

Index

a

adsorption 431
aerospace applications 661
aircraft 661
airplane 681
alkaline electrolysis 243
auxiliary power unit (APU) 681

b

700 bar refuelling 609
battery 661, 793
– electric vehicles 853
biohydrogen 169
biomass 169, 307, 465
biosynthesis 169
borohydrides 415
Bruggeman relationship 89
buildings 755
buses 793
by-product hydrogen 609

c

carbon
– dioxide footprint 291
– materials 431
carbon-support corrosion 3
catalyst
– degradation 3
– development 3
– supports 41
cell
– degradation 227
– voltage 41
chassis 853
coal 449
– conversion 291
combined heat and power 735, 755
combustion engine 793
commercialization 597

complex hydrides 415
compressed gas tank 121
computer modeling 89
crude oil 853
cryogenic liquid truck 121
cumulative energy demand 551

d

decentralized power generation 735
delivery vehicle 793
dense ceramic membranes 321
desulphurization 291, 661, 681
diaphragm materials 243
direct injection 811
DMFC concept 715
dynamic power train simulation 831

e

economic analysis 567
economics 489
electric
– engine 793
– mobility 853
– motor 853
– power train 551
– powered vehicles 793
– vehicle 551
electricity
– generation 465
– production 735
electrification 853
electrocatalysis 3
electrolysis 207, 243, 465
electrolyte 17
electrolyzers 243
emission efficiency 811
energy 489
engine generator 661
environment 489
exergy 489

f

- finance 567
- fluidized-bed gasifier 307
- fossil fuels 291, 449
- fuel cell 89, 149, 189, 207, 227, 291, 351, 377, 465, 489, 551, 577, 597, 649, 661, 681, 715, 755, 793, 831, 853
 - direct ethanol fuel cell 41
 - direct liquid fuel cell 41
 - direct methanol fuel cell 41
 - efficiency 61
 - high-temperature fuel cell 17, 61, 735, 755
 - hydrogen fuel cell 793
 - hydrogen polymer electrolyte fuel cell 89
 - low temperature fuel cell 89, 755
 - molten carbonate fuel cell 61
 - planar solid oxide fuel cell 227
 - polarization curve 755
 - polymer electrolyte fuel cell 681
 - polymer electrolyte membrane (PEM) fuel cell 17, 793
 - powered vehicle 3
 - proton exchange membrane fuel cell 3
 - solid oxide fuel cell 61, 681, 755
 - system efficiency 207
 - vehicles 449, 609
- fuel processing 681

g

- gaseous
 - hydrogen compressor 121
- gasification 307
- greenhouse gases 755, 831

h

- harmonization 649
- heat 207
- heating boiler 735
- high-pressure electrolysis 243
- high-temperature electrolysis 227, 243
- hydrogen 489, 597, 649, 661
 - adsorption 431
 - assessment 351
 - distribution 121, 149
 - energy 533, 567, 577
 - extraction 377
 - fuel 61
 - fueled vehicles 449
 - fueling station 121
 - industrial hydrogen 149
 - infrastructure 121, 609

- internal combustion engine 811
 - liquefaction 377
 - liquid hydrogen 377
 - networks 121
 - oxidation 3
 - plant 291
 - power train 551
 - production 149, 169, 189, 207, 227, 271, 291, 351, 465, 533, 609
 - refueling stations (HRS) 649
 - renewable hydrogen 465
 - separation 321
 - storage 121, 377, 395, 415, 431, 533, 853
 - storage density 377
 - storage system 793
 - supply 149
 - transportation 121, 533
 - vehicles 351, 629
- hydrothermal gasification 307
- HYVOLUTION 169

i

- infrared communication 609
- infrastructure 351, 629
- interdisciplinary triangle 489
- internal mixture preparation 811
- International Organization for Standardization 649
- ionic liquids 17

k

- kinetics 243, 395

l

- life cycle
 - analysis 551
 - assessment 489
- light traction 715

m

- market introduction 577
- membrane
 - electrode assembly 17
 - materials 17, 351
- metal hydrides 395, 415
- metal/metal oxide cycles 189
- metal-organic frameworks 431
- microporous ceramic membranes 321
- mixed proton-electron conductivity 321
- modeling 89
- municipal development 597

n

national fuel strategies 449
 natural gas 449
 non-thermal processing 169
 nonionic electrolyte conduction 227

o

organic hydrides 415

p

partial oxidation 291
 passenger cars 681
 performance potential 811
 photofermentation 169
 physisorption 431
 pipelines 121
 platinum
 – catalysts 3
 – group metals 831
 pollution factors 489
 polymer electrolyte membrane 271
 port fuel injection 811
 portable systems 715
 – backup power generator 715
 – grid-independent generator 715
 power generator 715
 power train 793, 853
 – hybrid power train 793
 pre-normative research 649
 pressure-composition isotherm 395
 proton conductivity 17

r

reforming 291, 307, 681, 755
 refueling 377
 regional development 597
 regulations, codes, and standards
 (RCS) 649
 research and development targets 533
 residential cogeneration 755
 resources 351

s

safety 629
 saturation jump 89
 secondary energy carrier 449
 ships 681
 social behavior 567

socioeconomics 567, 609
 solid
 – oxide electrolyzer cell 227
 – storage 415
 stack material 755
 stacks 17
 steam
 – electrolysis 207
 – reforming 291, 551
 storage capacity 431
 sulfur cycles 189
 sustainable development 489
 system control 755
 systems analysis 351, 831

t

tank filling system 793
 templated SiO₂ membranes 351
 thermochemical cycles 189
 thermodynamics 61, 243, 395
 thermophilic fermentation 169
 transport parameters 89
 transportation 465
 trucks 681

u

unmanned aerial vehicle (UAV) 661

v

vehicle 681
 – simulation 831
 voltage
 – efficiency 207
 – losses 3
 volumetric energy density 377

w

water
 – electrolysis 207, 227, 271
 – management 89
 well-to-wheel 831
 wind 207

z

zeolite 431
 – membranes 351
 Zero Regio 609

