

An aerial photograph of a river valley. The river flows from the top right towards the bottom left. On the left bank, there is a steep, eroded hillside with sparse vegetation. On the right bank, there are more trees and a concrete structure. In the background, a dam with a white bridge-like structure is visible. Overlaid on the center of the image is a logo consisting of a globe icon and the letters 'DLZ' in a stylized, maroon font.

 **DLZ**

# DLZ's Hydrogen Projects





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# DLZ At A Glance

- Full-Service Architecture And Engineering Firm based in Columbus, Ohio. Significant work for the U.S. Corps of Engineers – Pittsburgh, Huntington, Louisville, Chicago & the Detroit Districts.
- Hydropower Group has developed 7 small hydro power plants with over 80 MW in India on a design, build, own, and operate basis since 1998.
- Developing commercially viable hydrokinetic turbine in United States for use in inland waterways.
- Constructing hydrogen generation and vehicle fueling stations. Preliminary stages of constructing a 600 ton per day hydrogen plant and 100 MW solar and 200 MW wind farm in Latin America.



# Types of Hydrogen Fuel

	Terminology	Technology	Feedstock/ Electricity source	GHG footprint*
PRODUCTION VIA ELECTRICITY	Green Hydrogen	Electrolysis	Wind   Solar   Hydro Geothermal   Tidal	Minimal
	Purple/Pink Hydrogen		Nuclear	
	Yellow Hydrogen		Mixed-origin grid energy	Medium
PRODUCTION VIA FOSSIL FUELS	Blue Hydrogen	Natural gas reforming + CCUS Gasification + CCUS	Natural gas   coal	Low
	Turquoise Hydrogen	Pyrolysis	Natural gas	Solid carbon (by-product)
	Grey Hydrogen	Natural gas reforming		Medium
	Brown Hydrogen	Gasification	Brown coal (lignite)	High
	Black Hydrogen		Black coal	

\*GHG footprint given as a general guide but it is accepted that each category can be higher in some cases.

# Hydrogen Generation & Fueling Station

- DLZ - first private company to construct hydrogen generation/vehicle fueling station in Ohio
- Generate 20 kilograms / day
- Storage 18 kilograms
- Will expand generation and capacity once hydrogen trucks become available
- Generating green hydrogen from solar on corporate roof



# Solar Panels on Corporate Roof



# Hydrogen Vehicle Fueling Station





# Hydrogen Storage



# Hydrogen Car – Hyundai Nexo



# Hydrogen Project in Latin America

- DLZ planning a \$1.6 B project to produce 600 tons of green hydrogen per day
- Project will include a 100 MW solar farm and 200 MW wind farm
- 2<sup>nd</sup> and 3<sup>rd</sup> phases will add another 1,200 tons per day of green hydrogen for a total of 1,800 tons of green hydrogen per day



# Hydrogen Project in Latin America

- Existing country's grid is 98% green with hydropower comprising 79% of electrical generation.
- Any supplemental energy required from the grid will be able to classify the hydrogen as green.



