

AVIATION CO₂ REDUCTIONS



STOCKTAKING SEMINAR
TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS



Enabling a green aviation transition

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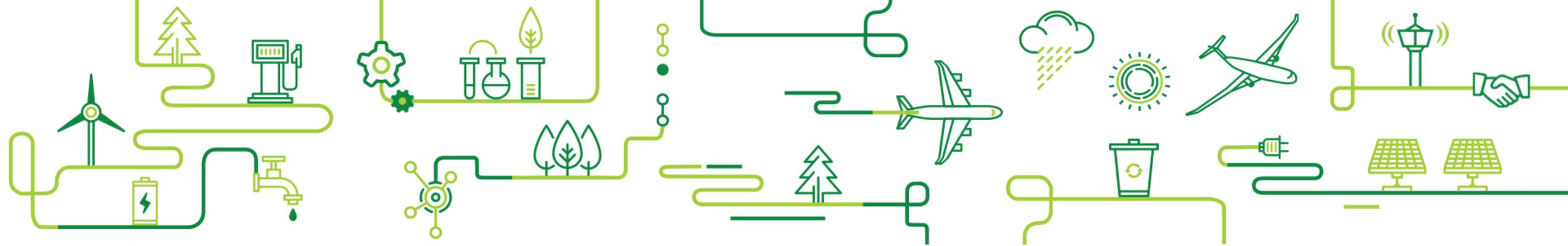


Enabling a green aviation transition: How green is an aircraft?

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Supporting innovation

- Existing ICAO certification requirements assess the environmental performance of the aircraft **design and technology** (e.g. Annex 16 Volume III aeroplane CO₂ emissions standard).
- **Innovative sources of energy** for the aviation sector is a key issue to reduce emissions (e.g. drop-in sustainable aviation fuels, hydrogen, electricity).
- Regulatory framework needs to anticipate and adapt in order to incentivise the uptake of innovative technologies by **quantifying and crediting the environmental benefits**.
- Various initiatives on **electrification of aviation** in Europe.



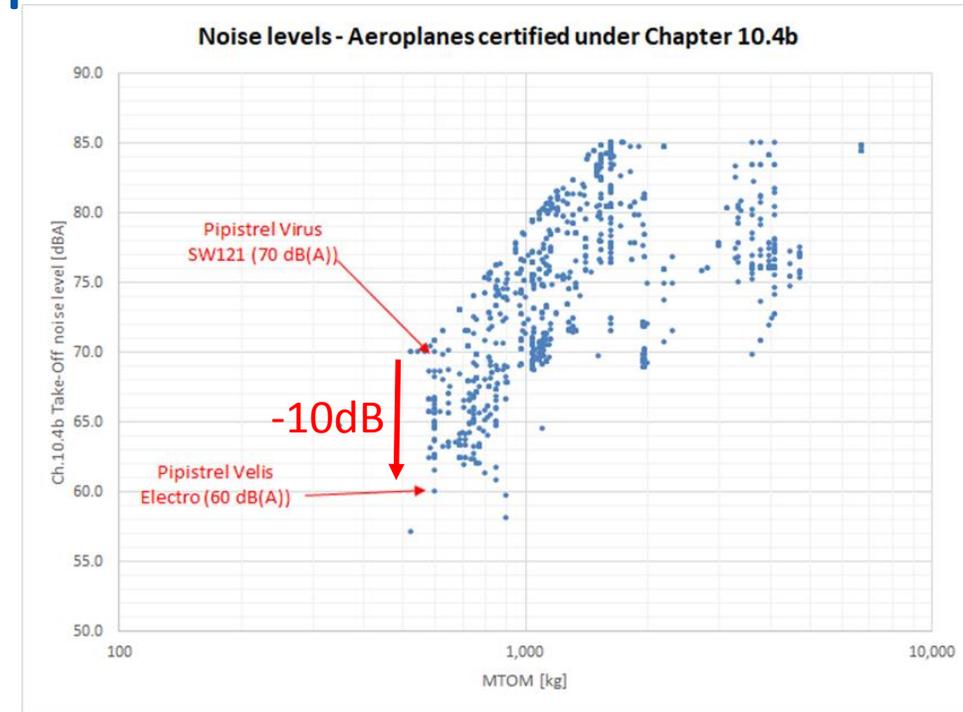
Electric / hybrid aircraft initiatives

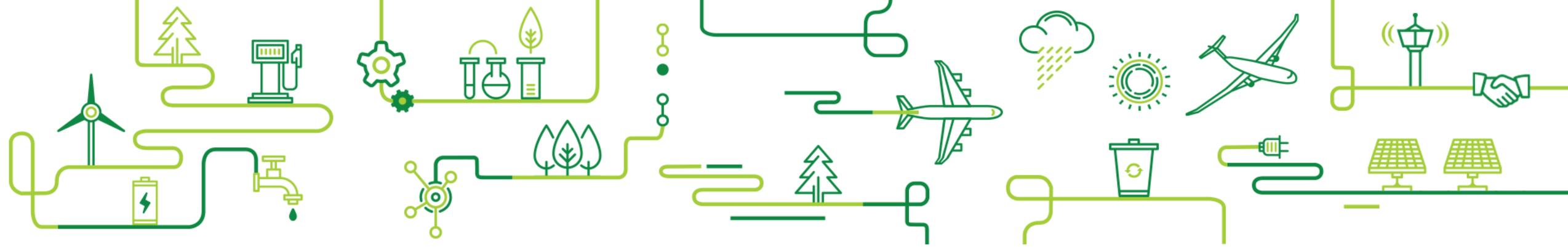
- EASA certified the **Pipistrel Virus Electro** in June 2020 – the **first fully electric general aviation aircraft**.
- Similar on-going work also taking place on **eVTOL urban taxis** and **UAS drones**.
- Norway's **regional air transport system** vision:
 - By **2030**, 1st scheduled domestic flight with electrified aircraft.
 - By **2040**, all civil domestic aviation operated with electrified aircraft, reducing emissions by at least 80% compared with 2020.
 - CAA Norway – EASA **Innovation Partnership** to work towards this vision with industry partners.



Environmental benefits of electrification

- Pipistrel Virus Electro certified against existing ICAO Annex 16 Vol. I noise certification requirements.
 - **Significant reduction in noise certified levels** due to absence of engine source noise.
 - No emissions certification requirements.
- Issues with measuring emissions performance
 - **CO₂ emissions dependent on electricity energy mix** (e.g. 58 to 773 gCO₂/kWh).
 - Use of renewable energy to generate electricity (29% share in EU) **shifts CO₂ emissions impact** from aircraft operation to production / maintenance / end of life recycling.
 - **Life cycle** assessment methodology (various international standards).
 - Would existing **ICAO aeroplane CO₂ standard** credit the emissions reductions from novel electrification technology?





Summary

- Regulatory framework needs to **anticipate and adapt** to novel green technology in order to incentivise uptake by aviation sector.
- **Cooperation between all stakeholders** is essential to realise emission reductions.
- Novel technology/design/energy sources offer emissions and noise benefits. **Quantifying and crediting these benefits is critical to support innovation.**
- EASA **European Aviation Environmental Report** aims to support that by providing an objective view on the environmental performance of the European aviation sector.



Thank You



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