WIVA P&G
Energy Model Region

UPHY

Upscaling of green hydrogen for mobility and industry

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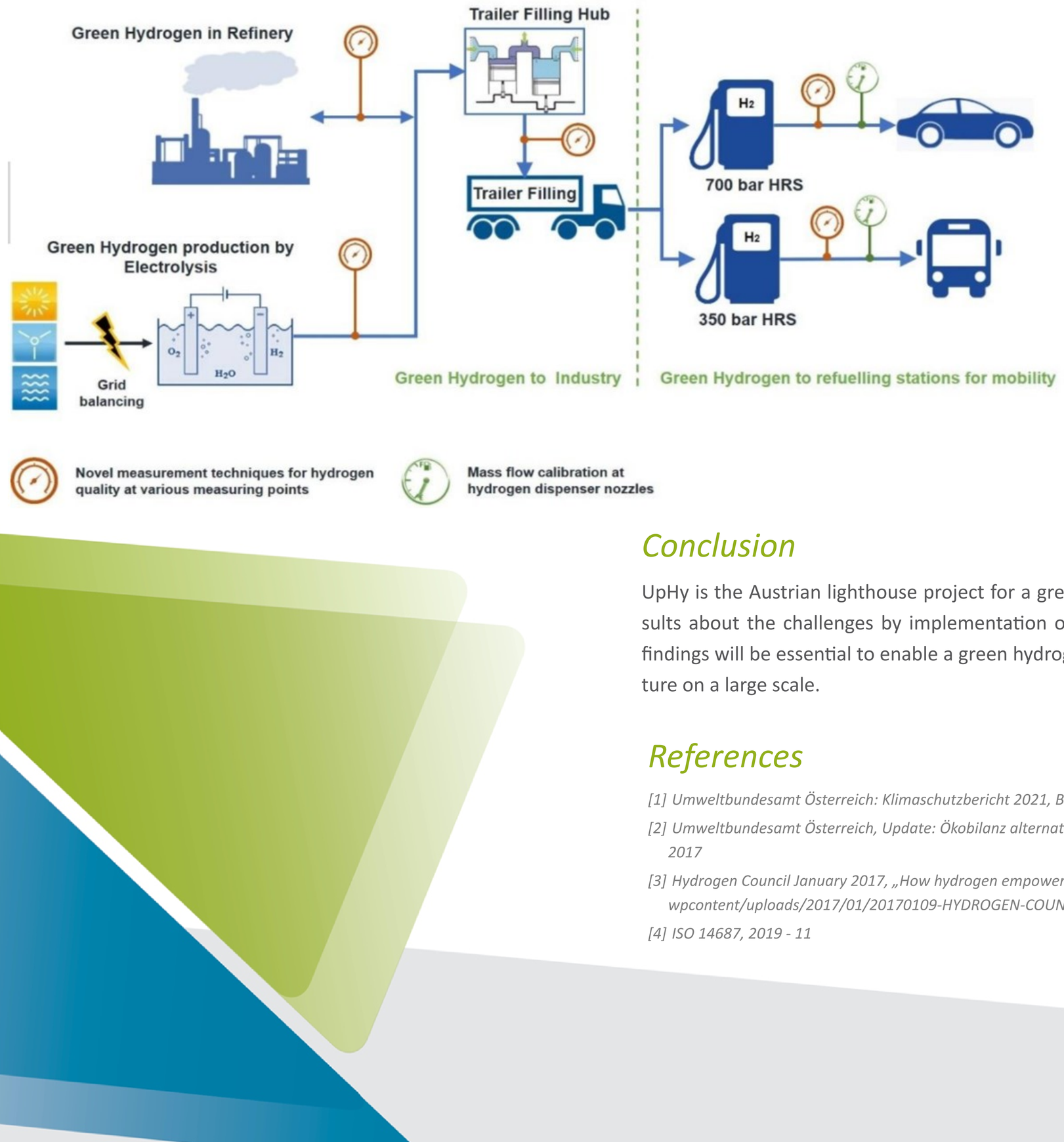
Objective

The mobility sector accounts for about 30% of total greenhouse gas emissions (GHG) in Austria [1]. Electric mobility via fuel cell electric vehicles (FCEVs), based on green hydrogen (H2), offers great potential to reduce GHG [2]. Especially in the long-distance and heavy-duty segment, the use of FCEVs would be appropriate [3]. For these applications, there is currently a limited number of FCEVs and an insufficient refueling network. Likewise, there are demanding requirements with regard to H2 quality [4] and there is a lack of metrological solutions for calibrating the delivered H2 mass. Within the research project "Upscaling of green hydrogen for mobility and industry" (UpHy I), this problem is addressed and the necessary measurement methods and equipment has been developed. The results of UpHy I are used to develop new business models for the use of green H2 in mobility and industry. The technical concepts serve as the technology basis for the implementation of the follow-up project UpHy II.



Demonstration

Within the project UpHy II for the first time in Austria, a completely green hydrogen value chain is planned on an industrial scale, from production over distribution to the use in transport and industry.

The first point in the value chain will be the **10 MW electrolysis** at the OMV refinery Schwechat, which will **produce 1,500 t/a green H_2** by Aug. 2023. **1,000 t of the green H2 will be used in the refinery** and **500 t for mobility** purposes. Therefor a **trailer loading station will be constructed** and a **logistic concept developed** to distribute the green H2 to the hydrogen refueling stations (HRS). **Two new HRS will built** with a capacity that 8 heavy duty vehicles can be refueled per hour.

Optimization

All technologies within the project are developed for real-world operating conditions and optimized in terms of **availability, costs, greenhouse gas emissions** and **energy consumption.**

Conclusion

UpHy is the Austrian lighthouse project for a green H2 value chain. Within the project central results about the challenges by implementation of a hydrogen value chain will be gained. These findings will be essential to enable a green hydrogen supply for industry and for mobility in the future on a large scale.

References

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Dieses Projekt wird aus Mitteln des Klima- und Energiefonds gefördert und im Rahmen des Programms Vorzeigeregion Energie durchgeführt.

FFG Forschung wirkt.