

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Pegasus Flash, G-MNGF	
<b>No &amp; Type of Engines:</b>	1 Rotax 447 piston engine	
<b>Year of Manufacture:</b>	1985	
<b>Date &amp; Time (UTC):</b>	9 November 2005 at 1000 hrs	
<b>Location:</b>	Great Oakley, Essex	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - 1	Passengers - N/A
<b>Nature of Damage:</b>	Extensive damage to fuselage, landing gear and wing	
<b>Commander's Licence:</b>	National Private Pilot's Licence	
<b>Commander's Age:</b>	52 years	
<b>Commander's Flying Experience:</b>	49 hours (all on type) Last 90 days - 12 hours Last 28 days - 0 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

**Synopsis**

The aircraft suffered an engine failure after takeoff when at a height of 200 ft. Due to lack of a suitable landing field straight ahead the pilot attempted a downwind landing on a taxiway which resulted in the aircraft somersaulting following a landing on soft ground adjacent to the taxiway. It sustained substantial damaged; the pilot received minor injuries and exited the aircraft unassisted. The most probable cause of the engine failure was an internal defect within the magneto generator, resulting in a loss of power to the engine ignition system.

**History of the flight**

After removing the aircraft from its hangar and fitting the wing, the pilot carried out a pre-flight check and noted

that there was approximately 30 lt of fuel in the fuel tank. He then started the engine and allowed it to warm up for several minutes; the engine was then stopped whilst the pilot prepared himself for the flight. When he was ready the pilot restarted the engine, boarded the aircraft and taxied to Runway 27 for takeoff. He selected maximum power and the aircraft took off normally. When at a height of approximately 200 ft, climbing at 600 fpm at 55 mph, the engine cut out without warning. The pilot established the aircraft in a stable gliding descent and looked for a suitable landing site. The field immediately in front of the aircraft had been ploughed and was assessed as unsuitable by the pilot, who then attempted to land the aircraft on the crosswind runway, Runway 22.

However, after turning onto the runway heading the aircraft was too high to land without overshooting so the pilot then attempted to turn the aircraft onto a heading of 090° for a downwind landing on a taxiway. As aircraft was now becoming low and its lack of height prevented the completion of the turn, the pilot was forced to land in a muddy field adjacent to the taxiway. During the landing, the nose wheel dug into the soft ground resulting in the aircraft somersaulting about its nose, which caused significant damage to the fuselage, landing gear, propeller and wing. The aircraft came to rest upright leaning at 45° to the right. The pilot received minor injuries and exited the aircraft unassisted.

### **Description of aircraft**

The Pegasus Flash is a weight shift microlight aircraft certified under CAA Type Approval Data Sheet BM10 issue 4. The aircraft consists of a fuselage pod fitted with a tricycle landing gear and a Rotax 447 engine, mounted at the rear, and a detachable wing, including the control frame assembly which attaches atop the fuselage pylon.

The engine installed in G-MNGF had operated for 507 hours and was fitted with a 'points' ignition system. This system consists of a magneto generating coil comprised of an low tension (LT) ignition coil, a 110 watt lighting coil and a 30 watt charging coil. Power from the ignition coil passes through an ignition switch to two high tension (HT) ignition coils, each of which provides power to a single spark plug. Thus, it is intended that total power loss should not occur in the event of a failure in one HT ignition circuit.

### **Engine maintenance history**

The pilot reported that the engine had suffered a momentary cut out after takeoff on the previous flight, following which the engine recovered and continued to operate normally. After this event the carburettor was

stripped and cleaned, the points were cleaned and reset, the air filter was checked and re-oiled, and the fuel pump and filter were visually inspected. The engine was then run for three minutes at varying power levels with no reported problems.

There have been several reported incidents of erratic or rough running Rotax 447 engines as a result of the tachometer being connected to the ignition coil instead of the low output magneto coils. The pilot was, however, aware of this problem and confirmed that the tachometer was correctly wired and, as the engine had given no indication of impending failure, this was not considered to be a factor in this incident.

### **Additional information**

The magneto generator fitted to a 'points' ignition Rotax 447 provides electric power for the aircraft through the three magneto coils. Previous events of total loss of power in the ignition circuit on relatively high time engines are known to have occurred, resulting from the breakdown of the insulation in the ignition coil. In some cases, this has been attributable to one of the low power magneto coils overheating and burning the 'Shellac' insulation of the ignition coil windings.

### **Analysis**

Metrological conditions at the time of the incident were such that the formation of carburettor icing was possible; the pilot was however aware of this possibility and was familiar with the symptoms of carburettor icing and its prevention. As the engine had cut out with no warning, such as rough running, carburettor icing was considered an unlikely cause of the engine failure. Also as the engine suffered a sudden and complete loss of power, it is considered highly unlikely that the HT section of both ignition systems failed simultaneously. In view of the sudden and complete power loss from the engine,

and the previous momentary cut out, it is also considered that a failure of the ignition switch is unlikely to have been the cause of the loss of engine power. Therefore given the life of the engine, the most probable cause of

the failure was likely to have been a breakdown of the insulation in the magneto ignition coil resulting in a total loss of power to the HT ignition circuits.