ATV Maintenance

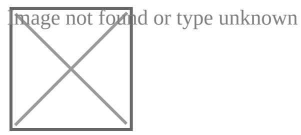
- **ATV Maintenance Schedules and Service Intervals**
  ATV Maintenance Schedules and Service Intervals How to plan regular service for your ATV Key steps for creating a seasonal ATV maintenance plan Essential fluids to change in your ATV and when to change them How often to replace filters on different types of ATVs Checklist for pre-ride inspections to avoid mechanical issues Signs that your ATV is due for professional servicing Understanding the difference between hours and mileage intervals How to prepare your ATV for long term storage Tips for keeping an accurate ATV maintenance log Why seasonal tune ups improve ATV reliability How to schedule preventative maintenance before major trips Common maintenance tasks to extend the life of your ATV
- **Diagnosing and Troubleshooting Common ATV Issues**
  Diagnosing and Troubleshooting Common ATV Issues How to identify the cause of engine stalling in an ATV Steps to troubleshoot electrical problems in your ATV Why your ATV may lose power under load and how to fix it Simple checks to find the cause of poor ATV acceleration What to do when your ATV struggles to start in cold weather Understanding common overheating problems in ATVs How to track down unusual noises in your ATV drivetrain Signs of brake system issues in your ATV How to tell if your ATV has a slipping CVT belt Techniques for testing fuel delivery problems in ATVs How to spot early signs of bearing or bushing wear Finding the source of vibration while riding an ATV
- **About Us**

Understanding Common Overheating Problems in ATVs

Air filter replacement maintains engine health **gravely tractors & polaris atv** personal water craft.

All-Terrain Vehicles (ATVs) are a popular choice for outdoor enthusiasts, offering a thrilling way to explore rugged terrains and enjoy the great outdoors. However, like any mechanical device, ATVs are prone to issues, and one of the most common problems ATV owners face is overheating. Overheating can lead to severe damage if not addressed promptly, so its crucial to understand the causes, symptoms, and solutions to this problem.

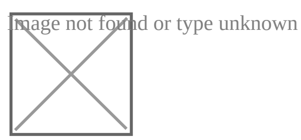
Causes of Overheating in ATVs



Several factors can contribute to an ATV overheating. One of the primary causes is a malfunctioning cooling system. The cooling system in an ATV is designed to regulate the engines temperature, ensuring it operates within a safe range. If components like the radiator, water pump, or thermostat fail, the engine can overheat.

Another common cause is low coolant levels. Coolant, a mixture of water and antifreeze, plays a vital role in dissipating heat from the engine. If the coolant level is low, either due to a leak or insufficient maintenance, the engine may not cool properly, leading to overheating.

Additionally, riding in extreme conditions can push an ATVs engine to its limits. Hot weather, heavy loads, or aggressive riding can generate excessive heat, overwhelming the cooling system.



Symptoms of Overheating

Recognizing the symptoms of overheating is essential for timely intervention. One of the most obvious signs is a temperature gauge that climbs into the red zone. If you notice this, its crucial to stop riding immediately to prevent engine damage.

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Other symptoms include steam or smoke coming from the engine compartment, a sweet smell (indicating a coolant leak), or a noticeable decrease in performance. If you experience any of these signs, its time to address the issue.

Solutions to Overheating

Addressing overheating in ATVs involves a combination of preventive maintenance and prompt action when problems arise. Regular maintenance is key. Ensure that the cooling system is in good working condition by checking for leaks, inspecting hoses, and verifying that the coolant level is adequate. Its also a good practice to flush the cooling system periodically to remove any buildup that could impede its efficiency.

If you suspect a coolant leak, its essential to locate and repair it as soon as possible. Ignoring a leak can lead to a rapid loss of coolant, increasing the risk of overheating.

In extreme conditions, take breaks to allow the engine to cool down. Avoid overloading your ATV, as excess weight can strain the engine and cooling system. Additionally, consider upgrading to a high-performance cooling system if you frequently ride in challenging environments.

Conclusion

Overheating is a common issue that ATV owners may encounter, but with proper understanding and maintenance, it can be effectively managed. By recognizing the causes, symptoms, and solutions to overheating, ATV enthusiasts can ensure their machines remain reliable and enjoyable for countless adventures on the trails. Remember, a well-maintained ATV is not only safer but also more fun to ride.

About Can-Am motorcycles

This article is about Can-Am motorcycles from 1972 to 1987. For the Can-Am ATV model range, see Can-Am Off-Road. For the Can-Am Roadster model range, see BRP Can-Am Spyder Roadster.

Can-Am Motorcycles

Headquarters	Valcourt, Canada
Products	Motorcycles
Parent	Bombardier Corporation
Website	can-am.brp.com/us/en/

Can-Am is a Canadian subsidiary of Bombardier Recreational Products (BRP) founded in 1972 and based in Valcourt, Quebec.[1][2] The company produced off-road motorcycles from 1972 to 1987. In 1997, the company was reformed and began production of ATV vehicles as well as the Can-Am Spyder three-wheeled motorcycle. In 2024 Can-Am released two new electric motorcycle models.[3]

History

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Brand history

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Can-Am was created as a subsidiary of the Bombardier Corporation in 1972.[4] The barn that housed the original Can-Am headquarters still exists at the Bombardier test facility within the Circuit Yvon Duhamel and is located a few miles south of Valcourt, Quebec.[1] The right side of the barn housed the offices for design and engineering, and the left side was used for fabrication.[2] Can-Am's name was the result of a Bombardier employee competition based on the anticipated Canadian vs. American market, though the existence of the Can-Am racing series necessitated the purchase of rights to the name.[2]

Based on the Bultaco design principle of a standard-size frame that could accommodate a range of differently sized engines, engineers Gary Robison, Bob Fisher, and Camille Picard, and former 500cc Motocross World Champion Jeff Smith designed a competition motorcycle from scratch using engines supplied by the Austrian firm, Rotax, another Bombardier subsidiary.[1][5] Their design featured steering head bearing cups that allowed for the adjustment of the steering head angle; these were mainly driven by simplified production on the assembly line.[2]

The machines made an immediate impact, with riders winning Gold, Silver and bronze medals at the International Six Days Trial.[1] The International Six Days Trial, now known as the International Six Days Enduro, is a form of off-road motorcycle Olympics which is the oldest annual competition sanctioned by the FIM dating back to 1913.[6]

In 1974, the Can-Am factory racing team swept the AMA 250cc motocross national championship with Can-Am riders Gary Jones, Marty Tripes and Jimmy Ellis, finishing first, second and third in the championship although, Tripes had raced for most of the season on a Husqvarna motorcycle before being hired by Can-Am for the last race of the season.[4][7][8][9]

Can-Am enduro rider Skip Olson finished second to Dick Burleson in the 1976 AMA Enduro national championship.[10] Can-Am's motorcycle racing success enhanced the brand's image and they gained a reputation for their high horsepower outputs.[4][11] In 1983, Can-Am released a 250 cc road racing motorcycle. Using two 125 cc Rotax motors with a conjoined crankshaft, the motorcycle featured a bespoke frame with an aluminum swingarm.[2]

When the 1973 oil crisis precipitated a decrease in sales of recreational vehicles, Bombardier was forced to reduce their snowmobile and motorcycle production.[12] Bombardier then shifted its priority from recreational products towards the transit equipment industry and then, several years later, into aircraft manufacturing.[12] As a result, investments in product development were reduced substantially and, Can-Am was unable to keep pace with Japanese manufacturers as rapid advancements in motocross technology progressed during the 1970s and 1980s.[12][13] In 1983, Bombardier licensed the brand and outsourced development and production of the Can-Am motorcycles to Armstrong-CCM Motorcycles of Lancashire, England.[4][13] 1987 was the final year of Can-Am motorcycle production.[1][4]

Rebirth and rebranding

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In 2006, Bombardier reintroduced the Can-Am brand with its Can-Am Off-Road range of all-terrain vehicles (ATV). In 2007, the Can-Am brand was also used for the Can-Am Spyder, a new three-wheeled roadster.

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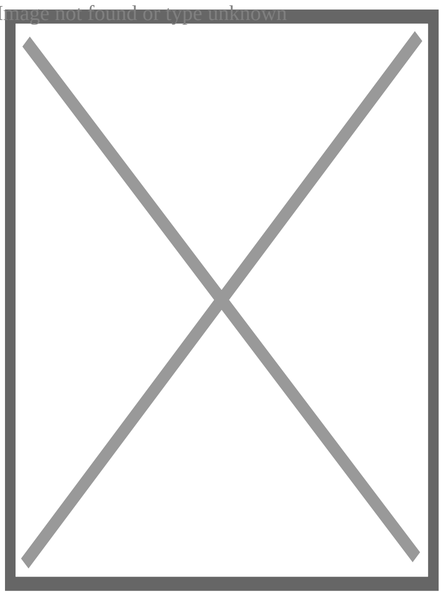
About Four-stroke engine



Four-stroke cycle used in gasoline/petrol engines: intake (1), compression (2), power (3), and exhaust (4). The right blue side is the intake port and the left brown side is the exhaust port. The cylinder wall is a thin sleeve surrounding the piston head which creates a space for the combustion of fuel and the genesis of mechanical energy.

A **four-stroke** (also **four-cycle**) **engine** is an internal combustion (IC) engine in which the piston completes four separate strokes while turning the crankshaft. A stroke refers to the full travel of the piston along the cylinder, in either direction. The four separate strokes are termed:

1. **Intake**: Also known as induction or suction. This stroke of the piston begins at top dead center (T.D.C.) and ends at bottom dead center (B.D.C.). In this stroke the intake valve must be in the open position while the piston pulls an air-fuel mixture into the cylinder by producing a

partial vacuum (negative pressure) in the cylinder through its downward motion.

2. **Compression**: This stroke begins at B.D.C, or just at the end of the suction stroke, and ends at T.D.C. In this stroke the piston compresses the air-fuel mixture in preparation for ignition during the power stroke (below). Both the intake and exhaust valves are closed during this stage.
3. **Combustion**: Also known as power or ignition. This is the start of the second revolution of the four stroke cycle. At this point the crankshaft has completed a full 360 degree revolution. While the piston is at T.D.C. (the end of the compression stroke) the compressed air-fuel mixture is ignited by a spark plug (in a gasoline engine) or by heat generated by high compression (diesel engines), forcefully returning the piston to B.D.C. This stroke produces mechanical work from the engine to turn the crankshaft.
4. **Exhaust**: Also known as outlet. During the *exhaust* stroke, the piston, once again, returns from B.D.C. to T.D.C. while the exhaust valve is open. This action expels the spent air-fuel mixture through the exhaust port.

Four-stroke engines are the most common internal combustion engine design for motorized land transport,[1] being used in automobiles, trucks, diesel trains, light aircraft and motorcycles. The major alternative design is the two-stroke cycle.[1]

History

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Otto cycle

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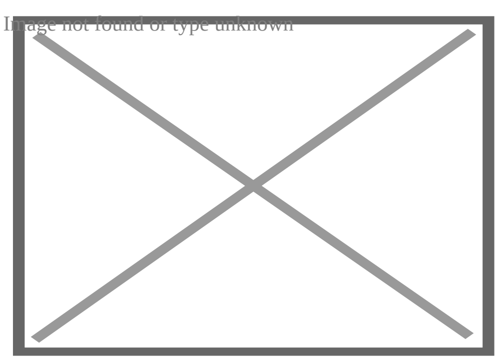
Main article: Otto cycle
See also: Otto engine



An Otto Engine from 1880s US Manufacture

Nikolaus August Otto was a traveling salesman for a grocery concern. In his travels, he encountered the internal combustion engine built in Paris by Belgian expatriate Jean Joseph Etienne Lenoir. In 1860, Lenoir successfully created a double-acting engine that ran on illuminating gas at 4% efficiency. The 18 litre Lenoir Engine produced only 2 horsepower. The Lenoir engine ran on illuminating gas made from coal, which had been developed in Paris by Philip Lebon.[2]

In testing a replica of the Lenoir engine in 1861, Otto became aware of the effects of compression on the fuel charge. In 1862, Otto attempted to produce an engine to improve on the poor efficiency and reliability of the Lenoir engine. He tried to create an engine that would compress the fuel mixture prior to ignition, but failed as that engine would run no more than a few minutes prior to its destruction. Many other engineers were trying to solve the problem, with no success.[2]

In 1864, Otto and Eugen Langen founded the first internal combustion engine production company, NA Otto and Cie (NA Otto and Company). Otto and Cie succeeded in creating a successful atmospheric engine that same year.[2] The factory ran out of space and was moved to the town of Deutz, Germany in 1869, where the company was renamed to Deutz Gasmotorenfabrik AG (The Deutz Gas Engine Manufacturing Company).[2] In 1872, Gottlieb Daimler was technical director and Wilhelm Maybach was the head of engine design. Daimler was a gunsmith who had worked on the Lenoir engine. By 1876, Otto and Langen succeeded in creating the first internal combustion engine that compressed the fuel mixture prior to combustion for far higher efficiency than any engine created to this time.

Daimler and Maybach left their employ at Otto and Cie and developed the first high-speed Otto engine in 1883. In 1885, they produced the first automobile to be equipped with an Otto engine. The Daimler *Reitwagen* used a hot-tube ignition system and the fuel known as Ligroin to become the world's first vehicle powered by an internal combustion engine. It used a four-stroke engine based on Otto's design. The following year, Karl Benz produced a four-stroke engined automobile that is regarded as the first car.[3]

In 1884, Otto's company, then known as Gasmotorenfabrik Deutz (GFD), developed electric ignition and the carburetor. In 1890, Daimler and Maybach formed a company known as Daimler Motoren Gesellschaft. Today, that company is Daimler-Benz.

Atkinson cycle

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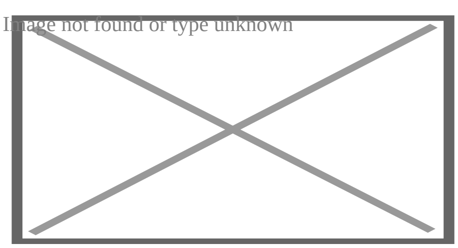
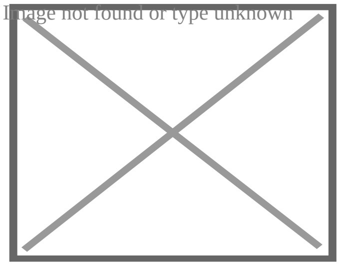


This 2004 Toyota Prius hybrid has an Atkinson-cycle engine as the petrol-electric hybrid engine



The Atkinson Gas Cycle

Main article: Atkinson cycle

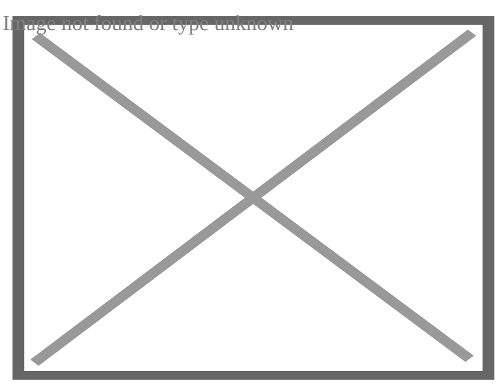
The Atkinson-cycle engine is a type of single stroke internal combustion engine invented by James Atkinson in 1882. The Atkinson cycle is designed to provide efficiency at the expense of power density, and is used in some modern hybrid electric applications.

The original Atkinson-cycle piston engine allowed the intake, compression, power, and exhaust strokes of the four-stroke cycle to occur in a single turn of the crankshaft and was designed to avoid infringing certain patents covering Otto-cycle engines.[4]

Due to the unique crankshaft design of the Atkinson, its expansion ratio can differ from its compression ratio and, with a power stroke longer than its compression stroke, the engine can achieve greater thermal efficiency than a traditional piston engine. While Atkinson's original design is no more than a historical curiosity, many modern engines use unconventional valve timing to produce the effect of a shorter compression stroke/longer power stroke, thus realizing the fuel economy improvements the Atkinson cycle can provide.[5]

Diesel cycle

[edit]
Main article: Diesel cycle



Audi Diesel R15 at Le Mans

The diesel engine is a technical refinement of the 1876 Otto-cycle engine. Where Otto had realized in 1861 that the efficiency of the engine could be increased by first compressing the fuel mixture prior to its ignition, Rudolf Diesel wanted to develop a more efficient type of engine that could run on much heavier fuel. The Lenoir, Otto Atmospheric, and Otto Compression engines (both 1861 and 1876) were designed to run on Illuminating Gas (coal gas). With the same motivation as Otto, Diesel wanted to create an engine that would give small industrial companies their own power source to enable them to compete against larger companies, and like Otto, to get away from the requirement to be tied to a municipal fuel supply.[*citation needed*] Like Otto, it took more than a decade to produce the high-compression engine that could self-ignite fuel sprayed into the cylinder. Diesel used an air spray combined with fuel in his first engine.

During initial development, one of the engines burst, nearly killing Diesel. He persisted, and finally created a successful engine in 1893. The high-compression engine, which ignites its fuel by the heat of compression, is now called the diesel engine, whether a four-stroke or two-stroke design.

The four-stroke diesel engine has been used in the majority of heavy-duty applications for many decades. It uses a heavy fuel containing more energy and requiring less refinement to produce. The most efficient Otto-cycle engines run near 30% thermal efficiency.[*clarification needed*]

Thermodynamic analysis

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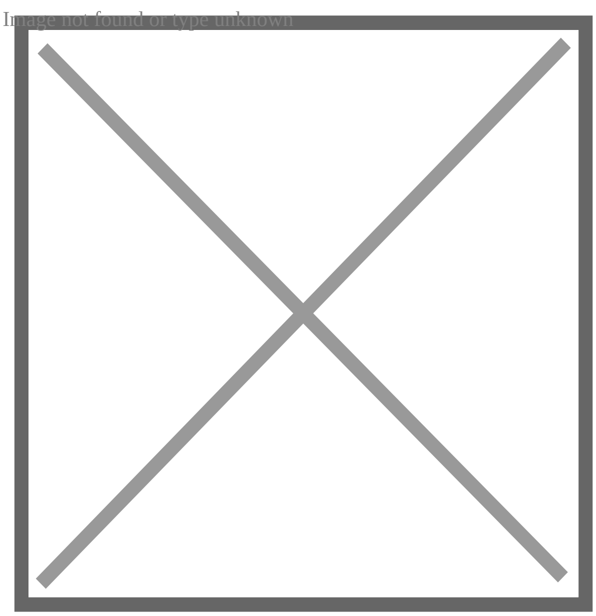

The idealized four-stroke Otto cycle p-V diagram: the intake (A) stroke is performed by an isobaric expansion, followed by the compression (B) stroke, performed as an adiabatic compression. Through the combustion of fuel an isochoric process is produced, followed by an adiabatic expansion, characterizing the power (C) stroke. The cycle is closed by an isochoric process and an isobaric compression, characterizing the exhaust (D) stroke.

The thermodynamic analysis of the actual four-stroke and two-stroke cycles is not a simple task. However, the analysis can be simplified significantly if air standard assumptions[6] are utilized. The resulting cycle, which closely resembles the actual operating conditions, is the Otto cycle.

During normal operation of the engine, as the air/fuel mixture is being compressed, an electric spark is created to ignite the mixture. At low rpm this occurs close to TDC (Top Dead Centre). As engine rpm rises, the speed of the flame front does not change so the spark point is advanced earlier in the cycle to allow a greater proportion of the cycle for the charge to combust before the power stroke commences. This advantage is reflected in the various Otto engine designs; the atmospheric (non-compression) engine operates at 12% efficiency whereas the compressed-charge engine has an operating efficiency around 30%.

Fuel considerations

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A problem with compressed charge engines is that the temperature rise of the compressed charge can cause pre-ignition. If this occurs at the wrong time and is too energetic, it can damage the engine. Different fractions of petroleum have widely varying flash points (the temperatures at which the fuel may self-ignite). This must be taken into account in engine and fuel design.

The tendency for the compressed fuel mixture to ignite early is limited by the chemical composition of the fuel. There are several grades of fuel to accommodate differing performance levels of engines. The fuel is altered to change its self-ignition temperature. There are several ways to do this. As engines are designed with higher compression ratios the result is that pre-ignition is much more likely to occur since the fuel mixture is compressed to a higher temperature prior to deliberate ignition. The higher temperature more effectively evaporates fuels such as gasoline, which increases the efficiency of the compression engine. Higher compression ratios also mean that the distance that the piston can push to produce power is greater (which is called the expansion ratio).

The octane rating of a given fuel is a measure of the fuel's resistance to self-ignition. A fuel with a higher numerical octane rating allows for a higher compression ratio, which extracts more energy from the fuel and more effectively converts that energy into useful work while at the same time preventing engine damage from pre-ignition. High octane fuel is also more expensive.

Many modern four-stroke engines employ gasoline direct injection or GDI. In a gasoline direct-injected engine, the injector nozzle protrudes into the combustion chamber. The direct fuel injector injects gasoline under a very high pressure into the cylinder during the compression stroke, when the piston is closer to the top.[7]

Diesel engines by their nature do not have concerns with pre-ignition. They have a concern with whether or not combustion can be started. The description of how likely diesel fuel is to ignite is called the Cetane rating. Because diesel fuels are of low volatility, they can be very hard to start when cold. Various techniques are used to start a cold diesel engine, the most common being the use of a glow plug.

Design and engineering principles

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Power output limitations

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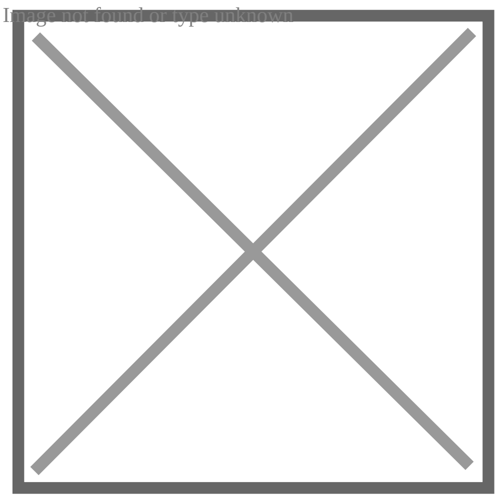

The four-stroke cycle
1=TDC
2=BDC
A: Intake
B: Compression
C: Power
D: Exhaust

The maximum amount of power generated by an engine is determined by the maximum amount of air ingested. The amount of power generated by a piston engine is related to its size (cylinder volume), whether it is a two-stroke engine or four-stroke design, volumetric efficiency, losses, air-to-fuel ratio, the calorific value of the fuel, oxygen content of the air and speed (RPM). The speed is ultimately limited by material strength and lubrication. Valves, pistons and connecting rods suffer severe acceleration forces. At high engine speed, physical breakage and piston ring flutter can occur, resulting in power loss or even engine destruction. Piston ring flutter occurs when the rings oscillate vertically within the piston grooves they reside in. Ring flutter compromises the seal between the ring and the cylinder wall, which causes a loss of cylinder pressure and power. If an engine spins too quickly, valve springs cannot act quickly enough to close the valves. This is commonly referred to as 'valve float', and it can result in piston to valve contact, severely damaging the engine. At high speeds the lubrication of piston cylinder wall interface tends to break down. This limits the piston speed for industrial engines to about 10 m/s.

Intake/exhaust port flow

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The output power of an engine is dependent on the ability of intake (air–fuel mixture) and exhaust matter to move quickly through valve ports, typically located in the cylinder head. To increase an engine's output power, irregularities in the intake and exhaust paths, such as casting flaws, can be removed, and, with the aid of an air flow bench, the radii of valve port turns and valve seat configuration can be modified to reduce resistance. This process is called porting, and it can be done by hand or with a CNC machine.

Waste heat recovery of an internal combustion engine

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An internal combustion engine is on average capable of converting only 40-45% of supplied energy into mechanical work. A large part of the waste energy is in the form of heat that is released to the environment through coolant, fins etc. If somehow waste heat could be captured and turned to mechanical energy, the engine's performance and/or fuel efficiency could be improved by improving the overall efficiency of the cycle. It has been found that even if 6% of the entirely wasted heat is recovered it can increase the engine efficiency greatly.[8]

Many methods have been devised in order to extract waste heat out of an engine exhaust and use it further to extract some useful work, decreasing the exhaust pollutants at the same time. Use of the Rankine Cycle, turbocharging and thermoelectric generation can be very useful as a waste heat recovery system.

Supercharging

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One way to increase engine power is to force more air into the cylinder so that more power can be produced from each power stroke. This can be done using some type of air compression device known as a supercharger, which can be powered by the engine crankshaft.

Supercharging increases the power output limits of an internal combustion engine relative to its displacement. Most commonly, the supercharger is always running, but there have been designs that allow it to be cut out or run at varying speeds (relative to engine speed). Mechanically driven supercharging has the disadvantage that some of the output power is used to drive the supercharger, while power is wasted in the high pressure exhaust, as the air has been compressed twice and then gains more potential volume in the combustion but it is only expanded in one stage.

Turbocharging

[edit]

A turbocharger is a supercharger that is driven by the engine's exhaust gases, by means of a turbine. A turbocharger is incorporated into the exhaust system of a vehicle to make use of the expelled exhaust. It consists of a two piece, high-speed turbine assembly with one side that compresses the intake air, and the other side that is powered by the exhaust gas outflow.

When idling, and at low-to-moderate speeds, the turbine produces little power from the small exhaust volume, the turbocharger has little effect and the engine operates nearly in a naturally aspirated manner. When much more power output is required, the engine speed and throttle opening are increased until the exhaust gases are sufficient to 'spool up' the turbocharger's turbine to start compressing much more air than normal into the intake manifold. Thus, additional power (and speed) is expelled through the function of this turbine.

Turbocharging allows for more efficient engine operation because it is driven by exhaust pressure that would otherwise be (mostly) wasted, but there is a design limitation known as turbo lag. The increased engine power is not immediately available due to the need to sharply increase engine RPM, to build up pressure and to spin up the turbo, before the turbo starts to do any useful air compression. The increased intake volume causes increased exhaust and spins the turbo faster, and so forth until steady high power operation is reached. Another difficulty is that the higher exhaust pressure causes the exhaust gas to transfer more of its heat to the mechanical parts of the engine.

Rod and piston-to-stroke ratio

[edit]

The rod-to-stroke ratio is the ratio of the length of the connecting rod to the length of the piston stroke. A longer rod reduces sidewise pressure of the piston on the cylinder wall and the stress forces, increasing engine life. It also increases the cost and engine height and weight.

A "square engine" is an engine with a bore diameter equal to its stroke length. An engine where the bore diameter is larger than its stroke length is an oversquare engine, conversely, an engine with a bore diameter that is smaller than its stroke length is an undersquare engine.

Valve train

[edit]

The valves are typically operated by a camshaft rotating at half the speed of the crankshaft. It has a series of cams along its length, each designed to open a valve during the appropriate part of an intake or exhaust stroke. A tappet between valve and cam is a contact surface on which the cam slides to open the valve. Many engines use one or more camshafts "above" a row (or each row) of cylinders, as in the illustration, in which each cam directly actuates a valve through a flat tappet. In other engine designs the camshaft is in the crankcase, in which case each cam usually contacts a push rod, which contacts a rocker arm that opens a valve, or in case of a flathead engine a push rod is not necessary. The overhead cam design typically allows higher engine speeds because it provides the most direct path between cam and valve.

Valve clearance

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Valve clearance refers to the small gap between a valve lifter and a valve stem that ensures that the valve completely closes. On engines with mechanical valve adjustment, excessive clearance causes noise from the valve train. A too-small valve clearance can result in the valves not closing properly. This results in a loss of performance and possibly overheating of exhaust valves. Typically, the clearance must be readjusted each 20,000 miles (32,000 km) with a feeler gauge.

Most modern production engines use hydraulic lifters to automatically compensate for valve train component wear. Dirty engine oil may cause lifter failure.

Energy balance

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Otto engines are about 30% efficient; in other words, 30% of the energy generated by combustion is converted into useful rotational energy at the output shaft of the engine, while the remainder being lost due to waste heat, friction and engine accessories.[9] There are a number of ways to recover some of the energy lost to waste heat. The use of a turbocharger in diesel engines is very effective by boosting incoming air pressure and in effect, provides the same increase in performance as having more displacement. The Mack Truck company, decades ago, developed a turbine system that converted waste heat into kinetic energy that it fed back into the engine's transmission. In 2005, BMW announced the development of the turbosteamer, a two-stage heat-recovery system similar to the Mack system that recovers 80% of the energy in the exhaust gas and raises the efficiency of an Otto engine by 15%.[10] By contrast, a six-stroke engine may reduce fuel consumption by as much as 40%.

Modern engines are often intentionally built to be slightly less efficient than they could otherwise be. This is necessary for emission controls such as exhaust gas recirculation and catalytic converters that reduce smog and other atmospheric pollutants. Reductions in efficiency may be counteracted with an engine control unit using lean burn techniques.[11]

In the United States, the Corporate Average Fuel Economy mandates that vehicles must achieve an average of 34.9 mpg$_{?US}$ (6.7 L/100 km; 41.9 mpg$_{?imp}$) compared to the current standard of

25 mpg?US (9.4 L/100 km; 30.0 mpg?imp).[12] As automakers look to meet these standards by 2016, new ways of engineering the traditional internal combustion engine (ICE) have to be considered. Some potential solutions to increase fuel efficiency to meet new mandates include firing after the piston is farthest from the crankshaft, known as top dead centre, and applying the Miller cycle. Together, this redesign could significantly reduce fuel consumption and NO*x* emissions.

Top dead center, before cycle begins	*1 – Intake stroke*	*2 – Compression stroke*
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Fuel ignites	*3 – Power stroke*	*4 – Exhaust stroke*

Starting position, intake stroke, and compression stroke.

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Ignition of fuel, power stroke, and exhaust stroke.

See also

[edit]

- Atkinson cycle
- Miller cycle

- Humphrey pump
- Desmodromic valve
- History of the internal combustion engine
- Napier Deltic
- Poppet valve
- Radial engine
- Rotary engine
- Six-stroke engine
- Stirling engine
- Stroke (engine)
    - Two- and four-stroke engines
    - Two-stroke engine
    - Five-stroke engine (uncommon)
    - Six-stroke engine

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[edit]

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External links

[edit]

- U.S. patent 194,047
- Four stroke engine animation
- Detailed Engine Animations[*usurped*]
- How Car Engines Work
- Animated Engines, four stroke, another explanation of the four-stroke engine.
- CDX *e*Textbook, some videos of car components in action.
- New 4 stroke

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Engine configurations for piston engines

<table>
<tr><th>Type</th><td>

Atmospheric
Axial
Beam

Cornish
Rotative

Bourke
Cam engine
Camless
Compound
Double-acting cylinder
Flathead
Free-piston

Stelzer

Hemi
Heron head
Intake over exhaust
Oscillating cylinder
Opposed-piston
Overhead camshaft
Overhead valve
Pentroof
Rotary
Single-acting cylinder
Split cycle
Swing-piston
Uniflow
Watt
Wedge

</td></tr>
<tr><th>Stroke cycles</th><td>

Two-stroke
Four-stroke
Five-stroke
Six-stroke
Two-and four-stroke

</td></tr>
</table>

Cylinder layouts	**Inline / straight**	○ I1 ○ I2 ○ I3 ○ I4 ○ I5 ○ I6 ○ I7 ○ I8 ○ I9 ○ I12 ○ I14
	Flat / boxer	○ F2 ○ F4 ○ F6 ○ F8 ○ F10 ○ F12 ○ F16

	V / Vee	○ V2
		○ V3
		○ V4
		○ V5
		    ○ VR5
		○ V6
		    ○ VR6
		○ V8
		○ V10
		○ V12
		○ V14
		○ V16
		○ V18
		○ V20
		○ V24

	W	○ W3 ○ W6 ○ W8 ○ W12 ○ W16 ○ W18 ○ W24 ○ W30
		○ Deltic

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Car design

Classification

- **By size**
  - Micro
  - Kei
  - Subcompact
  - Supermini
  - Family
  - Compact
  - Mid-size
  - Full-size
- **Custom**
  - Baja Bug
  - Hot rod
  - Lead sled
  - Lowrider
  - Sandrail
  - T-bucket
- **Luxury**
  - Compact executive
  - Executive
  - Personal
- **Minivan / MPV**
  - Compact
  - Leisure
  - Mini
- **SUV**
  - Compact
  - Crossover (CUV)
  - Mini
  - Coupe SUV
- **Sports**
  - Grand tourer
  - Hot hatch
  - Muscle
  - Pony
  - Sport compact
  - Sports sedan
  - Super
  - Go-kart
- **Other**
  - Antique
  - Classic
  - Economy
  - Ute
  - Van
  - Vintage car

Body styles

- 2+2
- Baquet
- Barchetta
- Berlinetta
- Brougham
- Cabrio coach
- Cab over
- Cabriolet / Convertible / Drophead coupe
- Coupe
- Coupé de Ville / Sedanca de Ville
- Coupé utility
- Fastback
- Hardtop
- Hatchback
- Kammback
- Landaulet
- Liftback
- Limousine
- Microvan
- Minibus
- Multi-stop truck
- Notchback
- Panel van
- Phaeton
- Pickup truck
- Quad coupé
- Retractable hardtop
- Roadster / Spider / Spyder
- Runabout
- Saloon / Sedan
- Sedan delivery/Panel van
- Shooting brake
- Station wagon
- Targa top
- Torpedo
- Touring
- Town (Coupé de Ville)
- T-top
- Vis-à-vis

Specialized vehicles	◦ All-terrain vehicle ◦ Amphibious ◦ Connected ◦ Driverless (autonomous) ◦ Dune buggy ◦ Go-kart ◦ Gyrocar ◦ Pedal car ◦ Personal rapid transit ◦ Police car ◦ Flying car ◦ Taxicab ◦ Tow truck ◦ Voiturette
Propulsion	◦ Alternative fuel ◦ Autogas ◦ Biodiesel ◦ Biofuel ◦ Biogasoline ◦ Biogas ◦ Compressed natural gas ◦ Diesel ◦ Electric (battery ◦ NEV) ◦ Ethanol (E85) ◦ Fossil fuel ◦ Fuel cell ◦ Fuel gas ◦ Natural gas ◦ Gasoline / petrol (direct injection) ◦ Homogeneous charge compression ignition ◦ Hybrid (plug-in) ◦ Hydrogen ◦ Internal combustion ◦ Liquid nitrogen ◦ Liquified petroleum gas ◦ Steam

Drive wheels	○ Front-wheel ○ Rear-wheel ○ Two-wheel ○ Four-wheel ○ Six-wheel ○ Eight-wheel ○ Ten-wheel ○ Twelve-wheel
Engine position	○ Front ○ Mid ○ Rear
Layout (engine / drive)	○ Front-front ○ Front mid-front ○ Rear-front ○ Front-rear ○ Rear mid-rear ○ Rear-rear ○ Front-four-wheel ○ Mid-four-wheel ○ Rear-four-wheel ○ Dual motor-four-wheel ○ Individual wheel drive
Engine configuration (internal combustion)	○ Boxer ○ Flat ○ Four-stroke ○ H-block ○ Reciprocating ○ Single-cylinder ○ Straight ○ Two-stroke ○ V (Vee) ○ W engine ○ Wankel

- **Portal**
- **Category**
- **Template:EC car classification**

Aircraft piston engine components, systems and terminology

Piston engines

Mechanical components

- Camshaft
- Connecting rod
- Crankpin
- Crankshaft
- Cylinder
- Cylinder head
- Gudgeon pin
- Hydraulic tappet
- Main bearing
- Obturator ring
- Oil pump
- Piston
- Piston ring
- Poppet valve
- Pushrod
- Rocker arm
- Sleeve valve
- Tappet

Electrical components

- Alternator
- Capacitor discharge ignition
- Dual ignition
- Electronic fuel injection
- Generator
- Ignition system
- Magneto
- Spark plug
- Starter

Terminology

- Air-cooled
- Aircraft engine starting
- Bore
- Compression ratio
- Dead centre
- Engine displacement
- Four-stroke engine
- Horsepower
- Ignition timing
- Manifold pressure
- Mean effective pressure
- Naturally aspirated
- Monosoupape
- Overhead camshaft
- Overhead valve engine
- Rotary engine
- Shock cooling
- Stroke

Propellers	**Components**	○ Propeller governor ○ Propeller speed reduction unit ○ Spinner
	Terminology	○ Autofeather ○ Blade pitch ○ Constant-speed ○ Contra-rotating ○ Counter-rotating ○ Scimitar ○ Single-blade ○ Variable-pitch
Engine instruments	○ Annunciator panel ○ EFIS ○ EICAS ○ Flight data recorder ○ Glass cockpit ○ Hobbs meter ○ Tachometer	
Engine controls	○ Carburetor heat ○ Throttle	
Fuel and induction system	○ Avgas ○ Carburetor ○ Fuel injection ○ Gascolator ○ Inlet manifold ○ Intercooler ○ Pressure carburetor ○ Supercharger ○ Turbocharger ○ Updraft carburetor	
Other systems	○ Auxiliary power unit ○ Coffman starter ○ Hydraulic system ○ Ice protection system ○ Recoil start	

About Shorewood Home & Auto (Formerly Circle Tractor)

Driving Directions in Will County

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polaris atv ultimate series- ready pack

41.608177048358, -87.952142513859
Starting Point
Shorewood Home & Auto (Formerly Circle Tractor), 13639 W 159th St, Homer Glen, IL 60491, USA
Destination
Open in Google Maps

used atv mowers for sale

41.606342917118, -87.909382977642
Starting Point
Shorewood Home & Auto (Formerly Circle Tractor), 13639 W 159th St, Homer Glen, IL 60491, USA
Destination
Open in Google Maps

atv for sale illinois

41.61894596793, -87.9730747233
Starting Point
Shorewood Home & Auto (Formerly Circle Tractor), 13639 W 159th St, Homer Glen, IL 60491, USA
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polaris atv ultimate series- ready pack

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Starting Point
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Destination
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atv push mower

41.619926653045, -87.892455610928
Starting Point
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atv illinois for sale

41.661417333599, -87.915319377447
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Destination
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ATV Repair

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Starting Point
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Starting Point
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41.579276774696, -87.956507786578
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Frequently Asked Questions

What are the most common causes of overheating in ATVs?

The most common causes include insufficient coolant levels, clogged radiators, malfunctioning thermostats, and prolonged operation under heavy loads or in hot conditions.

How can I prevent my ATV from overheating?

Prevent overheating by regularly checking and maintaining proper coolant levels, cleaning the radiator to remove debris, avoiding prolonged idling or heavy use in high temperatures, and ensuring proper air flow to the engine.

What should I do if my ATV starts overheating during a ride?

If your ATV overheats during a ride, safely stop the vehicle, turn off the engine, allow it to cool down, check coolant levels and top up if necessary, and inspect for any visible blockages or damage. If the problem persists, consult a professional mechanic.

Shorewood Home & Auto

Phone : +17083010222

Email : +17083010222

City : Shorewood

State : IL

Zip : 60404

Address : 1002 W Jefferson St

Google Business Profile

Company Website : **https://www.shorewoodhomeandauto.com/**

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