Air-fuel management and emissions reduction device

Summary

Researchers from Macedonia have developed a technology (henceforth “device”) which increases the efficiency of internal combustion engines in cars, trucks, machinery as well as stationary and mobile generators. The device is universal- it replaces any known air-fuel system and triples the gains in fuel economy with a negligible drop in energy and without the need for additional infrastructure. The researchers offer license agreement, technical cooperation and financial resources.

Creation Date	10 April 2014
Last Update	03 June 2014
Expiration Date	03 June 2015
Reference	11 MK 82EW 3LQ7

Details

Description

Researchers from Macedonia have developed a technology (henceforth “device”) which increases the efficiency of internal combustion engines in cars, trucks, machinery as well as stationary and mobile generators. The device delivers, monitors, and manages very accurately a known mixture of air and fuel to internal combustion engines, enabling them to run very efficiently. It is a novel and unique technology designed to replace any existing vehicle air-fuel system -- carburetors, throttle body injection systems, and fuel injection systems -- and works very differently from any of them. The device also has an environmental and safety impact: it greatly reduces engine emissions and the conditions which contribute to catastrophic explosions in car/machinery accidents. The device is comprised of air inputs atop a throttle base plate which connects to a pre-determined intake manifold system designed for a particular vehicle. The device also has other ports to connect to electronic ignitions as well as to computer-monitoring and other vehicle accessories. Elements of the device make changes to the fuel delivery by changing the fuel structure going into the mixture-channel area, thereby achieving efficiency rapidly and consistently. Based on altitude and air density of where the vehicle is located, a barometric compensation device regulates the air-fuel mixture which then passes through the plate (the body) of the device at a particular rate and manner. The device is self-contained and does not need any electronics and/or computerized sensors in order to operate and produce maximum gains. Its size and dimensions do not affect its ability to perform. Also, the device does not have a significant effect on the vehicle's weight. While it is very different, the device has some similarities with existing air-fuel systems: - It can be installed on a vehicle using a standard fuel line or fuel injection line, both of which are available on all vehicles today. - It has a throttle plate to regulate engine speed, just like all devices that run internal combustion engines. - It has a venturi area to allow air to come into the throttle plate area. - It has a barometric pressure device to negate any potential problems arising from altitude changes. - It has ported and non-ported accessories to operate and monitor changes in engine management and the running of other accessories in the

vehicle. - It operates either with a mechanical or electric fuel pump. - It can be adapted or installed on 4-, 6-, 8-, 10-, and 12-cylinder engines. - It can be attached to any type of engine configuration -- regardless of whether the engine is in front or in the back -- based on what kind of intake manifold the vehicle has. The researchers offer license agreement and technical cooperation to a company (car producer, engine or parts producer, stationary generator producer, R&D institution, or a similar private funding mechanism) for further development of the product including testing the device on at least two new vehicles in a certified laboratory. This will allow the device to be finalized, patented, and ready to go onto the next phase of being produced. Current and Potential Domain of Application: This device is applied in cars, trucks, boats, mobile and stationary generators as well as in machinery. It can be easily retro-fitted by any Original Equipment Manufacturer or as an after-market device, making it attractive to a variety of markets.

Advantages and Innovations

The device: 1. Yields on average double or triple the distance with the same amount of fuel and a negligible drop in energy. The gains are greater for smaller, lighter vehicles. It is also applicable for 1,2,3-cylinder engines. 2. Reduces vehicle emissions pollution by at least 65%. When combined with catalytic converters, it approaches a zero emissions standard. 3. Can be adapted to almost all vehicles as well as stationary and mobile generators. It can also be used to improve machinery efficiency (for example ski lifts, etc.). 4. Operates with petroleum-based fuels and some bio fuels. 5. Is self-sufficient and self-contained. 6. Does not need additional infrastructure to operate and provide maximum gains (unlike othe

Technical Specification or Expertise Sought

The results of the device are derived from tests on nine (9) different vehicles including on: General Motors (Chevy Impala, Chevy Chevelle, Chevy Camaro); Ford (Ford LTD, Ford Thinderbird, Ford Mustang); Crysler (Crysler New Yorker, Crysler Lebaron, Dodge Charger), but also on early models of Jeep and AMC. The testing was done on highways and in urban conditions throughout the year during the stages of producing the device. When the device is applied to an engine, not only fuel efficiency is enhanced, but the engine itself is more efficient too. This is because engine temperatures are much more stable even though temperature differential changes from car to car.

Stage of Development

Available for demonstration

IPR Status

Secret Know-how

Comment Regarding IPR status

Development phase: A full functional prototype with finalized electronics. The device needs to be tested on two (or more) new cars of different type and capacity in a certified laboratory in order to be finalized. No (world-wide) patent application as of now.

Profile Origin

Private (in-house) research

Client

Type and Size of Organisation Behind the Profile

Other

Partner Sought

Type and Role of Partner Sought

- Type of partner sought: any private organization or individual (industry, research, or private production firm, philanthropic organization or individual) or a public entity. - Specific area of activity of the partner: automotive sector; car industry; automotive engine management; machinery producer; stationary generator production; electrical power production. - Task to be performed by the partner sought: provide funding and technical assistance.

Type of Partnership Considered

License agreement
Financial agreement
Technical cooperation agreement

Technology for cutting of stone, metal, glass, ceramics, plastic

Summary

A Polish SME has developed a precise, Computerized Numerical Control (CNC) controlled device for cutting with stream of water. The company is looking for partners from industry. Partners are sought for commercial agreements with technical assistance.

Creation Date 25 April 2014
Last Update 03 June 2014
Expiration Date 03 June 2015
Reference TOPL20140425002

Details

Description

The Polish enterprise has long term experience in the processing of cutting devices. The company team had developed modern design of the cutting machine, which ensures high precision cutting with use of high pressure water jet technology. In a device the modern high pressure pumps are installed, which are the world standard in cutting with clear water (soft materials) and cutting with use of abrasive material (hard materials). Diamond cutting head is one of the most efficient and most resistant head available on the market. Depending on the needs and expectations of the customer, the cutting machines can be equipped with catcher for cutting, abrasive material transport system, catcher cleaning system, abrasive material recycling system, the sensor of tool height over the material. The company is looking for partners from industry. Partners are sought for commercial agreements with technical assistance.

Advantages and Innovations

All the components being in contact with water are made from stainless steel. The elements of guiding and travelling system are additionally protected with elastic gaiters. Drive system, which means AC engines with resolvers, precise guides, precise toothed bars, guarantee long life and high accuracy of the machine for a long time.

Stage of Development

Already on the market

IPR Status

Patents granted

Profile Origin

Other

Client

Type and Size of Organisation Behind the Profile

Industry SME 50-249

Partner Sought

Type and Role of Partner Sought

The SME is looking for partners from industry. Partners are sought for commercial agreements with technical assistance. Support will be provided to the partner with the assembly of the modular machine tool, with technical consultancy, maintenance and training of operators.

Type and Size of Partner Sought

>500

Type of Partnership Considered

Commercial agreement with technical assistance

An advanced mechanism allows very precise beveling of metal sheets

Summary

A Polish company active in production and design of cutting machines developed, patented and introduced advanced mechanism based on digitally controlled servo-drives and precise transmissions. With a low tolerance of clearance this allows for very precise beveling of metal sheets during one process. The company is looking for partners from industry sector. The task to be performed by the partner sought is implement the technology within manufacturing of commercial agreement.

Creation Date	25 April 2014
Last Update	03 June 2014
Expiration Date	03 June 2015
Reference	TOPL20140425003

Details

Description

The standard laser cutting is not an efficient method to produce one type of profile, such as only square tubes. This technology can replace the traditional machines which use not an efficient method for producing one profile and don't provide potential savings from reduced labor. The precise chamfering of metal sheets and possibility of cutting out any curve are only one of use for mechanism. It is also an ideal solution for pipes cutting. In order to fulfill the complete range of requirements the mechanism uses head 3D. The head 3D ensures high precision of the measurement of the distance from the material and fast change of the cutting angle, thanks to precise CNC controlling and guaranteed accuracy of positioning of the torch is 0,1mm. The software automatically chooses the suitable kind of preparation for welding giving suitable chamfers and applies it on whole cutting edge. For minimising the risk of mistake the software is equipped with a special editor and window of 3D visualization where user can continuously check effects of his modifications. Built-in 3D simulation module allows to preview the cut process on screen of monitor.

Advantages and Innovations

The main advantage of this system is mechanically assured steady point of torch, in contrast to different technical solutions on market for which the point has to be constantly controlled and corrected by software. This mechanical precision makes possible accuracy of positioning to 0,1 mm.

Stage of Development

Already on the market

IPR Status

Patents granted

Profile Origin

Other

Client

Type and Size of Organisation Behind the Profile

Industry SME 50-249

Partner Sought

Type and Role of Partner Sought

Potential partners could be from industry sector. The task to be performed by the partner sought is implement the technology within manufacturing of commercial agreement.

Type and Size of Partner Sought

>500

Type of Partnership Considered

Manufacturing agreement
Commercial agreement with technical assistance