

Photovoltaic Industry Silicon Sludge Patent Technology



Overview

This is a technology related to a silicon recovery method for silicon cathode materials using waste silicon sludge discharged from solar power processes, which improves the pipe joint structure and prevents leakage of waste sludge and hot air transported through pipes. Department of Energy (DOE) Solar Energy Technologies Office (SETO) supports crystalline silicon photovoltaic (PV) research and development efforts that lead to market-ready technologies. Below is a summary of how a silicon solar module is made, recent advances in cell design, and the PatSnap Eureka AI that helps you search prior art, draft patents, and assess FTO risks, powered by patent and scientific literature data. Sludge is a semi-solid slurry that can be produced from a range of industrial processes, from water treatment, wastewater treatment or on-site sanitation. Chemical Vapor Deposition (CVD) is widely used in manufacturing of solar photovoltaic cells. Polluting by-products include deposition of a silicon film, formation of SiO_2 powder. The IEA Photovoltaic Power Systems Programme's (IEA-PVPS) latest report on solar panel recycling offers a comprehensive review of all existing technologies in this market segment, from pure mechanical recycling to innovative techniques such as as light pulse treatment, water-jet cleaning.

Article Content

(PDF) Solar photovoltaics: Silicon cell principles,

An overview is given concerning current industrial technologies, near future improvements and medium term developments in the field of industrially

Advances in solar photovoltaics: Technology review and patent trends

Introducing an exclusive definition of the technological system of photovoltaics, this article aims to accurately identify the relevant patent applications and to analyse their trends geographically,

Advances in photovoltaics Technology trends for solar energy

This technology insight report presents technology trends in the field of photovoltaics over the span of five decades. To this end, it closely monitors patenting activities across more than 30 technologies in

IEA-PVPS identifies 456 patents in PV module recycling

A global patent search identified 456 patents, with 80% of patents targeting recycling processes for silicon-based modules, cell metals, polymers,

Silicon Recovery from Kerf Slurry Waste: a Review of

Request PDF | Silicon Recovery from Kerf Slurry Waste: a Review of Current Status and Perspective | Over the past years, the photovoltaics (PV)

Separation of Si and SiC from Photovoltaic Industry Waste ...

Silicon ingot cutting process generates slurry waste which mainly contains lubricant oil, silicon and silicon carbide particles. In this study, slurry waste was the subject of a primary decantation which

Emerging photovoltaic materials and technologies

In this period of rapid development in the photovoltaic industry, this societal and technology trend report conducts a preliminary study of the emerging photovoltaic materials and technologies exemplified by

Scalable Upcycling Silicon from Waste Slicing Sludge for High ...

Meanwhile, silicon has already been widely applied as a material of choice in photovoltaic, semiconductor and microelectronics industries for decades, which brings in a steady

Crystalline Silicon Photovoltaics Research

DOE supports crystalline silicon photovoltaic (PV) research and development efforts that lead to market-ready technologies.

Photovoltaic's silica-rich waste sludge as supplementary cementitious ...

Abstract Waste sludge, a solid recovered from wastewater of photovoltaic-industries, composes of agglomerates of nano-particles like SiO_2 and CaCO_3 . This sludge deflocculates in

Silicon-Based Technologies for Solar to Photovoltaic Conversion

Solar energy, powered by silicon solar cells, plays a critical role in this transition with silicon (Si)-wafer-based technology holding 97% of the market share.

Review of silicon recovery in the photovoltaic industry

Abstract The photovoltaic industry is developing rapidly to support the net-zero energy transition. Among various photovoltaic technologies, silicon-based technology is the most advanced,

Sludge patented technology retrieval search results

PatSnap Eureka AI that helps you search prior art, draft patents, and assess FTO risks, powered by patent and scientific literature data. Sludge is a semi-solid slurry that can be produced from a range

Current trends in silicon-based photovoltaic recycling: A technology ...

Photovoltaic recycling policies and legislation require further development. Silicon-based photovoltaics (Si-PVs) are a leading renewable energy technology that has seen global acceptance.

Status and perspectives of crystalline silicon photovoltaics in ...

This Review discusses the recent evolution of this technology, the present status of research and industrial development, and the near-future perspectives.

An Effective New Treatment of Fluoride-Containing

This article concerns an effective and inexpensive detoxification of fluorinated sludge, developed by the authors during research into the sludge

Trend on the Recycling Technologies for Silicon Sludge by the Patent ...

In this paper, patents and paper on the recycling technologies of the silicon sludge were analyzed.

Inventions for photovoltaics increased more than

The number of photovoltaic inventions started to grow considerably in the late 1990s, increasing more than seventeen-fold over the past three

Utilization of Waste Polysilicon Sludge in Concrete

Polysilicon sludge obtained from the photovoltaic industry is also a type of waste material that can be used as SCM because it has high content of reactive SiO₂. This study investigates the effects of

Review of silicon recovery in the photovoltaic industry

The photovoltaic industry produces secondary silicon resources, which have been proved to be recyclable. This article offers a comprehensive review of the progress made in PV-SSCR recovery,

Method for recovering silicon for silicon anodes by using waste sludge ...

This is a technology related to a silicon recovery method for silicon cathode materials using waste silicon sludge discharged from solar power processes, which improves the pipe joint...

Recycling of photovoltaic silicon waste for high-performance porous ...

The pSi/Ag/C/G composite exhibits excellent electrochemical performance. The rapid development photovoltaic industry has generated a huge amount of waste ultra-fine silicon cutting

Silicon Recovery from Kerf Slurry Waste: a Review of

Over the past years, the photovoltaics (PV) industry has been experiencing a strong economic growth worldwide. This development is due to

Progress in silicon resource recovery and high-value utilization from ...

<p>With the rapid development of photovoltaic industry, the amount of silicon cutting waste is constantly increasing. Recycling and high-value utilization of silicon resources from silicon cutting

Recycling of silicon from photovoltaic production sludge

First a further physical conditioning of the sludge takes place to reduce the content of silicon carbide. For reduction of the metallic impurities,

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.boxesgaramella-andria.it>

Email: sales@boxesgaramella-andria.it

Phone: +39 331 584 7291

Address: Via delle Industrie, 15, 20154 Milano, Italy

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