

## Certification of a Light Rotorcraft UAS

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The aviation department of the Inspectorate for Traffic and Waterways (abbreviated IVW in Dutch) is the Civil Aviation Authority of The Netherlands (CAA NL). In this function, they are responsible for all safety related issues in civil aviation, according to the ICAO rules, like airspace and airfield ruling, organizational approval of operators and airworthiness.

In The Netherlands, UAS are only allowed to operate under the model aircraft regulation, which limits their weight to 25 kg. Currently, there is no regulation in place for UAS between 25 kg and 150 kg, which means that these UAS are not allowed to fly in the Netherlands. There is significant interest from UAS industry to work with heavier UAS, so at this moment, regulations are being developed in order to allow UAS with a mass of up to 150 kg to fly in Dutch airspace.

Due to their role as civil aviation authority, IVW received in 2007 a request from the Dutch company Geocopter B.V. for (restricted) type certification of a 80 kg Rotorcraft UAS, the GC 201 rotorcraft. According to the basic regulation of EASA, the European Aviation Safety Agency, a UAS with a maximum weight of 150 kg is the full responsibility of the national aviation authority. After some internal discussion, CAA NL decided honour the request and to start working on this type certification.

### Developing Regulations

The first step is to start developing technical requirements against which the UAS could be certificated. This is done according to the proposed EASA rules (NPA 16-2006), where it is suggested to select the most suitable certification specification for manned aircraft and adapt this for the UAS to be certificated.

For this specific project, the certification specification for very light rotorcraft (CS-VLR) was selected. The full team of certification specialists at CAA NL reviewed the specification and developed a draft certification specification. This draft document was presented and discussed with the applicant, in order to make sure that the requirements were usable in the certification project. The applicant was not familiar with the standard procedures of how to certify an aircraft, so it took a number of meetings and detailed discussions to fully understand the requirements and present them in a usable form. At this point in time, these discussions are still ongoing.

In parallel with the technical requirements, operational requirements (e.g. UAS operator organization and UAS flight crew licensing) are also being developed. Again, these requirements are being developed in very close cooperation with the applicant. This helps in two ways. Firstly, CAA NL learns whether or not the requirements are fair and usable. Secondly, the applicant learns to understand the rules and can provide suggestions for improvements in the requirements.

### International Harmonisation

From the start of the project, it was decided to try to harmonise these requirements with other national aviation authorities,

because all countries within the European Union follow the same basic regulation of EASA and are therefore responsible for similar certification projects. This group was named JARUS (see other paper in this yearbook) and a large number of European and non-European countries are an active part of this group. The draft requirements developed by CAA NL were presented to this group and at the moment the comments of the other national aviation authorities on large parts of the requirements are collected and discussed.

Within the technical requirements, there is a specific requirement for system safety. Since it is expected that UAS will be heavily dependent on automated systems, it was decided to form a separate group to establish a draft for this requirement. Furthermore, there is also a group working on the harmonisation of the operational requirements within JARUS.

### Current Status

As indicated earlier, there is currently no regulation in place in The Netherlands that allows a UAS of 80 kg to fly. In order to enable the development and flight testing of the applicant's UAS, a special exemption has been provided to the applicant. Under this exemption, he is allowed to fly his UAS in two dedicated areas in Dutch airspace. Also, the intended operators of the UAS have received an exemption to allow them to operate the UAS without a pilot's license. These exemptions are also limited in time, because once the regulation for light UAS is officially published in The Netherlands, the applicant can operate his UAS under this regulation.

With these exemptions, the applicant can start working on his test program for the certification of the UAS. Furthermore, it will allow him in the near future to start commercial operation in a limited area of Dutch airspace, according to the draft regulation for light UAS that is being developed.

