical service.

Or, contact us at **solutions@renneritalia.com**

All the products do not contain harmful substances

Symbols and main features

The coatings with no emissions of volatile organic compounds.
They're the most innovative and the less dangerous for the environment.

The solvent-based products boasting the high build with the maximum concentration of raw materials from plant origin renewable sources.

They do not contain styrene, a particular hydrocarbon which can cause health problems.

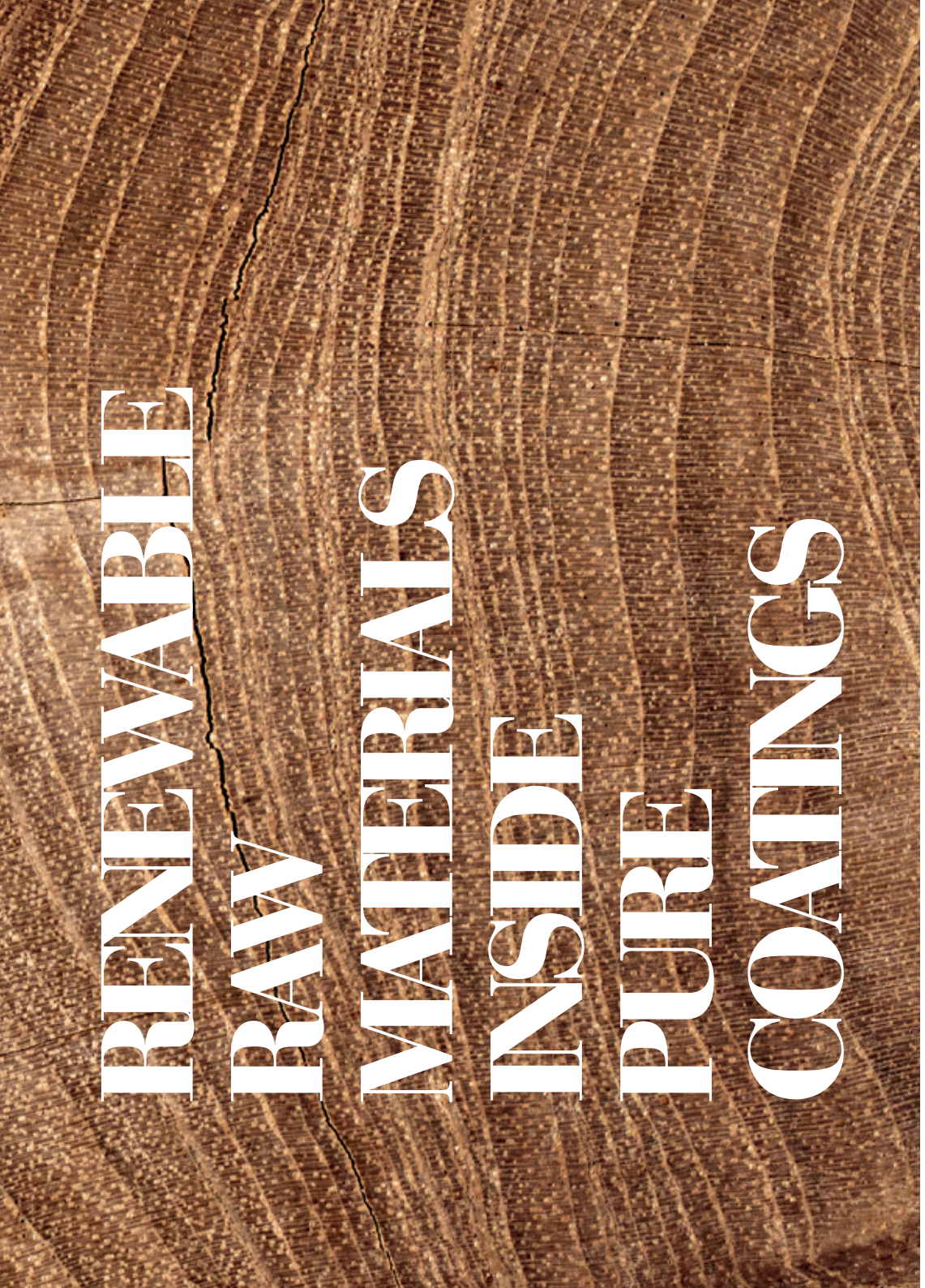
Solvent-based products which do not contain aromatic compounds, such as toluene, xylene, ethylbenzene, which can be harmful to human health.

The coatings with no alkylphenol ethoxylate. This substance is dangerous for the environment. It is particularly toxic for water organisms.

Coatings that do not contain formaldehyde. A certain quantity of this substance can create irritation to the respiratory system and to the sight, in particular to allergic and asthmatic individuals.

These coatings are issued from the synthesis of non-refined plant substances, such as linseed oil and carnauba wax. Thus, they do not contain heavy metals.

Certified coatings in A+ class of VOC emissions.
A+ class indicates a very low emissions level.



Thanks to its renewable sources raw materials content, Pure coatings **reduce CO_2 emissions and battle the greenhouse effect, which changes the climate.**

Renewable source

A renewable **source** is **inexhaustible**.

Sustainable source

If the time of employ of the resource coincides with the time that the resource itself needs to become available again, in this case the resource is also **sustainable**.

Example. The tree is a renewable source. The wood to create house decorations is obtained from the tree. If the decorations are used for a sufficient time for the cut plant to regrow (rational use), the tree is both a renewable and a sustainable resource.

Sustainability concerns the durability of the objects. The creation of a long-lasting product, by means of the high-quality Pure Bio Coatings and the adhesion to an aware behaviour code, helps to make an object a friend of nature. Also, the partial substitution of petroleum with renewable sources raw materials helps to reduce the climate change.

Example. The ethyl acetate is industrially produced by means of esterification of the acetic acid with ethanol. The same molecule can be issued by means of fermentation of corn starch (in this case, we talk about bioethanol).

Inside a Pure coating, the renewable source resins have the same behaviour of the resins, issued from hydrocarbons. The change from petroleum to renewable source does not affect the final quality of the coating. But it positively affects the reduction of the CO_2 emissions in the atmosphere.
For this reason, wood, metal and plastic industry can choose with conviction Renner Italia green coatings.

ISCC CERTIFICATIONS AUTHORITY

Pure Bio Coatings boast raw materials, complying with the International Sustainability and Carbon Certification. ISCC is a sustainability certification protocol, covering the whole production chain that leads to green raw materials. It guarantees the traceability of the bio-based raw materials starting from the country of origin. The used renewable raw materials are renewable organic waste materials, non-concerning human food.

This kind of certification assumes a specific value in building blocks suppliers selection, used for polymers synthesis with partial green content.

Choosing ISCC means aiming at:

- implementing policies against deforestation
- protecting territories with high biodiversity
- protecting the ground, the water and the air
- preserving the rights to health, security and environment
- measuring and reducing greenhouse gases
- tracking the distribution chain
- linking the little producers in the distribution chain
- complying with laws and international agreements
- managing in a good way

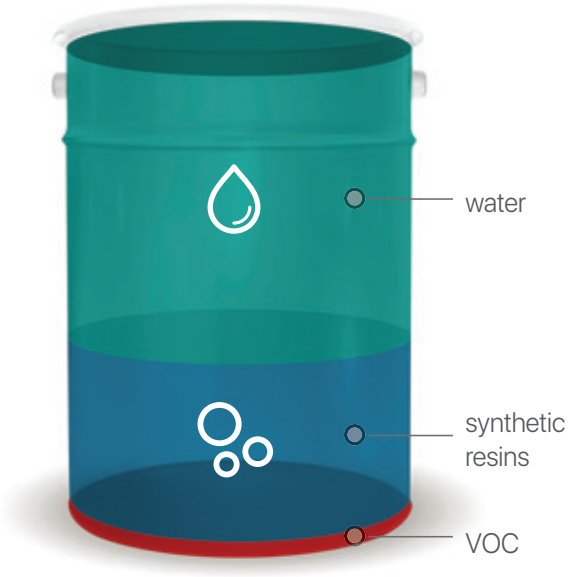
More than green: the first zero emissions coating

Pure Bio Coatings are made of plant origin **raw materials not earmarked for human food and are produced by means of electric energy from renewable sources**. Inside this green range, a place of honour is given to the first zero emissions product.

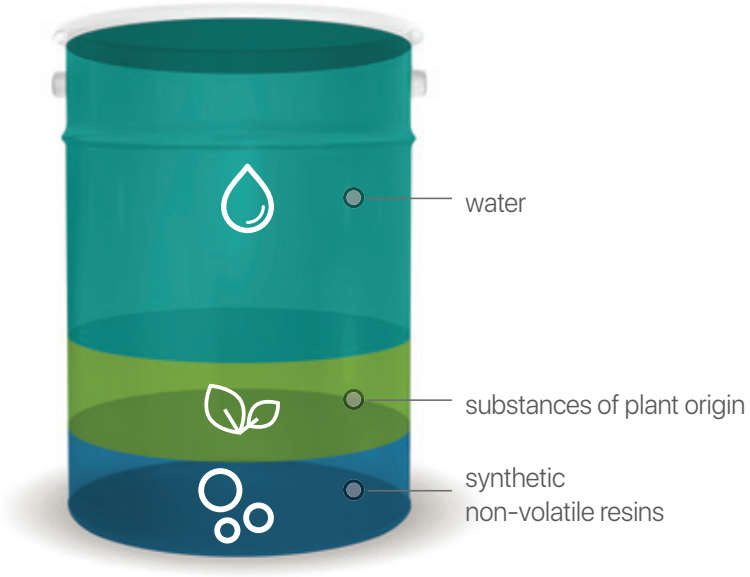
Developed to satisfy the performances offered by the basecoat and the topcoat for indoor furniture and floors, PG-xxYO was born from the synthesis of unrefined vegetable substances (such as linseed oil and carnauba wax) mixed with raw materials of guaranteed origin. It's a transparent with three mat degrees or whitened, 1k product with top performances in the fields of hardness, resistance to cold liquids, waterproofness, light resistance, applicability, sandability, drying, stackability. The high technologic content of natural resins and raw materials makes PG-xxYO suitable both for industrial manufacturing process and for masterly application by hand.

Choose the first zero emissions coating!

Standard water-based coating



Zero emissions coating



PURE PROJECT AND CIRCULAR ECONOMY

Circular economy is the production and consumption model, implying sharing, reuse, restoration, and recycling of goods aimed at extending their lives.

The aim of the circular economy is to reduce the wastes at the least. Once the product has achieved his first purpose, its constituent materials are introduced again into the economic circle to generate further value.

Circular economy contrasts with the linear economic model, which is based on this process: to extract – to produce – to use – to throw.

Nowadays, the recycled materials are less than 12% of the European material demand, and less than 9% worldwide. European Union recycling purposes within 2030 are about 70% of all the packaging wastes and 60% of urban ones.

In this background, Renner Italia Research and Development laboratory decided to do its part, thanks to the innovative employment of **resins, issued from the recycling of plastic polymers materials** (14% of solid content is issued from recycled PET plastics).

THE COATINGS FOR THE SPACE RESEARCH

The project with CNR and ESA to protect the world plant life

In 2023, the European Space Agency will launch in orbit Flex. The satellite will communicate with a topcoat, created inside Renner laboratories, to monitor the health condition of the plant life worldwide.

ESA's Earth Explorer eighth mission involves Renner Italia and the National Research Council (CNR – Consiglio Nazionale delle Ricerche). Flex, acronym of Fluorescence Explorer, is ESA's satellite to be launched in orbit in 2023 to monitor the health of the forests. It will be equipped with a tool, able to map the fluorescence of the plant life in the spectral domain between 500 and 880 nanometres, detecting the light emitted by the plants. Flex will systematically check-up the tenuous reddish brilliance emitted by the plants during photosynthesis, at 815 km from the Earth. The plants fluorescence, which is invisible to the human eye, is an extraordinary diagnostic tool, able to calculate the photosynthesis activity of the Earth's systems and to diagnose the plant life stress.

Global changes

The greenhouse gases emissions cause a fast climate change. But this is not the only change factor. According to FAO, since 1990 up until now, we destroyed 130 million hectares of forest. A huge surface: equatable with the whole South Africa. I.e. four times Italy's surface. A wider quantity of areas is transformed into cultivation. The situation must be kept under observation. According to the International Panel on Climate Change, the atmosphere will meaningfully heat up. A considerable increase of the sea level and important drought crisis will happen. In the year 2050, the global population will reach 9/11 billion individuals, instead of the current 7,7 billion, with inevitable repercussions on the natural resources. The World Bank estimates a food request increase between 50 and 100%. The population growth will affect the water and energy request, which will double or even triple.

It's time to stop and embrace the precepts of bio-economy, which finds its roots in the sustainable employment of raw materials.

A reliable indicator of the photosynthesis activity will support the right management of the natural resources and, in particular, of the agriculture. Flex was born for this purpose.

Flex satellite monitors the health condition of the forests

Plants use the sunlight as an energy source to grow and reproduce.
But the absorbed radiation is often excessive and it has to be dispersed. The photosynthesis systems disperse it partly as light at wavelengths between 640 and 800 nanometres. We're on the border between the red and the near-infrared. Catching this glowing signal allows to analyse in real time the efficiency of the biochemical process and the physical conditions of the plants. And this is the scope of the spectrometer of whom Flex is equipped with.
In drought conditions, for example, the plant stress appears with a reduction of the fluorescence signal, which allows to prematurely estimate potential water lacks.

The photosynthesis and the life on Earth

Considering the role played by the photosynthesis for life on Earth, Flex has an extremely important mission.
The photosynthesis is the biochemical process of primary production of organic compounds from inorganic substances.

$$6\,CO_2 + 6\,H_2O \rightarrow C_6H_{12}O_6 + 6\,O_2$$

6 molecules of carbon dioxide + 6 molecules of water

=

1 molecule of glucose + 6 molecules of oxygen

The photosynthesis is the process, allowing the preservation of life on Earth. By means of the energy of the sun, it recycles a waste (CO_2) to produce the oxygen we breathe, the food we eat and an enormous quantity of materials we constantly use, such as wood and textile fibres.

The role of CNR and Renner Italia's engagement

In order that Flex will maintain unchanged the accuracy of its measurement, the spectrometer on board must compare the variable fluorescence of chlorophyll with that one of the emitter to a constant and known signal.
The satellite must detect the emission of an artificial surface with similar spectral characteristics to those of the reflectance and the fluorescence of the chlorophyll.
As indicated by the researcher of CNR, Renner's laboratory created a coating system, which is suitable to maintain unchanged the emission of a precisely selected luminescent molecule, with a signal similar to that of plants.
When the satellite Flex will go into the orbit, in 2023, it will talk to Renner coating, applied over a 1 square km MDF panel, located inside a field, managed by CNR, in Tuscany.

The eight satellites Earth Explorer for the planet care

Flex is the last of the ESA scientific missions with the aim of monitoring the Earth. We can already find into the orbit Goce (launched in 2009 to register the changes of gravitational fields of Earth), Smos (that analyses the saltiness of oceans and the humidity level of lands), Cryosat-2 (that has been controlling the polar ice since 2010), Swarm (trio of satellites, that is mapping the terrestrial magnetism), Aeolus (laser mission, that measures the winds of the entire world), Earthcare (examines the role of clouds in climate changes), Biomass (that will estimate the carbon contained in the most important forests).

RENNER ITALIA AND THE ENVIRONMENT

A long-time history

Since the birth of Renner Italia, we believe that chemistry plays a leading role in the challenge of sustainable development. In other words, it must satisfy the contemporary needs, protecting the rights of the future generations.

For this reason

- since forever **Renner plants** are able to produce exclusively **water-based coatings**
- our **industrial site** is fed by **100% of electrical energy**, from **renewable sources**
- inside union agreements we included bonus for workers, choosing rigorous practices of **energy saving** during daily work. This venture earned us the *Premio Impresa Ambiente*, in 2012
- we package our products in a special high-density polyethylene removable bag from the metal cans to **reduce special hazardous wastes**
- wherever we are, we support the use of our **water-based coatings, with no formaldehyde and heavy metals**
- we cooperate with institutes, such as *CNR – Consiglio Nazionale delle Ricerche and ESA –European Space Agency*, for **projects concerning planet care,** supporting **aerospace technology**.

Pure Bio Coatings are a new coherent step on the road of our industrial experience, which is sustainable since forever.

Pure Bio Coatings is a trademark of Renner Italia
Via Ronchi Inferiore, 34 - 40061 Minerbio (BO) Italia
T. +39 051 6618 211 F. +39 051 6606 312
www.renneritalia.com - info@renneritalia.com

03/20 VAR816 EN