H_2MAC

HYDROGEN FUEL CELL ELECTRIC NON-ROAD MOBILE MACHINERY FOR MINING AND CONSTRUCTION: AN INNOVATIVE, EFFICIENT, SCALABLE, SILENT AND MODULAR POWER-TRAIN CONCEPT

Project ID	101137786
PRR 2025	Pillar 3 - H_2 End Uses - Transport
Call Topic	HORIZON-JTI-CLEANH$_2$-2023-03-01
Project Total Costs	6 563 805.00
Clean H_2 JU Max. Contribution	4 990 769.76
Project Period	01-01-2024 - 31-12-2027
Coordinator Beneficiary	INSTITUTO TECNOLOGICO DE ARAGON, ES
Beneficiaries	ASOCIACION ESPANOLA DE FABRICANTES EXPORTADORES DE MAQUINARIA PARA CONSTRUCCION, OBRAS PUBLICAS Y MINERIA, ZAMALBIDESERVICE2021 SL, TALLERES ZB S.A., HIDROMEK MAQUINARIA DE CONSTRUCCION ESPAÑA S.L., HIDROMEK-HYDROLIK VE MEKANIK MAKINA IMALAT SANAYI VE TICARET ANONIM SIRKETI, TAMPEREEN KORKEAKOULUSAATIO SR, MANN + HUMMEL GMBH, BALLARD POWER SYSTEMS EUROPE AS, Powercell Sweden AB, FUNDACION PARA EL DESARROLLO DE LAS NUEVAS TECNOLOGIAS DEL HIDROGENO EN ARAGON

https://h2mac.eu/

PROJECT AND GENERAL OBJECTIVES

- The objective of H_2Mac is to develop zero emissions heavy-duty mobile machinery for mining and construction sectors.
- Therefore, H_2MAC will develop an excavator and a shredder with integrated fuel cell powertrains and related subsystems.
- The power trains will be innovative, efficient, scalable, silent and modular. The excavator will be powered by one 120 kW fuel cell module. The shredder will upscale the concept using two modules to enlarge the power to 240 kW.
- The operation of both heavy-duty mobile machines is complementary, as the excavator has a load profile derived of its movement during operation, while the shredder is a more static machine when operating.
- H_2MAC includes a simultaneous demonstration of both machines during 1000 hours in a single real environment. The results should allow the H_2MAC consortium to develop solutions for operation in different sectors under different operational conditions.
- The consortium is composed of a variety of technological partners, component manufacturers, machinery manufacturers and associations that will help communication, dissemination and exploitation through standardisation.

ACHIEVEMENT

- H_2MAC General Assembly in Tampere (Finland) on the 11th and 12th of March 2024.

PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives	Noise reduction	dBA	< 100	
	New technology feasible and commercially viable	Number/project	2	
	Emission reduction	CO_2-eq /year	0	
	FC system efficiency (TCO reduction)	%	50	