**Flying-V Control**

**Job description**

As aviation is an important contributor to anthropogenic climate-change, future airplanes need disruptive technologies that dramatically reduce their energy consumption. The Flying V is a prime example of such a disruptive technology. It is a revolutionary new airplane configuration, which has neither a tail nor a fuselage and which holds compartments for passengers, freight and fuel inside its wing. This configuration results in a 20% improvement in energy efficiency compared to a traditional tube-and-wing aircraft. The unique design of the Flying V leads to a number of challenges in the flight control system design. The tailless configuration reduces lateral-directional stability, which can lead to undesirable flying and handling qualities. The control surface layout is different than in conventional aircraft, which makes the control allocation more challenging.

This PhD position aims for automatic control design and validation for improving the handling quality and fault-tolerance ability of the novel Flying V aircraft. The novel controller should have stability guarantees and should be robust against model uncertainties, external disturbances, and faults.  The designed controller will be first validated on a flight dynamic model identified from real-world flight testing.  Then the handling qualities of the closed-loop system need to be validated using the SIMONA Research Simulator of TU Delft. Finally, the controller is to be validated by real-world UAV flight tests.

**Requirements**

The candidate should have a Master's degree in an area covering control, e.g., aerospace engineering, control engineering, mechanical engineering, or other related areas. The research will cover both theoretical and applied contributions. Experience with design of automatic flight control systems is desired. Skills in programming and implementation of (nonlinear) control laws are highly appreciated.

**Conditions of employment**

**Fixed-term** contract: 4 years.

Doctoral candidates will be offered a 4-year period of employment in principle, but in the form of 2 employment contracts. An initial 1.5 year contract with an official go/no go progress assessment within 15 months. Followed by an additional contract for the remaining 2.5 years assuming everything goes well and performance requirements are met.

Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities, increasing from € 2541 per month in the first year to € 3247 in the fourth year. As a PhD candidate you will be enrolled in the TU Delft Graduate School. The TU Delft Graduate School provides an inspiring research environment with an excellent team of supervisors, academic staff and a mentor. The Doctoral Education Programme is aimed at developing your transferable, discipline-related and research skills.

The TU Delft offers a customisable compensation package, discounts on health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. For international applicants we offer the Coming to Delft Service and Partner Career Advice to assist you with your relocation.

**Employer**
**Delft University of Technology**

Delft University of Technology is built on strong foundations. As creators of the world-famous Dutch waterworks and pioneers in biotech, TU Delft is a top international university combining science, engineering and design. It delivers world class results in education, research and innovation to address challenges in the areas of energy, climate, mobility, health and digital society. For generations, our engineers have proven to be entrepreneurial problem-solvers, both in business and in a social context.

At TU Delft we embrace diversity as one of our core values and we actively engage to be a university where you feel at home and can flourish. We value different perspectives and qualities. We believe this makes our work more innovative, the TU Delft community more vibrant and the world more just. Together, we imagine, invent and create solutions using technology to have a positive impact on a global scale. That is why we invite you to apply. Your application will receive fair consideration.

Challenge. Change. Impact!

**Department**
**Faculty Aerospace Engineering**

The Faculty of Aerospace Engineering at Delft University of Technology is one of the world’s most highly ranked (and most comprehensive) research, education and innovation communities devoted entirely to aerospace engineering. More than 200 science staff, around 250 PhD candidates and over 2,700 BSc and MSc students apply aerospace engineering disciplines to address the global societal challenges that threaten us today, climate change without doubt being the most important. Our focal subjects: sustainable aerospace, big data and artificial intelligence, bio-inspired engineering and smart instruments and systems. Working at the faculty means working together. With partners in other faculties, knowledge institutes, governments and industry, both aerospace and non-aerospace. Working in field labs and innovation hubs on our university campus and beyond.

Click here to go to the website of the Faculty of Aerospace Engineering.

**Additional information**

For more information about this vacancy, please contact Dr. ir. Erik-Jan van Kampen and Dr. Xuerui Wang. Email: E.vanKampen@TUDelft.nl; x.wang-6@tudelft.nl

**Working at TU Delft**

Join the oldest and largest technical university in the Netherlands. Work on clever solutions for worldwide challenges, to change the world and make an impact. Ready to bring your energy to our research?

Challenge, change, impact!

Please contact the employer for questions regarding your application.

Tip: save this job as favorite in your AcademicTransfer account. This gives you an immediate overview and makes it easy to find the job later on. No account yet? Create it now and take advantage of other useful functionalities too!

Back to the vacancy
**Application procedure**

Are you interested in this vacancy? Please directly contact Dr. ir. Erik-Jan van Kampen and Dr. Xuerui Wang. Email: E.vanKampen@TUDelft.nl; x.wang-6@tudelft.nl

Please note:

* Native speakers will be exempted from the English test requirement, as well as, in principle, non-native applicants who have obtained an English-taught Master’s degree. If during the selection process it is deemed that the English proficiency of the candidate with an English-taught Master’s degree does not meet the requirements, they may also be asked to do a test.
* If your MSc diploma and transcript are not in Dutch or English and you will be the selected candidate, the TU Delft will ask you to deliver a certified translation.
* A pre-employment screening can be part of the selection procedure.
* Applying for an exemption for specific research and educational areas is an obligatory part of the selection procedure for this vacancy. This exemption must be obtained from the Ministry of Education, Culture and Science (OCW) before an employment contract is agreed upon. Click here for more information.
* You can apply online. We will not process applications sent by email and/or post.
* Acquisition in response to this vacancy is not appreciated.