



UAS Test Center Denmark

- When you want to develop,
sell og fly UAS in Europe

Place: Hans Christian Andersen Airport (EKOD), Odense
Date: 2016.04.20

Vision

- // HCA Airport wants to be one of the leading European test centers of Unmanned Aircraft Systems. We have established UAS TEST CENTER Denmark
- // UAS Test Center Denmark is dedicated to safety, service, flexibility and professional competencies.



Introduction

- Henning Mussegaard, Operator Approvals
- UAS Test Center Denmark @Hans Christian Andersen Airport (EKOD)
- 2013, UAS Denmark and UAS Test Center established
- 2014, Followed by a business park and first companies moving in
- 2015, First BVLOS flight by Boeing
- 2015, First large RPAS flight by Schiebel
- 2015, Delegated responsibility for Operator approvals, by *Danish Transport and Construction Agency (NAA)*.



Current activities in UAS TCD

1. Testbed for Danish and international companies
2. Incubator and permanent location for companies, University
3. Venue for UAS related activities in OSCE, NATO etc.
4. Cooperation partner in R&D projects
5. Qualified entity – approval of UAS operators in Denmark
6. Flight academy
7. UAS Denmark – network cluster – regulatory issues etc.
8. Nordic UAS Event 1-3 June, 2016 (Odense Congress Center)

UAS Test Center Denmark: Flight academy

// "Drone driver's license" mandatory in Denmark in autumn 2016

// We have offered ground school since January 2015

INFO

// Experienced teachers with an aviation background

// Distance learning + 3 day course and written exam

// Academy certification and license

// Safety priority - learn to avoid accidents

CONTENT

Aviation Safety, Air Law, Aerodynamics and Principles of Flight, Aircraft Knowledge, Flight Performance and Operational Planning, Operations Manual, Human Factors, Communication, Meteorology, Map Reading, Deployment and Flight Procedures

UAS Test Center DK – HCA Airport Airspace

HCA Airport Delegated Drone Airspace
BVLOS





REFERENCE: FORGEIGN FIRMS SEE POTENTIAL IN THE TESTING AND R&D OPPORTUNITIES IN DENMARK

THE WORLD'S LARGEST AIRPLANE PRODUCER IS TESTING UAV'S IN DENMARK

“ Both academic and industry are at an **incredibly high level** in Denmark. We have found much more **potential** here than anticipated.

We will continue to build on our more than four years of **collaboration with HCA Airport** to bring opportunities in the fast-growing unmanned systems market to Danish industry

DEBBIE RUB
VP and GM, Boeing Global Strike



UAS Test Center DK – HCA Airport Facilities




Facilities (Test site, hangar, offices, infrastructure)

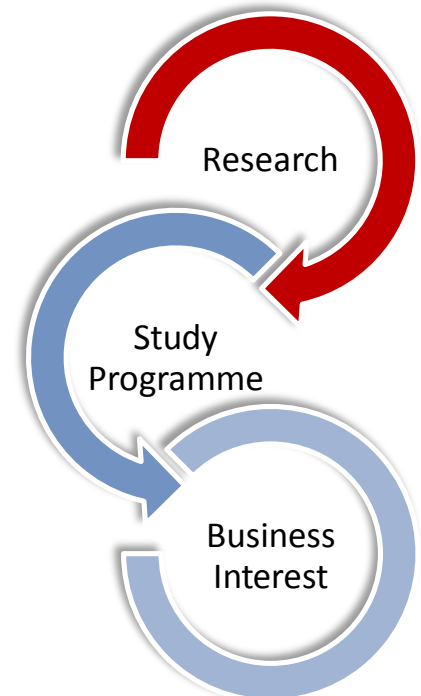


Betydningen af et test- og innovationscenter

- I 2015 udarbejdede Oxford Research en analyse målt på det danske jobpotentiale inden for droner, herunder et testcenters betydning.
- Danmark kan positionere sig og på sigt opbygge en international styrkeposition. I vindmølleindustrien opbyggede man testfaciliteter på Risø som stærkt fundament for at gøre Danmark til førende.
- I videns- og teknologiintensive sektorer er det vigtigt, at producenter, operatører, vidensinstitutioner, og offentlige aktører har mulighed for at afprøve og teste deres teknologier.
- Et veludbygget test- og innovationscenter kan bidrage til brobygning mellem forskningen og den kommercielle anvendelse af teknologierne og dermed understøtte processen fra test og demonstration til markedsintroduktion.
- Danmark kan skabe op imod 15.000 private dronejob frem mod 2050.

THE UNIVERSITY OF SOUTHERN DENMARK (SDU) HAS ESTABLISHED A DRONE LABORATORY

-  The first in Europe to offer a **MSc in Drone Technology**
(60 students annually)
-  Close collaboration with the **UAS Test Center Denmark**
-  **Brad Beach** is the new head of SDU's Drone Center (former Director of U.S. Military UAS school)



Status of Danish regulations

Danish regulation BL 9-4 (Extract)

- Security distance 150 m to urban areas and major roads
- Security distance to civil public Airport/Airfield > 5 km
- Security distance to military Airport/Airfield > 8 km
- Max 100 m altitude (AGL)
- 7-25 kg only on model aircraft field
- 7-25 kg, Liability insurance is mandatory
- > 25 kg, National rules of the air is applicable, exemptions are possible

Additional AIC B 08/14 – Exemptions from BL-9-4 are possible for commercial use or test/research purpose (Extract):

- Approved Operators Handbook is required
- Cat. 1A (Max 1,5 kg and Kinetic energy < 150 J) - VLOS
- Cat. 1B (1,5-7 kg and Kinetic energy < 1.000 J) - VLOS
- Cat. 2 (Over 7 kg) - VLOS
- Cat. 3 (BVLOS) – Segregated airspace
- Over 25 kg: Type certificate needed – but exemption might be possible
- Refer to AIC B 08/14 for specific details.

Additional regulations:

- > 150 kg: EC 218/2008 is applicable according to Annex II (i).

Coming regulations

Danish regulations are about to be updated

- New revision is expected this year
- Will include national regulation for RPAS
- Extract of expected RPAS license and requirements:

License	Weight	Education	Experience	Test	Registration
-	< 0,250 Kg	-	-	-	- (yes)
A	0,250 – 1,5 kg	Theoretical, Practical	>15 Flights Non-Urban	Theoretical, Practical (Category)	- yes
B	1,5 – 7,0 Kg	Theoretical, Practical	>15 Flights Non-Urban	Theoretical, Practical (Category)	- yes
C	7,0 – 25 Kg	Theoretical, Practical	>15 Flights Non-Urban	Theoretical, Practical (Category)	- yes
D	< 25 Kg BVLOS	Theoretical, Practical	>50 Flights Non-Urban Within 1 year	Theoretical, Practical (Category and Model specific)	LAPL

Categories are

- (I) Fixed wing/ Glider
- (II) Helicopter/ Multi-rotor
- (III) Airship/ Balloon
- (IV) Powered-lift
- (V) Special

- Central drone registration

Ny dronelov 2.-og 3. behandling ultimo maj. Bekendtgørelse i 2 trin, efterår- og ultimo 2016.

- Hvilke rammer giver den kommende dronelov for kommunernes udnyttelse af droneteknologi?
- Alle piloter på kursus I 3 dage
- Dronebevis, A-B-C
- Alle droner registreres.



REGLER FOR FLYVNING MED DRONE

ILLUSTRERET AF LARSHOLMGAARD.DK



5 KM **8 KM**

TIL OFFENTLIG
FLYVEPLADS

TIL MILITÆR
FLYVESTATION

MAX FLYVEHØJDE

100 M



MINIMUM AFSTAND TIL
BYMESSIG BEBYGGELSE

← 150 M



MINIMUM AFSTAND TIL
STØRRE OFFENTLIG VEJ

150 M →



UNDER 7 KG:

ANDRES LIV OG EJENDOM MÅ IKKE UDSÆTTES FOR FARE. OMGIVELSERNE SKAL PÅFØRES SÅ LIDT ULEMPE SOM MULIGT. OMRÅDER MED MANGE MENNESKER OG SÆRLIGT FØLSOM NATUR MÅ IKKE OVERFLYVES.

OVER 7 KG:

MÅ KUN FLYVE PÅ GODKENDT MODELFLYVEPLADS. ANSVARSFORSIKRING ER PÅKRÆVET. MAN SKAL VÆRE GODKENDT AF TRAFIKSTYRELSEN ELLER FLYVE UNDER EN ORGANISATION, DER ER GODKENDT.

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