

Técnicas Reunidas

Técnicas Reunidas is a leading international engineering and industrial plant construction company that, through its Proprietary Technology Development Division (PTDD), develops and commercializes technologies focused on **metal recovery, critical raw materials in a circular economy framework, and industrial decarbonization.**

Técnicas Reunidas acts as both technology licensor and engineering partner, supporting industrial projects from concept development to commissioning through an integrated technology and engineering approach



Coarse Fraction
Grey Mass



Fine Fraction
Grey Mass

Value from solar waste

The **Resil²volt**® process extracts valuable materials from photovoltaic waste, offering a sustainable substitute for primary resources. By reintroducing these materials into the market, it diminishes reliance on virgin sources, fostering the circular economy and promoting sustainability within the renewable energy sector.

Feedstock:

Solar cell concentrates generated from Si based photovoltaic modules.

Products:

Si: Purity: >99%. M.G-Si

Ag⁰: Purity: >95%.

AlCl₃ Solution (25%): Purity: >99%.

Metal Powder Blend: Cu, Sn, Al, Ag, Pb and others.



Silver Dust



Metallurgical
Grade Silicon

Key advantages of Resil²volt[®]

01

Simplified process, with a reduced number of operations.

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02

High recovery efficiency for the main elements.

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03

No waste generation, widely available chemicals and low operational costs

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04

Flexibility to treat different feedstock compositions and granulometry

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05

Scalability based on widely proven hydrometallurgical techniques.



Stages of the process

01

SELECTIVE LEACHING:

A specially developed hydrometallurgical treatment allows the silicon metal contained in the grey mass to be separated and high-purity silicon suitable for industrial applications to be obtained.

02

SILVER RECOVERY:

Silver is selectively recovered from the leach solution through a specialized process that yields high-purity metallic silver with excellent recovery rates.

03

FINAL PURIFICATION AND OBTAINING CO-PRODUCTS:

The final stage allows for the recovery of a 25% aluminum chloride solution and a valuable metal fraction containing elements such as copper, tin, aluminum, or lead.



TR / PROPRIETARY TECHNOLOGY DEVELOPMENT DIVISION

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Resil²volt[®] Technology

Recovery of silicon and silver
from photovoltaic waste.

Resil²volt[®] technology is a hydrometallurgical solution developed to recover valuable materials from photovoltaic panel waste. From grey mass (also known as silicon dust), generated through physical and/or thermal processes applied to modules at the end of their useful life, the technology enables the recovery of high-purity metallic silicon, metallic silver, and other valuable co-products.

