



(19) **United States**

(12) **Patent Application Publication**

Salek et al.

(10) **Pub. No.: US 2018/0171870 A1**

(43) **Pub. Date: Jun. 21, 2018**

(54) **ELECTROCATALYTIC SYSTEM FOR REDUCING POLLUTION AND FUEL CONSUMPTION**

Publication Classification

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(51) **Int. Cl.**
F02C 6/18 (2006.01)
F02D 41/00 (2006.01)
F02D 19/06 (2006.01)
F02B 47/02 (2006.01)
(52) **U.S. Cl.**
CPC *F02C 6/18* (2013.01); *F02D 41/0027* (2013.01); *F02D 19/0671* (2013.01); *F22B 1/1815* (2013.01); *F02D 19/0644* (2013.01); *F02B 47/02* (2013.01); *F02D 19/066* (2013.01)

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(57) **ABSTRACT**

An improved electrocatalytic system utilizes an Organic Rankine cycle system to take advantage of exhaust fume heat to convert a working fluid to steam used in a steam expander to generate electricity. The generated electricity is then used in electrolyzing water to produce hydrogen gases used as a supplemental fuel in an internal combustion (IC) engine. Thereby, the improved electrocatalytic system provides an efficient, less costly and retrofittable system for reducing harmful emissions and fossil fuel consumption in vehicles.

(21) Appl. No.: **15/899,341**

(22) Filed: **Feb. 19, 2018**

(30) **Foreign Application Priority Data**

Feb. 17, 2017 (IR) 13955014000301463

