

## **Follow-up to recommendations *Paramotor trike crashed during flight***

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### **1. About this report**

The Dutch Safety Board conducted an investigation into an accident in which a paramotor trike crashed shortly after take off. The pilot and sole occupant of the paramotor trike was fatally injured. The investigation focused on the direct causes of the accident and the underlying factors. The investigation revealed that both the theoretical and practical training of paramotor (trike) pilots differs from the training for other forms of recreation aviation. Paramotor (trike) pilots use the same airspace and must partly meet the same requirements as other pilots in recreational aviation. Both the training of student pilots and the flight operation of licenced pilots therefore require a professional approach.

The investigation also revealed that a paramotor trike is not covered by the definition of a powered paraglider, and that a paramotor trike is not mentioned separately in aviation legislation. Paragliding has developed further over the years with the introduction of trikes, but the legislator has not actively followed this development. The result is that these paramotor trikes have been flown since approximately 2010, while no legal regulations exist for this form of aviation, and flying without a licence is tolerated.

To improve the safety of paramotor (trike) aviation, the Dutch Safety Board issued three recommendations relating to the training for paramotor (trike) flying and the legislation surrounding paramotor trike aviation. The recommendations were addressed to the Ministry of Infrastructure and Water Management and the Royal Netherlands Aeronautical Association (KNVvL). Both parties have responded to the recommendations.<sup>1</sup>

This memorandum contains a general conclusion about the follow-up to the recommendations, followed by a short summary of the responses received to each recommendation and a conclusion about the follow-up to that recommendation. The full text of the reactions of the Ministry of Infrastructure and Water Management and the KNVvL can be found on the website of the Dutch Safety Board.

### **2. General conclusion on follow-up to the recommendations**

The recommendations have been adequately followed up on by the parties. Both the Ministry of Infrastructure and Water Management and the KNVvL have taken steps to tackle the safety issues. The Ministry of Infrastructure and Water Management has drawn up draft legislation and regulations making it compulsory to register new and further developed powered paragliders and motor trikes with an empty weight below 120

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<sup>1</sup> On 9 September 2022 and 6 October 2022 respectively.

kg in the Dutch Aviation Register and to provide a special certificate of airworthiness. The KNVvL has revised and where necessary updated its training and examination plan. In a number of different ways, they have made efforts to make the training more professional and more uniform, for paramotor (trike) flying. The KNVvL has focused additional attention on the importance of thorough flight preparations.

*Overview of follow-up on recommendations*

In evaluating the extent to which recommendations from aviation reports have been followed up on, the Dutch Safety Board is bound by the assessment criteria from the European classification system, in line with EU Regulation No. 996/2010. The European classifications with the corresponding assessment criteria appear in an appendix to this memorandum.

Recommendations to	Recommendation	Compliance
KNVvL	1. Develop a uniform training course that pays extensive attention to the theoretical and practical elements of paramotor (trike) flying.	Adequate
KNVvL	2. Ensure that licenced pilots are made aware of a professional approach to paramotor (trike) flying. Emphasize the need for thorough flight preparations.	Adequate
Ministry of Infrastructure and Water Management	3. Develop and implement the necessary regulations for flying paramotor trikes as soon as possible. Include that the undercarriage, engine and wing together form an aircraft which all must carry the same registration number.	Adequate

### 3. Follow-up per recommendation

#### **Recommendation 1**

To the Royal Netherlands Aeronautical Association (KNVvL):

Develop a uniform training course that pays extensive attention to the theoretical and practical elements of paramotor (trike) flying.

#### *Response KNVvL*

In a letter dated 6 October 2022, the KNVvL informs that that paramotor flight training has been modified in response to the accident. The KNVvL informs that the following steps have been taken:

- The KNVvL has drawn up a programme plan 'Training and Examinations Paramotor Flying' with points for improvement and attention.
- The regulations on paramotor flying (which set out training and examination requirements) have been revised. Among other things, the learning objectives and practical requirements have been adjusted and the organisation of practical exams has been revised.
- A (new) training manual and examinations have been drawn up for paramotor flying. These describe in detail the procedures for training courses and for the setting of examinations. The theory attainment targets for paramotor flying have been revised, expanded and included in this manual. Learning objectives as used in other section of the KNVvL, such as paragliding and gliding, have also been used.
- Video training modules have been developed on various topics, such as meteorology and regulations.
- The dangers of specific meteorological conditions (such as a convergence) will from now on be more clearly explained and examined. Also, practical training on the use of the reserve parachute is now additionally included in the task list.

Furthermore, the KNVvL intends to further professionalise training (also at individual schools) through a basic training plan. The Paramotor Flying division has also expressed the wish to be able to grant KNVvL recognition to paramotor flying schools that meet these conditions. This recognition will then be required for the paramotor flying school if it wishes to offer KNVvL training courses.

#### *Assessment of the follow-up*

In accordance with the European classification, the follow-up to the recommendation is classified as adequate.

### *Explanation of the assessment*

Following the accident and the recommendation from the Dutch Safety Board, the KNVvL has revised and, where necessary, expanded the training and examinations of paramotor pilots. The aim of the KNVvL is to further professionalise and standardise the training (also at individual schools) through a basic training plan. These actions are in line with the recommendation.

### **Recommendation 2**

To the Royal Netherlands Aeronautical Association (KNVvL):

Ensure that licenced pilots are made aware of a professional approach to paramotor (trike) flying. Emphasize the need for thorough flight preparations.

### *Response KNVvL*

The KNVvL writes that flight preparations has been given a far more prominent role in all stages of the training, see the response to recommendation 1. In addition, the KNVvL uses the website [www.paramotorweb.nl](http://www.paramotorweb.nl), newsletters, video training modules and personal contact, to point out to pilots of powered paragliders and paramotor trikes among others of the importance of good and thorough flight preparations. A special app has also been developed with links to important sites for flight preparations. Information about this app is available on the abovementioned website. Finally, the paramotor flying schools and examiners include flight preparations far more prominently in their training courses and examinations.

### *Assessment of the follow-up*

In accordance with the European classification, the follow-up to the recommendation is classified as adequate.

### *Explanation of the assessment*

The KNVvL has taken several of actions to inform pilots of powered paragliders and paramotor trikes of the importance of thorough flight preparations. The KNVvL has in that way complied with the recommendation.

### **Recommendation 3**

To Ministry of Infrastructure and Water Management

Develop and implement the necessary regulations for flying paramotor trikes as soon as possible. Include that the undercarriage, engine and wing together form an aircraft which all must carry the same registration number.

#### *Response from the Ministry of Infrastructure and Water Management*

In a letter dated 22 September 2022, the Minister informs that following numerous discussions with stakeholders, draft legislation and regulations have been drafted.<sup>2</sup> This legislation and regulations are expected to be implemented during the first quarter of 2023.<sup>3</sup>

The proposed amendment to the regulations, which is in line with international regulations, will make it possible to register new and further developed powered paragliders and motor trikes with an empty weight below 120 kg in the Netherlands aviation register, and to provide them with a special certificate of airworthiness, according to the Minister.<sup>4</sup> Due to amended regulations abroad, this had not been possible for several years.

The new regulations distinguish between two weight classes for the registration of paramotor(trikes), for which different rules will apply: the paramotor (trike) with an empty weight below 120 kg and the paramotor (trike) with an empty weight above 120 kg.

With regard to a paramotor (trike) with an empty weight below 120 kg, the Minister informs that from the point of view of safety, the conscious decision has been made to apply the registration mark only to the wing. This makes it possible, in the case of a light paramotor (trike) as far as possible to match the combination of wing, engine and possible wheel construction to the weight and skills of the pilot. The fact that the airworthiness and safety of the entire structure is determined by the screen has been taken into account, the minister said.

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<sup>2</sup> On the basis of this draft legislation and regulations, existing legislation will be amended in such a way that in the future it also applies to paramotor trikes.

<sup>3</sup> Further consultation with the Ministry revealed that this process has suffered some delay. The legislation and regulations are now expected to be implemented in the second half of 2023. The Ministry of Infrastructure and Water Management will maintain close contact with the various stakeholders on this issue, including the KNVvL and the Human Environment and Transport Inspectorate (ILT).

<sup>4</sup> Registration of this kind will also be made compulsory.

With regard to a paramotor (trike) heavier than 120 kg, the regulations will remain unchanged. The Minister informs that the recommendation is already met, for this category.

*Assessment of the follow-up*

In accordance with the European classification, the follow-up to the recommendation is classified as adequate.

*Explanation of the assessment*

Although the Minister does not fully adopt the recommendation from the Dutch Safety Board regarding the light weight class, the Dutch Safety Board considers the follow-up on the recommendation to be adequate. The Board considers valid the minister's consideration to apply the registration mark only on the screen to maintain sufficient flexibility in the configuration of the paramotor trike. After all, this flexibility contributes to safety.