
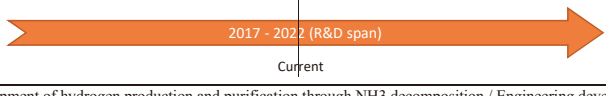
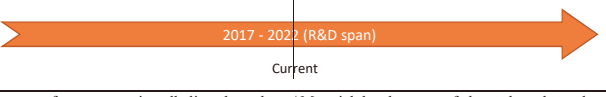

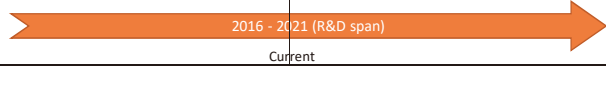


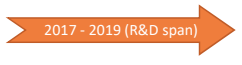


Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
Korea	KIER	Production	Development of high performance 1 MW PEM electrolyzer for integration with renewable energy Development of 1 MW PEM electrolyzer stack and stack component. Power system optimization for electrolyzer durability. [period of the project] 	Efficiency of electrolyzer stack: 4.0 kWh/Nm3 MEA performance: 1.8 V @ 2.0 A/cm2	Dr. Sang-Bong Moon/ Elchemtech	(Domestic) Korea Institute of Energy Research, Gwangju Institute of Science and Technology, Dankook Univ, Ulsan National Institute of Science and Tehcnology	
			Design of a cost-effective and highly efficient pressurized modular hydrogen production unit for on-site hydrogen supply/ Design, fabrication and performance validation of a genuine hydrogen production platform(reforming module + VPSA module) with 300 Nm3/hr H2 capacities 	hydrogen production capacities, 300 Nm3/hr, reforming efficiency 75% ↑ , hydrogen recovery 85% ↑ , CO 1 ppm under, \$ 1 million/unit	Wang Lai Yoon (PhD, KIER)	Domestic) Korea University, Chungnam Universtiy, Yunsei Universtiy	
			Development of hydrogen production and purification through NH3 decomposition / Engineering development of on site hydrogen refueling station with high purity hydrogen of 99.97% 	Hydrogen production capacities, 20 Nm3/hr, Efficiency 75% ↑ , purity 99.97%	Un ho Jung(Ph. D. KIER)	Domestic) CES, KIST, Hyundai motor company, GENS engineering	
			Development of next generation alkaline electrolyzer/ Material development of electrode and membrane for alkanine electrolysis. 	Increaseement of efficiency and durability	Chang hee Kim(Ph. D. KIER)	Domestic) KITECH, Sungkyunkwan University, KAIST	
		Transportation /Storage	Engineering technology for renewable energy hybrid system with reversible SOFC/SOEC and waste steam-hydrogen storage(2016-2021)/ Research and development of metal hydride for hydrogen storage system 	Hydrogne storage with metal hydride storage from SOEC	Jong-Won Kim(Ph. D. KIER)	Domestic) KIMM	
		Utilization	National R&D Program of KIER/Development of low-cost high-performance core materials for building application fuel cells (2017-2020) 	Development of core materials for fuel cell MEAs including hydrocarbon-type electrolyte membrane, core-shell catalyst and also scale-up processes	Dr. Seokhee Park / KIER		

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Korea	KIER	CCS Electrochemical Conversion	<p><Example> CCS Overseas Demonstration and Development of Core Technology Upgrading CO2 Conversion Efficiency Project [2017-2021]</p>	<p>1 ton-CO2/day full chain CCS Demonstration (Reboiler heat duty ≤ 2.0 GJ/ton-CO2, CO2 recovery $\geq 90\%$)</p> <p>Low-power catholyte-free electrochemical conversion (Power usage ≤ 3 kWh/kg-CO2)</p> <p>Development of future innovative CO2 capture sorbent (Regeneration energy ≤ 1.5 GJ/ton-CO2)</p>	Dr. Young Cheol Park, Dr. Yeoil Yoon, Dr. Ki-Tae Park / KIER	(Domestic) Chungnam National University, Korea South-East Power Co. (US) Talen Energy	

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Korea	KIER	Gasification	Development of Gasification Technology and Key System Technology[2017-2021] 	Development of Pilot demonstration Plant(10.0ton/h) and Gasifier Operation Pressure (25bar)	Dr. Ho Won Ra, Dr. Myung Won Seo, Dr. Tae Young Mun, Mr. Sung Min Yoon / KIER	(Domestic) Sungkyunkwan University (International)	https://www.●●●
Korea	KIER	Biomass Torrefaction	Development of Industrial and Technological Package of Clean Fuel Production Process for Indonesian Biomass Waste [2017-2019] 	Development of commercial demonstration (2 ton/h) PDP and overseas technology transfer of PDPs through operation of 200 kg/h drying/retroting Pilot plant Ash removal rate (>85%), Heating value of solid fuel (20-26MJ/kg), Bulk density (>700kg/m3)	Dr. Sihyun Lee, Dr. Sangdo Kim, Dr. Donghyuk Chun, Mr. Hyuk Im / KIER	(Domestic) Pusan National Univerity (International) University of Lampung (Indonesia)	