5645950

PROCESS FOR SUPPLYING AIR TO A FUEL CELL SYSTEM

Benz Uwe; Fleck Wolfra; Hornburg Gerald Uhldingen, GERMANY assigned to Daimler-Benz AG

A process and an apparatus control output of an air-breathing fuel cell system which consists of an air supply line, a fuel cell, an air exhaust line, and a separate gas supply system for hydrogen gas. To control the fuel cell output, an adjustable rotary speed compressor is located in the air supply line and a variable absorption capacity expander is located in the air exhaust line. The compressor, the expander, and an additional electric motor are positioned on a common shaft. The expander converts the pressure energy contained in the exhaust air into mechanical energy and delivers that energy via the common shaft to the compressor. The air volume flow is controlled by the compressor rotary speed and adjusted to a preset value. A preset working pressure is established in the fuel cell system by adjusting the absorption capacity of the expander.

5645951

METHOD OF GENERATING ELECTRIC ENERGY FROM BIOLOGICAL RAW MATERIALS

Johnssen Wolf Munchen, GERMANY assigned to Hannelore Binsmaier Nee Gallin-Ast

A method of generating electric energy from biological raw materials. A biological raw material is used which is substantially free from sulfur of natural origin. A combustion gas is generated from biological raw materials in an oxidation reactor by partial oxidation. An oxygen/biological raw material proportion of ingredients and a gas phase temperature are maintained which ensure a combustible gas virtually free of nitrogen oxides. After removing suspended matter from the combustible gas in a separator, the combustible gas is converted into electric energy in fuel cells having a porous anode, a porous cathode and a suitable electrolyte.

5646852

METHOD AND DEVICE FOR VEHICLE FUEL CELL DYNAMIC POWER CONTROL

Lorenz Helmut; Noreikat Karl-Ernst; Klaiber Thomas; Fleck Wolfram; Sonntag Josef; Hornburg Gerald; Gaulhofer Andreas Unterensingen, GERMANY assigned to Daimler-Benz Aktiengesellschaft

A method and an apparatus are provided for controlling the power of an electric drive unit in a vehicle. The drive unit is supplied with electrical energy by a fuel cell in the vehicle. On the basis of a power request which is determined from the accelerator pedal position, the air flow rate required to provide the set power from the fuel cell is calculated and set by controlling rotational speed of a compressor arranged in the air intake line to the fuel cell. To prevent the fuel cell from producing more electrical power than the drive unit can absorb, the drive unit acts limits the power request by emitting appropriate error messages. The set value for the power is fed to the drive unit and can be corrected such that the drive unit never demands more power than the amount of power instantaneously produced by the fuel cell to prevent fuel cell collapse.

5648182

FUEL CELL POWER GENERATION SYSTEM

Hara Takeshi; Kato Kenji; Takada Noriyuki Aichi ken, JAPAN assigned to Kabushikikaisha Eqous Research; Aisin AW Co Ltd

A fuel cell power generation system suitable for powering an electric vehicle and which provides high degree of safety when restarting power generation. The system is small in size, light in weight and low in cost of power generation. Three-way valves are provided in an exhaust-passage extending from a fuel-reforming unit and in pipes connecting the fuel-reforming unit, a CO removal unit and a fuel cell and as a gas exhaust valve on an anode side exhaust passage extending from the fuel cell. Accordingly, upon shut down, after exhausting residual reformed gas, combustion exhaust gas from a combustion unit associated with the fuel reforming unit

is passed through the respective units for purging the residual reformed gas.

BATTERY MATERIALS

5632863

BATTERY PYROLYSIS PROCESS

Meador W R Pecos, TX, UNITED STATES

Used batteries and other material for reclamation and recovery or environmentally safe disposal are transferred from a feed bin by an auger into a crusher and then into a pyrolysis chamber. The feed system excludes air or oxygen from passing through the auger and crusher into the pyrolysis chamber. The material from the crusher is transferred by an auger through the pyrolysis chamber which is heated to a decomposition temperature between 350° and 650° F. and is decomposed. The pyrolysis chamber includes a vapor recovery system for removing the vapors and maintaining a vacuum in the pyrolysis chamber. The vapors are withdrawn through a heat exchanger and into the liquid/gas separator where the condensed liquids are removed and the gas is further processed. The residue from the pyrolysis chamber is discharged into a residue recovery system which includes a closed auger for transferring the residue from the pyrolysis chamber into a bin. A pressure sensitive switch which maintains a minimum level of solid material in the bin which acts as a seal to prevent air or oxygen from entering the pyrolysis chamber. The residue is transferred to a screening collector having an upper and a lower screen. The screens are vibrated and the finer sized metals are collected from the bottom of the screening collector, the heavier metals off the lower screen and the paper and plastic off the upper screen.

5633098

BATTERIES CONTAINING SINGLE-ION CONDUCTING SOLID POLYMER ELECTROLYTES

Narang Subhash; Ventura Susanna C Redwood City, CA, UNITED STATES assigned to SRI International

Novel batteries containing single-ion conducting polymer electrolytes (SPEs) are provided. The polymers are polysiloxanes substituted with fluorinated poly(alkylene oxide) side chains having associated ionic species. The polymers have the following structure (*See Patent for Chemical Structure*) (I) in which R1, R2 and n are as defined herein.

5633099

CARBONATE COMPOUNDS, NON-AQUEOUS ELECTROLYTIC SOLUTIONS AND BATTERIES COMPRISING NON-AQUEOUS ELECTROLYTIC SOLUTIONS

Yokoyama Keiich; Hiwara Akio; Fujita Shigeru; Omaru Atsuo Sodegaura, JAPAN assigned to Mitsui Petrochemical Industries Ltd; Sony Corporation

A novel carbonate compound represented by the general formula (I): (*See Patent for Tabular Presentation*) PS wherein R3 represents an alkyl group or an alkyl group substituted with one or more halogen atoms, and R4 represent an alkyl group having no hydrogen atom at the beta-position thereof or an alkyl group substituted with one or more halogen atoms having no hydrogen atom at the beta-position thereof, with the proviso that R3 is not identical to R4, which has excellent properties as solvent, is disclosed. A non-aqueous electrolytic solution and a battery utilizing the novel carbonate compound are also disclosed.

5635138

APPARATUS FOR IN SITU X-RAY STUDY OF ELECTROCHEMICAL CELLS

Amatucci Glenn G; Tarascon Jean-Marie Raritan, NJ, UNITED STATES assigned to Bell Communications Research Inc

An apparatus and method for monitoring structural changes of an electrode in a rechargeable battery include an in situ x-ray study electrochemical cell holder comprising top and bottom cell holder members including at least one beryllium window element for transmission of diffractometer x-radiation. A