

# › ELECTRIFICATION & HYDROGEN PROJECT PITCHES

MATCH MAKING EVENT  
9 APRIL 2019



ECN

TNO

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# HIGH TEMPERATURE CO-ELECTROLYSIS

- › Titel: High temperature Co-Electrolysis
- › Objective: Development and bench scale testing of high temperature co-electrolysis of CO<sub>2</sub> and water
- › Activities: Develop HTWE stack, bench scale testing at ECN>TNO, business case co-electrolysis
- › Project partners: Steel companies, electrolyser suppliers, end users in industry
- › Project budget: ~ M€ 1.0

# NOVEL ALKALINE ELECTROLYSER

- › Titel: Novel Alkaline electrolyser
- › Objective: Development and testing of a novel alkaline electrolyser
- › Activities: Develop a novel alkaline water electrolysis stack, tests at ECN>TNO, calculation business case
- › Project partners: Manufacturer, TU/e, end users in industry
- › Project budget: ~ M€ 1.0

# SEAWATER ELECTROLYSIS

- › Titel: Seawater Electrolysis
- › Objective: Development and lab scale testing of a water electrolysis stack with seawater as feed.
- › Activities: Develop WE stacks (LT and HT), tests at ECN>TNO, business case off-shore hydrogen production
- › Project partners: Oil&gas companies with off shore platforms, electrolyser suppliers, water companies end users in industry
- › Project budget: ~ M€ 0.6

# ELECTRIC CRACKING

- › Titel: Electric cracking of naphtha
- › Objective: Feasibility and technical development of electric cracking
- › Activities:
  - 1) Overall process integration for electrification of integrated naphtha cracker  
consortium building, numerical optimization of entire process, detailed economic feasibility
  - 2) Technical optimization electric cracker process on lab scale  
introductory measurements, realization labreactor, labtesting (efficiency, selectivity, coking)
- › Project partners: furnace manufacturer, EPC contractor, industrial end user
- › Project budget: ~ M€ 1.0

# METAL FUELS

- › Titel: Metaalpoeders als CO<sub>2</sub> vrije brandstof voor de industrie
- › Objective: vaststellen potentieel van metal fuels voor gebruik in de industrie.
- › Activities:
  - › 1) bepalen behoefte en randvoorwaarden van de potentiële eindgebruikers voor het gebruik van metalen als brandstof (inclusief behoefte aan opslag en hybridisering)
  - › 2) conceptueel ontwerp voor metal fuel systeem bij eindgebruiker
  - › 3) bepalen oxidatie- en reductiegedrag van de metalen op reactorniveau
  - › 4) uitvoeren energetische optimalisatie op de reductie-oxidatie cyclus voor deze materialen
- › Project partners: Metaal industrie, eindgebruiker, TU/e
- › Project budget: ~ M€ 0.8

# FUEL CELL FOR INDUSTRIAL COGEN

- › Titel: Fuel cell for industrial cogen
- › Objective: Develop small scale (10 kWe .. 20 kWe) fuel cell cogen plant with high  $\eta$  and producing MP (~ 10 bar) steam
- › Activities: Develop cogen plant, test at ECN>TNO, and at pilot at end user
- › Project partners: Steam consuming end users in industry, fuel cell suppliers
- › Project budget: ~ M€ 1.2, mixed funding 50% industrial contribution

› **BEDANKT VOOR UW AANDACHT**

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