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# **Clean Hydrogen Project BRAVA No. 101101409**

## **WP7 - Deliverable D7.2 – report Initial exploitation & IP management plan**



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<b>Final approval</b>	Dirk Kastell (A-D)

## Change History

<b>Version</b>	<b>Date</b>	<b>Changes</b>	<b>Done by</b>	<b>Approved by</b>
V1	29.11.2023	First Version	Patrick Hönicke	Dirk Kastell



## List of Acronyms and Abbreviations

<b>Abbr.</b>	<b>Description</b>	<b>Abbr.</b>	<b>Description</b>
2-PC	Two-phase cooling	MTBF	Mean Time Between Failure
A/C	Aircraft	MTC	Motorised turbo-compressor(s)
AM	Additive Manufacturing	NM	Nautical mile
BoP	Balance of Plant	OCV	Open circuit voltage
BPP	Bipolar plate	OEM	Original Equipment Manufacturer
CCM	Catalytic coated membrane	PAX	Passengers
CA	Consortium agreement	PFSA	Perfluorosulfonic acid
CFD	Computational fluid dynamics	PGS	Power Generation System
CL	Catalyst layer(s)	POD	PGS Unit
DCE	Dissemination, Communication and Exploitation	PPS	Propulsion Power System
DMU	Digital mock-up	PEM	proton exchange membranes
EASA	European Union Aviation Safety Agency	PEMFC	Proton Exchange Membrane Fuel Cell
EOL	End of Life	PM	Particulate matter
FC	Fuel Cell	RAC	Ram Air Channel(s)
FL250	Flight level 250 (= 25,000 ft)	RH	Relative humidity
GHG	Greenhouse gas	SAF	Synthetic aviation fuel
GT	Gas turbine	SLM	Supporting layer manufacturing
HX	Heat exchanger(s)	SoA	State of the Art
IP	Intellectual property	SRIA	Strategic Research and Innovation Agenda
IPN	Interpenetrating polymer networks	TMS	Thermal Management System
IPR	Intellectual property rights	TEFO	Total Engine Flame Out
ISA-35	International Standard Atmosphere	TO	Take-Off
KPI	Key Performance Indicator	ToC	Top of Climb
KSO	Key Strategic Orientations	TOGA	Take-Off and Go-Around
L2	Liquified hydrogen	TRL	Technology Readiness Level
MEA	Membrane Electrode Assembly	VOC	Volatile organic compounds
MCU	Motor control unit	ZEROe	Airbus initiative towards zero emission aircraft



# 1 Executive Public Summary

Airbus plans to be the first large aircraft manufacturer to bring hydrogen-powered commercial aircraft to the market (in service by 2035). This is huge endeavour with far-reaching consequences, which will affect the entire aviation sector. The hydrogen production, distribution and storage infrastructure needs to be build-up at all major airports, while the developments in BRAVA are important for the fuel cell to be applied in aviation and preparation for exploitation is key for the tier 1 and tier 2 suppliers as well as Airbus.

Deliverable D7.2 aims at describing the initial plan for exploitation of the BRAVA project results. The document draws the first potential exploitation components and summarises the beneficiaries' preliminary exploitation strategies including the first outline for Intellectual Property management of BRAVA results.

The document is articulated in two parts:

- The first part defines the business case associated with the work and the subsystems / products to be developed in the frame of BRAVA project. This part focuses on describing the long-term goal of implementing (part of) the subsystems into an overall FC system for aviation into a hydrogen-fuelled FC-driven aircraft and the entry-into-service of such aircraft, i.e., steps to be performed beyond the BRAVA project.
- The second part introduces the actual preliminary exploitation plan, identifies the project's Key Exploitable Results (KERs), potential exploitation routes, partners' individual exploitation plans. More specifically, it details, wherever already possible:
  - Main objectives and responsibilities,
  - Target groups and key actors,
  - Communication channels and tools,
  - Exploitable components, exploitation paths and levels of exploitation.

This preliminary exploitation plan confirms the high value creation potential of BRAVA project, with many of the subsystem developments not only being relevant for FC systems for aviation, but also for other transport applications. Regular updates will take place in the course of the project with a final exploitation plan being due at the end of the project.



## 6 Acknowledgments

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### Project partners:

#	Partner short name	Partner Full Name
1	A-D	AIRBUS OPERATIONS GMBH
2	A-E	AIRBUS OPERATIONS SL
3	AER	AEROSTACK GMBH
4	CNRS	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE
4.1	UM	UNIVERSITE DE MONTPELLIER
5	HER	HERAEUS DEUTSCHLAND GMBH & CO KG
6	LTS	LIEBHERR AEROSPACE TOULOUSE SAS
7	MAD	MADIT METAL S.L.
8	MOR	MORPHEUS DESIGNS S.L.
9	NLR	STICHTING KONINKLIJK NEDERLANDS LUCHT – EN RUIJTEVAARTCENTRUM
10	SOL	SOLVAY SPECIALTY POLYMERS ITALY SPA
10.1	RHOP	RHODIA OPERATIONS
10.2	RHLA	RHODIA LABORATOIRE DU FUTUR
11	TUB	TECHNISCHE UNIVERSITAT BERLIN

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