

Nicolas Vargas

Search history

Search 1: TA=(refrigerat* or air condition* or hvac) and PD<20180704 (Results 618575)
Search 2: 1 and expert system* (Results 45)
Search 3: 2 and refrigerant* (Results 11)
Search 4: TA=(refrigerant* and temperature) and PN=(US2011082651) and PD<20180704 (Results 1)
Search 5: 3 and stor* (Results 9)

1) Family number: 41456110 (US2008033674A)

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Title: DETECTING AND DIAGNOSING FAULTS IN HVAC EQUIPMENT

Abstract: A method and system detects and diagnoses faults in heating, ventilating and air conditioning (HVAC) equipment. Internal state variables of the HVAC equipment are measured under external driving conditions. Expected internal state variables are predicted for the HVAC equipment operating under the external driving conditions using a locally weighted regression model. Features are determined of the HVAC based on differences between the measured and predicted state variables. The features are classified to determine a condition of the HVAC equipment.

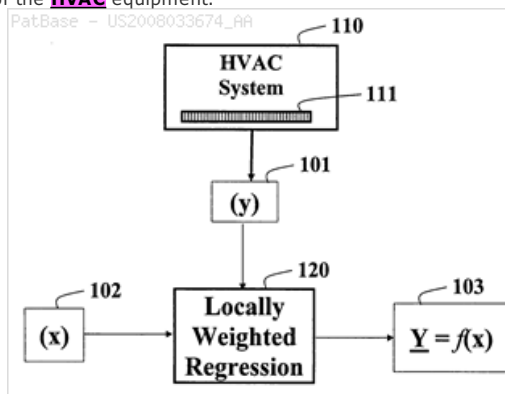
Classifications:

International (IPC 8-9): G01D3/00 G01L25/00 G01M17/00
G01N37/00 G05B9/02 G06F19/00 G08B21/00 (Advanced/Invention);
G01D3/00 G01L25/00 G01M17/00 G01N37/00 G05B9/02 G06F19/00
G08B21/00 (Core/Invention)

CPC: F24F11/30 F24F11/52 F24F2110/00 G05B23/0254

European: F24F11/00R9 G05B23/02S4M4 R24F11/00R3
R24F11/00R9E

US: 340/679 340/679S 700/108 700/108S 700/79 700/79S 702/108
702/108S 702/113 702/113S 702/81 702/81P



Family:

Publication number	Publication date	Application number	Application date
US2008033674 AA	20080207	US20060498289	20060801
US7444251 BB	20081028	US20060498289	20060801

Priority:

US20060498289 20060801

Probable Assignee: MITSUBISHI ELECTRIC RESEARCH LABORATORIES INC

Assignee(s): (std): DIVAKARAN AJAY ; MITSUBISHI ELECTRIC RES LAB ; NIKOVSKI DANIEL N ; PEKER KADIR A ; RADHAKRISHNAN REGUNATHAN

Assignee(s): MITSUBISHI ELECTRIC RESEARCH LABORATORIES INC

Inventor(s): (std): NIKOVSKI DANIEL N ; RADHAKRISHNAN REGUNATHAN ; DIVAKARAN AJAY ; PEKER KADIR A

Agent(s): MITSUBISHI ELECTRIC RESEARCH LABORATORIES INC; BRINKMAN DIRK; MUELLER CLIFTON D; VINOKUR GENE V; CLIFTON D; GENE V; DIRK

2) Family number: 20411195 (US5553812A)

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Title: INERTIAL VELOCITY COMMAND SYSTEM

Abstract: A velocity command system is provided with a velocity stabilization mode wherein aircraft flight path referenced velocities are determined with respect to an inertial frame of reference, the flight path referenced velocities are held constant during pilot commanded yaw maneuvers so that the aircraft maintains a fixed inertial referenced flight path regardless of the pointing direction of the aircraft. Velocity control with respect to an inertial frame of reference is accomplished by controlling the aircraft flight path based on aircraft body referenced commanded lateral and longitudinal acceleration and based on aircraft body referenced lateral and longitudinal centrifugal acceleration. Operation in the velocity stabilization mode is provided in response to the manual activation of the velocity stabilization mode by the pilot, provided that the aircraft is already operating in the ground speed mode and the aircraft is not in a coordinated turn.

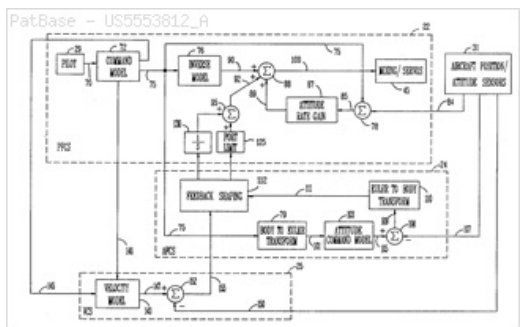
Classifications:

International (IPC 8-9): B62J17/04 B62J6/02 B62J6/18 B64C13/00
B64C13/18 B64C27/57 F25D11/02 F25D17/00 F25D17/04 F25D17/06
F25D17/08 F25D23/00 F25D27/00 F25D29/00 G05B13/02 G05D1/08
G05D1/10 G05D23/00 G05D23/19 (Advanced/Invention);
B64C13/00 F25D11/02 F25D17/08 F25D27/00
G05D1/10 (Advanced/Non-invention);

The diagram illustrates a control system for a vehicle, organized into three main functional blocks: a control unit (10), a vehicle system (20), and a feedback loop (30).

- Control Unit (10):** This block contains the primary processing logic. It includes a **PLANT** (11) and a **CONTROL MODEL** (12) which output to a **DRIVER MODEL** (13). The **DRIVER MODEL** outputs to a **SUM** (14). The **SUM** also receives input from a **FEEDBACK SIGNAL** (15). The output of the **SUM** is sent to a **REFERENCE STATE CAR** (16), which then feeds into a **MODE/STAY** (17) block.
- Vehicle System (20):** This block represents the physical system being controlled. It includes a **VELOCITY MODEL** (21) which receives input from the **MODE/STAY** block. The output of the **VELOCITY MODEL** is sent to a **SUM** (22). The **SUM** also receives input from a **REFERENCE STATE CAR** (23). The output of the **SUM** is sent to a **MODE/STAY** (24) block.
- Feedback Loop (30):** This block provides the **FEEDBACK SIGNAL** (15) to the **SUM** (14). It includes a **VELOCITY MODEL** (31) which receives input from the **MODE/STAY** (24) block. The output of the **VELOCITY MODEL** is sent to a **SUM** (32). The **SUM** also receives input from a **REFERENCE STATE CAR** (33). The output of the **SUM** is sent to a **MODE/STAY** (34) block.

The diagram uses various symbols to represent mathematical operations and data flow, including circles with plus and minus signs, and rectangular blocks for models and control elements.



Family:

Publication number	Publication date	Application number	Application date
AU199521491 A1	19951023	AU19950021491	19950403
AU199525449 A1	19960104	AU19950025449	19950504
AU199525775 A1	19960104	AU19950025775	19950524
AU199525776 A1	19951221	AU19950025776	19950524
AU199529370 A1	19960216	AU19950029370	19950629
AU670017 B2	19960627	AU19950025775	19950524
AU688025 B2	19980305	AU19950021491	19950403
AU689263 B2	19980326	AU19950025449	19950504
AU689264 B2	19980326	AU19950025776	19950524
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Priority:

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Probable Assignee: SAMSUNG ELECTRONICS CO LTD

Assignee(s): (std): DAE WOO MOTOR CO LTD ; DAMSUG ELECTRONICS CO LTD ; ILL SAN CO LTD ; KIM YONG KYU ; KIM YONG MYOUNG ; LIM JAE HOON ; ORION ELECTRIC CO LTD ; PARK SEAK HAENG ; POONG JUNG IND CO LTD ; SAMSUNG ELECTRONIC COMPNY LTD ; SAMSUNG ELECTRONICS CO LTD ; SINDORICOH CO LTD ; SONG HO WOON ; SONG KI WOONG ; UNITED TECHNOLOGIES SIKORSKY AIRCRAFT CORP ; SAM SUNG ELECTRONIC ; TONG IL IND CO LTD ; SAMSUNG ELECTRONIC ; SANSEI ELECTRONICS CORP ; PARK UN KYU ; UNITED TECHNOLOGIES CORP ; UNITED TECHNOLOGIES CORP SIKOR ; DAE WOO ELECTRONICS CO LTD

Assignee(s): UNITED TECHNOLOGIES CORP STRATFORD CONN US ; GOLD PHILLIP J ; FOGLER DONALD L JR ; DRYFOOS JAMES B ; SAMSUNG ELECTRONICS CO LTD KR ; SAMSUNG ELECTRONICS CO LTD KR ; SAMSUNG ELECTRONICS CO ; UNITED TECHNOLOGIES SIKORSKY AIRCRAFT DIVISION COR ; UNITED TECHNOLOGIES SIKORSKY AIRCRAFT DIVISION CORP ; HUNTINGTON NATIONAL BANK ; BOEING CO ; SAMSUNG ELECTRONICS CO LTD KYUNGKI DO KR ; SAMSUNG ELECTRONICS CO LTD SUWON KYUNGKI KR ; SAMSUNG ELECTRONICS CO LTD SUWON ; SAMSUNG ELECTRONICS CO LTD SUWON KR ; SAMSUNG ELECTRONICS CO LTD SUWON KYUNGKI KR ; SANSEI DENSHI KK ; SAMSUNG ELECTRON CO LTD ; SAMSUNG ELECTRONIC CO LTD

Inventor(s): (std): FOGLER JR DONALD L ; HAE JIN PARK ; HAENG PARK SEAK ; BOKU SHAKUKO ; JAE IN KIM ; MYOUNG KIM YONG ; MYOUNG LIM JAE HOON KIM YONG ; KIN SAIIN ; KIN YOMEI ; PARK SIK HING ; PARK SUK HAENG ; PARK SUK HANG ; SEAK HAENG PARK ; SONG HO WOON ; SONG KI WOONG ; SONG KI WUNG ; SONG SOO YUNG ; TEI SEIKIYOKU ; TEI SEIKYOKU ; WOONG SONG KI ; YONG MYOUNG KIM ; YUN SEOK KANG ; PARK SEAK HAENG ; PARK HAE JIN ; PARK HAE FIN ; LIM SUNG KYU ; LIM JAE HUN ; LIM JAE HOON ; KIM YOUNG MYOUNG ; KIM YOUNG MAEUNG ; KIM YONG MYOUNG ; KIM YONG KYU ; KIM SEONG KON ; KIM JONG MOK ; KANG YUN SEOG ; KANG YOON SUK ; JUNG SUNG WUK ; JUNG UN WANG ; JEONG SUNG WOOK ; KIYOU JIYUNSEKI ; KIN YOMEI ; KIM JAE IN ; KANG YUN SEOK ; JEONG SEONG WOOK ; HOON LIM JAE ; HA JAE KI ; GOLD PHILLIP J ; GOLD PHILLIP ; FOGLER DONALD L JR ; FOGLER DONALD L ; FOGLER DONALD ; CHOI SE KWANG ; BOKU SHIYAKUKOU ; BOKU KAISHIN ; SUK HANG PARK ; SONG KI WOON ; PARK SUCK HAONG ; SEONG WOOK JEONG ; PARK SUCK HAENG ; KIM YONG MYUNG ; KIM JAE INN ; KANG YUN SUK ; JUNG SUNG WOOK ; PARK UN KYU ; DRYFOOS JAMES B ; DRYFOOS JAMES

Inventor(s): DONALD L FOGLER JR ; DRYFOOS JAMES B WALLINGFORD PA 19086 US ; FOGLER DONALD L JR MILFORD CT 06460 US ; GOLD PHILLIP J SHELTON CT 06484 US ; JAMES B DRYFOOS ; Jae HoonSong ; KANG YUN SEOG PALDAL GU SUWON CITY KYUNGKI DO KR ; Ki WoongPark ; KIMU YON MYON ; JEONG SEONG WOOK PALDAL GU SUWON CITY KYUNGKI DO KR ; JEONG SEONG WOOK PALDAL GU SUWON CITY KYUNGKI DO K ; KIM JAE IN KANGNAM GU SEOUL KR ; KIM YONG MYOUNG SUWON KYUNGKI KR ; KIM YONG MYOUNG SUWON KYONGGI KR ; KIM YONG MYOUNG SUWON KR ; KIM YONG MYOUNG KWEONSUN GU SUWON CITY KYUNGKI DO KR ; KIM YONG MYOUNG KWEONSUN GU SUWON CITY KYUNGKI DO ; Lim ; KYO JUNSEKI ; LIM JAE HOON SUWON KYUNGKI KR ; PAAKU SUIIKU HAEN ; PARK SEAK HAENG SUWON KR ; SONG KI WOONG SUWON KYUNGKI KR ; SONG KI WOON SUWON KYUNGKI KR ; PARK SUK HANG PALDAL GU SUWON CITY KYUNGKI DO KR ; PHILLIP J GOLD ; Seak Haeng ; PARK SUCK HAENG SUWON KYONGGI KR ; PARK SUCK HAENG SUWON KYUNGKI KR ; LIM JAE HOON KIM YONG MYOUNG ; PARK SEAK HAENG SUWON KYONGGI KR ; PARK SEAK HAENG SUWON KYUNGKI KR ; KI WOONG SONG ; JAE HOON LIM

Agent(s): PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD; SHELSTON IP; SHELSTON IP PTY LTD; PIZZEYS; OGILVY RENAULT LLP SENCRL SRL; REINHOLD COHN AND PARTNERS

Designated states: AT AU BE CA CH CN CY DE DK ES FI FR GB GR IE IT JP KR KZ LI LU MC MX NL PT SE SK US

3) Family number: 33057250 (US2006117767A)

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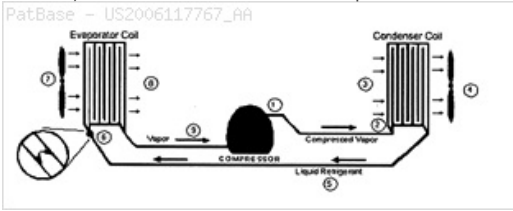
Title: SYSTEM AND METHOD FOR VERIFYING PROPER **REFRIGERANT** AND AIRFLOW FOR **AIR CONDITIONERS** AND HEAT PUMPS IN COOLING MODE

Abstract: An apparatus for the diagnosis of a cooling system which receives inputs in the form of data about a cooling system, and measurements made from the cooling system, and which then calculates the amount of **refrigerant** to be removed or added to the cooling system for optimal performance. In addition, methods for ensuring correct setup of a cooling system are disclosed. The methods may apply to FXV (fixed expansion valve) systems and may include making and displaying a prediction of a **refrigerant** adjustment based upon measurements such as return air wetbulb temperature, condenser air entering temperature, **refrigerant** superheat vapor line temperature, and **refrigerant** superheat vapor line pressure. A method for ensuring correct setup of a cooling system is disclosed. The method may apply to TXV (thermostatic

expansion valve) systems and may include making and displaying a prediction of a **refrigerant** adjustment based upon measurements such as **refrigerant** subcooling liquid line temperature and **refrigerant** subcooling liquid line pressure. A method for ensuring correct setup of a cooling system is disclosed. The method may include making and displaying a prediction of a **refrigerant** adjustment or of an airflow adjustment based upon measurements such as return air wetbulb temperature, return air drybulb temperature and supply air drybulb temperature. Recommendations may also be based upon evaporator coil temperature splits. Methods for visual identification, archiving of associated measurement and verification data, and viewing of data for a correct setup of a cooling system are disclosed. Methods of maintaining correct setup of a cooling system through use of labels and locking, double-sealing, color-coded, and laser etched Schrader caps are disclosed.

Classifications:

International (IPC 8-9): F25B45/00 G01M1/38 (Advanced/Invention);
F25B45/00 G01M1/00 (Core/Invention)
CPC: F25B45/00 F25B49/005 F25B2500/19
European: F25B49/00F R25B45/00 R25B500/19
US: 62/149 62/149P 62/292 62/324.4 700/276 700/276S



Family:

Publication number	Publication date	Application number	Application date
US2006117767 AA	20060608	US20050152302	20050614
US7500368 BB	20090310	US20050152302	20050614

Priority:

US20040611054P 20040917 US20050152302 20050614

Probable Assignee: MOWRIS ROBERT JAMES

Assignee(s): (std): MOWRIS ROBERT J ; MOWRIS ROBERT JAMES

Inventor(s): (std): MOWRIS ROBERT J ; MOWRIS ROBERT JAMES

Inventor(s): MOWRIS ROBERT

Agent(s): MICHAEL A GUTH; GREEN KENNETH L; AVERILL JR EDGAR W; KENNETH L; EDGAR W

4) Family number: 54594335 (IN01962DE2010A)

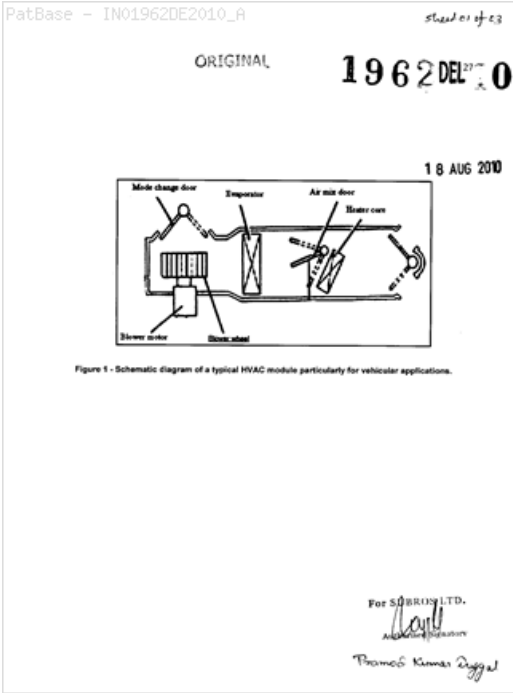
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Title: METHOD AND SYSTEM TO DESIGN AN OPTIMIZED AND BALANCED AUTOMOTIVE **HVAC** MODULE

Abstract: The present invention provides a method and system to design an optimized and balanced **HVAC** module with a unique concept based on real time operation and concurrent designing. The said system and method is utilized to achieve the important **HVAC** design parameters with unprecedented accuracy and precision which may form the basis of a new generation of **HVAC** design technology intended particularly for vehicular applications. The main applications, outputs and achievements of the disclosed invention being to determine the exact cooling requirement of the vehicle cabin, compilation of design data for futuristic performance enhancement of **air conditioning** module of the said vehicle, component balancing of the said **air conditioning** module, **refrigerant** quantity optimization, definition and estimation of design confidence number of the design method of the said **air conditioning** module of the said vehicle, minimizing the design time and hence the design cost.

Classifications:

International (IPC 8-9): F24F (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
IN01962DE2010 A	20130823	IN2010DE01962	20100818

Probable Assignee: SUBROS LTD

Assignee(s): SUBROS LTD

Inventor(s): D M REDDY CEO SUBROS LTD ; VISHAL SAXENA

Title: METHOD AND APPARATUS FOR DIAGNOSING PROBLEMS WITH THE THERMODYNAMIC PERFORMANCE OF A HEAT ENGINE

Abstract: A method and apparatus measured and calculates the derived thermodynamic state of a heat-pump or **air conditioning** system using information from transducers sensing elementary thermodynamic variables in the system. Elementary signals such as pressure, temperature, power, humidity, air flow, and others as required are derived using transducers from closed and open portions of the thermodynamic system, and which signals are then transmitted using appropriate transmission media. These signals are input to a computer, which could take many forms (electrical analog, electrical digital, pneumatic, hydraulic, and others), and these signal inputs along with known and tabulated thermodynamic characteristics of the working fluid (**refrigerant**) and psychrometric properties of the cooled media (air for example), are used to calculate thermodynamic output variables such as entropy, enthalpy, pressure, temperature, and volume at various states in the thermodynamic cycle. The output variables can be presented in tabulated or graphic form for clear understanding such as pressure vs. volume, temperature vs. entropy, or pressure vs. enthalpy graphs of the working system. The derived data can be used to determine efficiency and operating condition of the heat-pump or **air-conditioning** system and can be used as an aid in the diagnosis of the cause of a malfunctioning or inefficient system. Using artificial intelligence in an **"expert" system**, diagnosis could be completely automated.

Classifications:

International (IPC 8-9): G01M15/00 G01M19/00

G01M99/00 (Advanced/Invention);

G01M19/00 (Core/Invention)

International (IPC 1-7): G01M15/00 G06F15/20

CPC: Y10S706/914 G01M15/09 G05B23/0294 F25B49/005

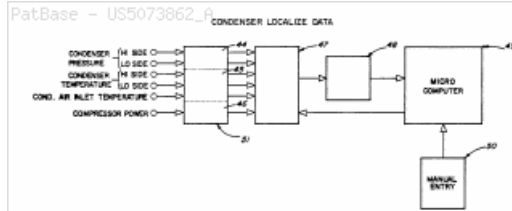
F25B2700/15 F25B2700/151 F25B2700/195 F25B2700/197

F25B2700/2104 F25B2700/21162 F25B2700/21163 F25B2700/21174

F25B2700/21175 Y02B30/52 G05B2223/02

European: G01M15/09 G05B23/02 Y02B30/12B

US: 324/511 340/648 364/493 364/505 364/551.01 702/185 706/914



Family:

Publication number	Publication date	Application number	Application date
US5073862 A	19911217	US19890430072	19891031

Priority:

US19870089514 19870826

US19890430072 19891031

Probable Assignee:

CARLSON PETER J

Assignee(s): (std):

CARLSON PETER J

Inventor(s): (std):

CARLSON PETER J

Title: Method and apparatus for predictive maintenance of HVACR systems

Abstract: Predictive maintenance method and apparatus for use with heating, ventilation, **air-conditioning** and/or **refrigeration** (HVACR) systems are disclosed. The preferred apparatus includes a dozen temperature sensors strategically located within and HVACR system to sense various operating temperatures and three electrical current sensors to sense various operating electrical currents. HVACR system conditions are measured periodically by an on-site service technician and inputted to a computer that identifies and reports the potential trouble spots represented by out-of-range measurements. The computer is programmed to produce graphs, tables and prediction commentary.

Classifications:

International (IPC 8-9): F25B49/00 G05B19/042

G07C3/00 (Advanced/Invention);

F25B49/00 G05B19/04 G07C3/00 (Core/Invention)

International (IPC 1-7): G06F17/00

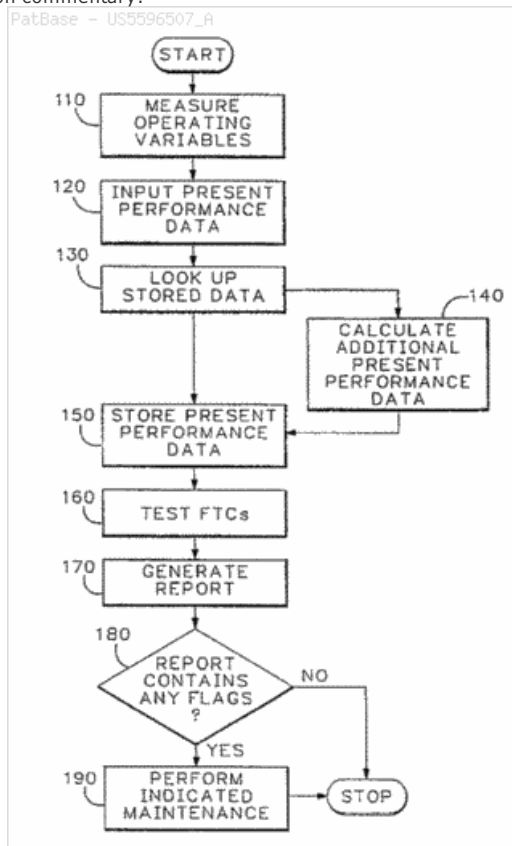
CPC: F25B49/005 F25B2400/075 G05B19/042 G05B2219/43008

G07C3/00

European: F25B49/00F G05B19/042 G07C3/00 R25B400/075

S05B219/43008

US: 364/505 700/276



Family:

Publication number	Publication date	Application number	Application date
US5596507 A	19970121	US19940290358	19940815

Priority:

US19940290358 19940815

Probable Assignee: JONES JEFFREY K**Assignee(s):** JONES JEFFREY K ; WHITE JAMES**Inventor(s):** (std): JONES JEFFREY K ; WHITE JAMES**7) Family number: 48848672** (US2011106759A)

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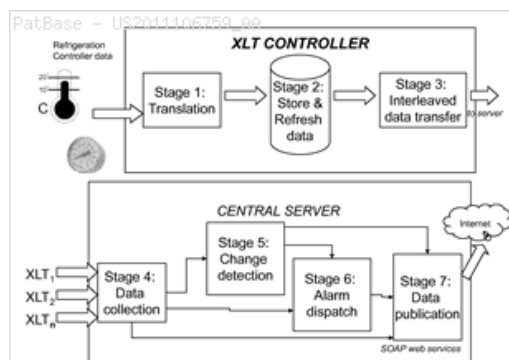
Title: SYSTEM FOR SUPERMARKET ENERGY MANAGEMENT

Abstract: The present invention relates to the field of supermarket **refrigeration** and **HVAC** control. More particularly, embodiments of the present invention provide systems and methods for concurrent and remote management of multiple supermarket **refrigeration** systems located at one or more retail sites. Embodiments may include at least one on-site computer, at least one central server, at least one user computer, one or more communication network, and one or more on-site **refrigeration** control systems. In embodiments, the on-site computer communicates with the on-site **refrigeration** control system(s), which may be the same or different, and multiple on-site computers and/or different **store** locations may be used. The on-site computer is capable of translating data received from these various **refrigeration** control systems into a single system-friendly generic format and the translated data is **stored** on the on-site computer. This data is intermittently copied and **stored** on a central server. Meanwhile, data and more particularly data updates are sent from the **refrigeration** control system to the on-site computer for **storage**. At a desired interval, for example every five minutes, the central server detects whether the information on the on-site computer is different from the information on the server. When there has been an update, the server downloads the current information in bulk from the on-site computer. The information on the server is then accessed by one or more users to manage the **refrigeration** control systems, optionally remotely. In contrast with other existing **refrigeration** control management systems, systems and methods of the present invention can be used with multiple legacy **refrigeration** control systems, including old and new versions of a system from one particular OEM provider, and/or different models from one particular OEM provider, and/or different versions or models from several different OEM providers. These systems and methods provide for compatibility between different control systems, which does not currently exist. Benefits of the inventive systems and methods include being capable of delivering information to a user, in response to a user query, faster than systems in which the user computer communicates with and obtains data **stored** on the legacy system itself.

Classifications:**International (IPC 8-9):** G06F17/30 G06Q10/00

G06Q10/06 (Advanced/Invention);

F25B49/00 (Advanced/Non-invention)

CPC: G06Q10/06 F25B49/005 F25B2400/22**European:** G06Q10/06 R25B400/22 R25B49/00F**US:** 707/622 707/622P 707/E17.005 707/E17.005S**Family:**

Publication number	Publication date	Application number	Application date
US2011106759 AA	20110505	US20100896469	20101001
US10055699 BB	20180821	US20100896469	20101001

Priority:

US20090257685P 20091103 US20100896469 20101001

Probable Assignee: AUTOMATION CREATIONS INC**Assignee(s):** (std): AUTOMATION CREATIONS INC ; BROWN FRANK C ; BROWN III FRANK C**Assignee(s):** ZERO3 CONTROLS INC**Inventor(s):** (std): BROWN III FRANK C ; BROWN FRANK C**Agent(s):** NEW RIVER VALLY IP LAW PC; MAYBERRY MICHELE L**8) Family number: 29378759** (US5669221A)

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Title: PORTABLE, POTABLE WATER RECOVERY AND DISPENSING APPARATUS

Abstract: A portable, potable-water generator for producing high-purity liquid water by condensation of dew from ambient air. The generator employs filtration subsystems to remove particulates and aerosols from the incoming air. An enclosed heat absorber cools the filtered air to its dew point and collects droplets of condensate into a closed system. The collected dew is further continually treated in a bacteriostat loop to destroy adventitious living organisms and to filter out undesirable and dangerous contaminants. All the subsystems are failsafe-interlocked to disable the generator immediately and prevent delivery of water if any one of them stops functioning within predetermined safe limits.

Classifications:**International (IPC 8-9):** B01D5/00 C02F1/00 C02F1/18 C02F9/00

E03B3/28 F25B29/00 F25B49/00 F25C1/00 F25D17/00 F25D17/06

F25D21/14 F25D3/10 F28B9/08 (Advanced/Invention);

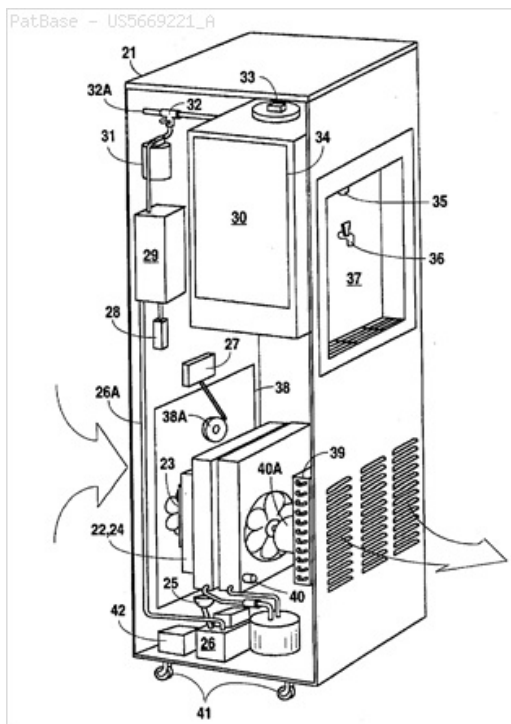
C02F1/28 C02F1/32 C02F1/36 C02F1/78 (Advanced/Non-invention);

B01D5/00 C02F1/00 C02F9/00 E03B3/00 F24D19/03

F25D17/06 (Core/Invention);

C02F1/28 C02F1/32 C02F1/34 C02F1/78 F25B49/00 (Core/Non-invention)

International (IPC 1-7): B01D37/00 B01D5/00 B01D63/00 B67D3/00 C02F1/00 C02F1/18 C02F1/28 C02F1/32 C02F9/00 E03B3/28 F24D19/03 F25B4/900 F25B49/00 F25C1/00 F25D17/00 F25D17/06 F25D21/14 F25D3/10 F28B9/08
CPC: Y02W10/37 C02F1/001 C02F9/005 B01D5/0072 C02F1/008 C02F1/283 C02F1/32 C02F1/36 C02F9/00 C02F2201/009 C02F2209/008 C02F2209/02 C02F2209/40 C02F2209/42 E03B3/28 C02F1/78 Y02A20/109 Y02A20/211 Y02A20/212 Y02A20/214 Y02A50/235 Y02A20/154
European: B01D5/00H14 C02F1/00T C02F9/00B E03B3/28 M02F1/00D M02F1/28D M02F1/32 M02F1/36 M02F1/78 M02F201/00I M02F201/00P M02F209/00T4 M02F209/02 M02F209/40 M02F209/42 M02F9/00
US: 62/125 62/150 62/272 62/285 62/92 62/920



Family:

Publication number	Publication date	Application number	Application date
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AU199728003 A1	19971029	AU19970028003	19970405
BRMU8103528 Y1	20110517	BR2001MU03528U	20010404
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CA2341106 AA	20011006	CA20012341106	20010320
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EP0891523 A1	19990120	EP19970922289	19970405
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EP0891523 B1	20051109	EP19970922289	19970405
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ID16418 A	19970925	ID19970001176	19970408
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US6182453 BB	20010206	US20000544407	20000406
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WO9738272 C1	20030220	WO1997US05665	19970405
ZA9702974 A	19990108	ZA19970002974	19970408

Priority:

US19960629305 19960408	US19960035753P 19961231	US19970035753P 19970106
US19970802489 19970220	WO1997US05665 19970405	US19980087892 19980529
US20000544407 20000406	CA20012341106 20010320	

Probable Assignee: WORLDWIDE WATER INC

Assignee(s): (std): GLOBAL WATER INC ; WORLDWIDE WATER ; WOLLMANN DAN D ; WORLDWIDE WATER INC

Assignee(s): WORLDWIDE WATER INC US ; DROUGHT MASTERS INC ; LEBLEU STEPHEN M ; FORSBERG FRANCIS C

; LEBLEU MR TERRY LYLE ; LEBLEU STEPHEN M SUITE ; LEBLEU TERRY LYLE ; LOU O HARDING ; WORLD WIDE WATER INC

Inventor(s): (std): FORSBURG FRANCIS C ; FORSBURG FRANK C ; FRANCIS C FUSBURG ; FRANCISC C FOSBERG ; FRANK C FORSBURG ; FUSBURG FRANCIS C ; LAIER LUBULER ; LEBLEU TERRY ; LEBLEU TERRY L ; LEBLEU TERRY LYLE ; LEBLEU TERRY L ; TERRY L LEBLEU ; TURRY ; TURRY LAIER LUBULER ; WOLLMANN DAN D ; LEBLEU STEPHEN M ; LEBLEU MILAN STEPHEN ; FORSBURG FRANK C ; FORSBURG FRANK CHANDLER ; BLEU LE TERRY LYLE ; BLEU LE MILAN STEPHEN

Inventor(s): FRANK C FORSBURG ; FRANCIS C FORSBURG ; STEPHEN M LEBLEU ; TERRY LYLE LEBLEU

Agent(s): SMART AND BIGGAR; SARGENT; REINHOLD COHN AND PARTNERS; COX AND SMITH INC

Designated states: AT AU BE BR CA CH CN CY DE DK ES FI FR GB GR IE IL IT JP KR LI LU MC MX NL NZ PL PT RO SE SG TR

9) Family number: 52880964 (US2015241316A)

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Title: SERVICE DEVICE FOR **AIR-CONDITIONING** SYSTEMS

Abstract: A service or maintenance device is provided by which the maintenance work to be done on **air-conditioning** systems is made easier. An internal measuring system for the evaluation and display of measured data may have a display control means configured to optionally show measured values in a dynamic analog scale type in parallel to a numerical value, and to allow a comparison with a set memory marking.

Classifications:

International (IPC 8-9): F25B45/00 G01D11/26 G01D11/30

G01D13/22 G01K11/00 G01L19/08 G01M99/00

G08B21/18 (Advanced/Invention);

G01D7/04 (Advanced/Non-invention)

CPC: F25B2345/003 B25J11/00 C03B7/14 C03B9/195 C03B9/1955

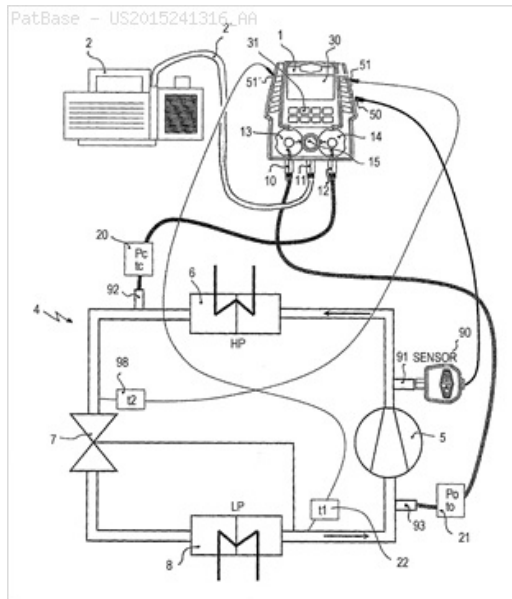
C03B9/353 C03B9/447 C03B11/02 G01D11/24 G01D11/30

F25B45/00 F25B2700/19 F25B2700/21 G01D7/04 G01K11/00

G01L19/083 G01M99/008 G08B21/182 H01L23/473 H01L2924/0002

H02M7/003 H05K7/20927

US: 1/1 340/626



Family:

Publication number	Publication date	Application number	Application date
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DE112012006964 A5	20150618	DE201211006964T	20121119
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DE202012013207 U1	20150806	DE201220013207U	20121001
US2015241316 AA	20150827	US20120432251	20121119
US9448140 BB	20160920	US20120432251	20121119
WO14053195 A1	20140410	WO2012EP72996	20121119

Priority:

DE201210019616 20121001 DE201220013207U 20121001 DE201220010642U 20121108
WO2012EP72996 20121119

Probable Assignee: REFCO MFG LTD

Assignee(s): (std): REFCO MFG LTD ; WIKA ALEXANDER WIEGAND SE AND CO KG

Assignee(s): REFCO MANUFACTURING LTD

Inventor(s): (std): DEMUTH ULRICH ; ULRICH MANFRED

Agent(s): LEONARDPATEL PC; TBK

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW