FUEL CELLS 2000
www.fuelcells.org
An Activity of the Breakthrough Technologies Institute

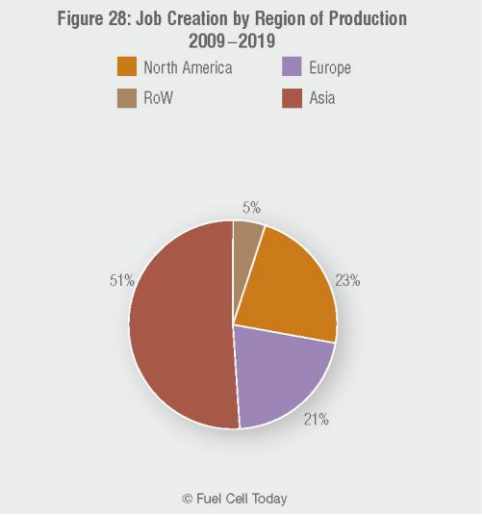
A Compendium of Job Estimates in the Fuel Cell Industry

Fuel Cells 2000's current estimate of direct fuel cell industry jobs worldwide totals more than 13,000, based on company reports and expert opinion. Supply chain employment is estimated at more than 25,000.

Estimated Fuel Cell Industry Jobs - Stack and System Companies						
	US	Canada	Europe	Aus-Asia	Lat. Am.	Total
Direct	3615	974	3028	5025	240	13272
Indirect	7230	1948	6056	10050	480	25764
Total	**10845**	**2922**	**9084**	**15075**	**720**	**39036**

Source: Fuel Cells 2000, February 2011

The global fuel cell industry could create 700,000 manufacturing jobs by 2020, according to Fuel Cell Today. Its 2010 Industry Review "conservatively estimates that the manufacturing of fuel cells will see the most growth in jobs in the next 10 years, with almost 700,000 cumulative jobs created. . . . over a million total new jobs could be created when fuel cell installation, servicing and maintenance is considered." The estimate includes only direct jobs.[1] "The overwhelming majority are in stationary fuel cells, with almost 500,000 total jobs during the next decade. This is commensurate with stationary fuel cells having the largest proportion of MW shipments in this period and a fairly high ratio of jobs to revenue and productivity."



About 25% of the jobs, or 175,000 jobs, were projected for North America, but mass manufacturing jobs were expected to go to Asia.

[1] http://www.fuelcelltoday.com/online/news/articles/2010-01/Fuel-Cell-Industry-Could-Create-
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A DOE study from 2008 estimates a net increase of 361,000 to 675,000 jobs[2] is possible by 2035 in fuel cells and hydrogen, in 41 industries.

Table 3.1: U.S. Cumulative Gains and Losses from Shifts of Employment between Sectors[a]

Scenario		2020	2035	2050
Numbers of Workers				
HFI	**Net Effect**	**182,840**	**677,070**	**674,500**
	Gains	252,040	754,030	751,060
	Losses	*69,200*	*76,960*	*76,560*
Less Aggressive	**Net Effect**	**58,010**	**184,560**	**360,740**
	Gains	126,680	242,820	417,390
	Losses	*68,670*	*58,260*	*56,650*
Percentage Effects on Total Employment				
HFI	**Net Effect**	**0.13%**	**0.42%**	**0.37%**
	Gains	0.17%	0.46%	0.41%
	Losses	*0.05%*	*0.05%*	*0.04%*
Less Aggressive	**Net Effect**	**0.04%**	**0.11%**	**0.20%**
	Gains	0.09%	0.15%	0.23%
	Losses	*0.05%*	*0.04%*	*0.03%*

[a]All numbers represent differences between the hydrogen scenario and the baseline. For example, there are 182,840 more workers in all sectors in 2020 according to the HFI Scenario than there would have been in 2020 according to the baseline scenario.

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A separate study for the European Union put the job potential at 500,000 jobs.[3]

Korea has a goal of supplying 20% of the world's fuel cells, creating 560,000 Korean jobs. This implies 2.8 million jobs worldwide with global sales of $126 billion.[4]

The American Solar Energy Society[5] contracted with Management Information Services, Inc., in 2008 to estimate then-current employment in the energy efficiency and renewable energy sectors. The study concluded that fuel cells were the third-fastest growing renewable energy industry (after biomass and solar). The study forecast potential U.S. employment from fuel cell and hydrogen industries of up to 925,000 jobs by 2030 in the maximum success case, with potential gross revenues up to $81 billion per year.

[2] Effects of a Transition to a Hydrogen Economy on Employment in the United States: Report to Congress. 2008.
[3] www.hyways.de/.../Final_Presentation_HK_ETPs_Seminar_6_Dec_06.pdf
[4] Park, Dal-Ryung, "Commercialization of Fuel Cell Technologies in Korea," 2010 FC Expo, March 2010.
[5] http://ases.org/images/stories/ASES/pdfs/CO_Jobs_Final_Report_December2008.pdf

The ASES study estimated total employment at about 22,000 in 2007.

U.S. Fuel Cell and Hydrogen Industry Jobs in 2030			
	Base	Moderate Scenario	Advanced Scenario
Fuel Cells	68600	158000	505000
Hydrogen	47200	143200	420000
Totals	**115800**	**301200**	**925000**

Source: Management Information Services, Inc. and American Solar Energy Society, 2008.

U.S. Fuel Cell and Hydrogen Industry Jobs in 2007		
	Industry Jobs	Total Jobs Created
Fuel Cells	5600	12800
Hydrogen	4100	9400
Totals	**9700**	**22200**

Source: Management Information Services, Inc. and American Solar Energy Society, 2008.