

ACCIDENT

Aircraft Type and Registration:	AutoGyro Europe MT-03, G-RSUK	
No & Type of Engines:	1 Rotax 914T piston engine	
Year of Manufacture:	2005	
Date & Time (UTC):	29 April 2006 at 1730 hrs	
Location:	Coventry Airport	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Rotor blades and propeller destroyed, damage to tricycle unit	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	45 years	
Commander's Flying Experience:	245 hours (of which 21 were on type) Last 90 days - 8 hours Last 28 days - 7 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

Synopsis

During landing, as the nosewheel touched down, the autogyro turned left and rolled over. The pilot attributed the cause of the accident to a combination of his failure to prevent nosewheel contact before it could be centred, and a high turn speed. A modification to introduce a castoring nosewheel has been introduced.

History of the flight

The autogyro was returning from Popham Airfield to Coventry following an uneventful endurance flight lasting 90 minutes. The descent into Coventry was normal but included a hold on base leg to allow a Boeing 737 aircraft to land. The landing aircraft was about

five minutes ahead of G-RSUK, avoiding any wake turbulence. The wind was calm. The pilot reported that the autogyro touched down, mainwheels first, with the engine power at idle. He held the nosewheel off the runway, however as the nosewheel touched down the autogyro turned left. The rotors struck the runway, one blade broke off and the autogyro rolled onto its right side. The propeller and engine stopped. The pilot was uninjured and climbed out of the open cockpit of the autogyro without difficulty.

The pilot stated that he normally turned left to vacate the runway after landing. However, he did not expect

the combination of the immediate left turn, the increased groundspeed with no wind, and the reducing rotor speed to result in an immediate rollover.

Autogyro description

The AutoGyro Europe MT-03 is a tandem two-seater autogyro with an all metal frame, designed in Germany and first flown in 2003. The operator of G-RSUK, RotorSport UK, holds the UK Type Approval for the MT-03 and provides a factory built UK version, compliant with British Civil Airworthiness Requirements (BCAR) Section T. The accident flight was being carried out as part of the UK approval process.

G-RSUK was fitted with a steerable nosewheel connected directly to the rudder pedals. In order to allow the steering to be in the straight ahead position during takeoff when some rudder deflection is normally required, an angular offset of 10° was incorporated into the nosewheel steering system. During landing, with the power off and the rudder straight, the nosewheel was therefore offset to the left by 10°, and it was necessary for the pilot to centralise the nosewheel before it made contact with the runway.

Discussion

The pilot attributed the cause of the accident to a combination of factors. The nosewheel contacted the

ground before the forward speed was low enough for it to be centred. He also commenced an immediate turn to the left. This, combined with the high ground speed and reducing stability as the rotor speed decayed, prevented the turn being completed without the autogyro rolling over. He considered that the calm wind conditions, high aircraft centre of gravity and fixed nosewheel to rudder pedal relationship made control of the landing overly sensitive.

There have been a number of similar ground rollover incidents in Germany. Design analysis by the UK Type Approval holder has shown that the sensitivity to rollover could be significantly reduced by the introduction of a self-centering, fully castoring nosewheel. The purpose of this modification is to allow the nosewheel to track in the direction of travel on touchdown. Additionally, due to the introduction of nosewheel castoring, as the ground speed increases, so does the turning circle thus making it more difficult for the combination of ground speed and turning circle to cause a rollover. The modification also allows the rudder to nosewheel offset to be reduced resulting in a more central pedal position during taxi.

This design modification has been incorporated in the aircraft configuration type approval and has successfully completed a ground and flight test program by both the CAA and RotorSport UK Ltd.