

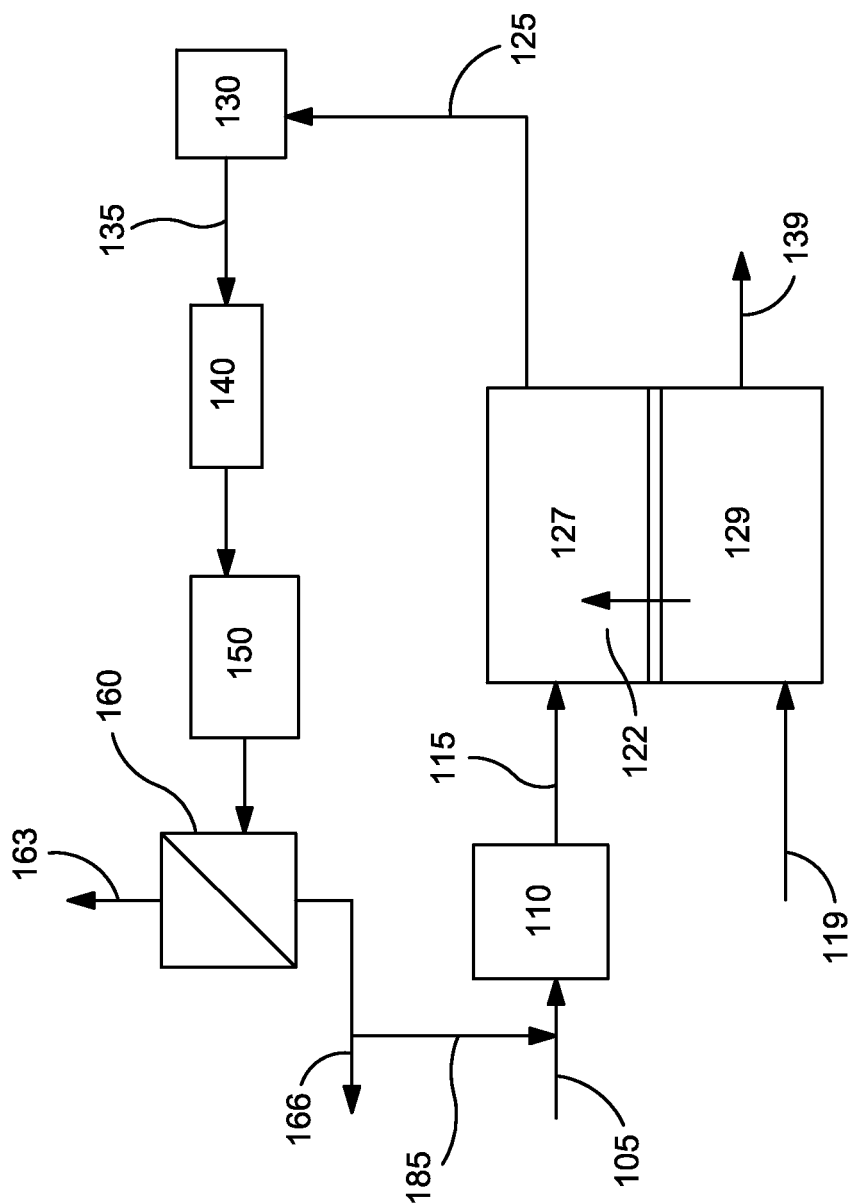


FIG. 1

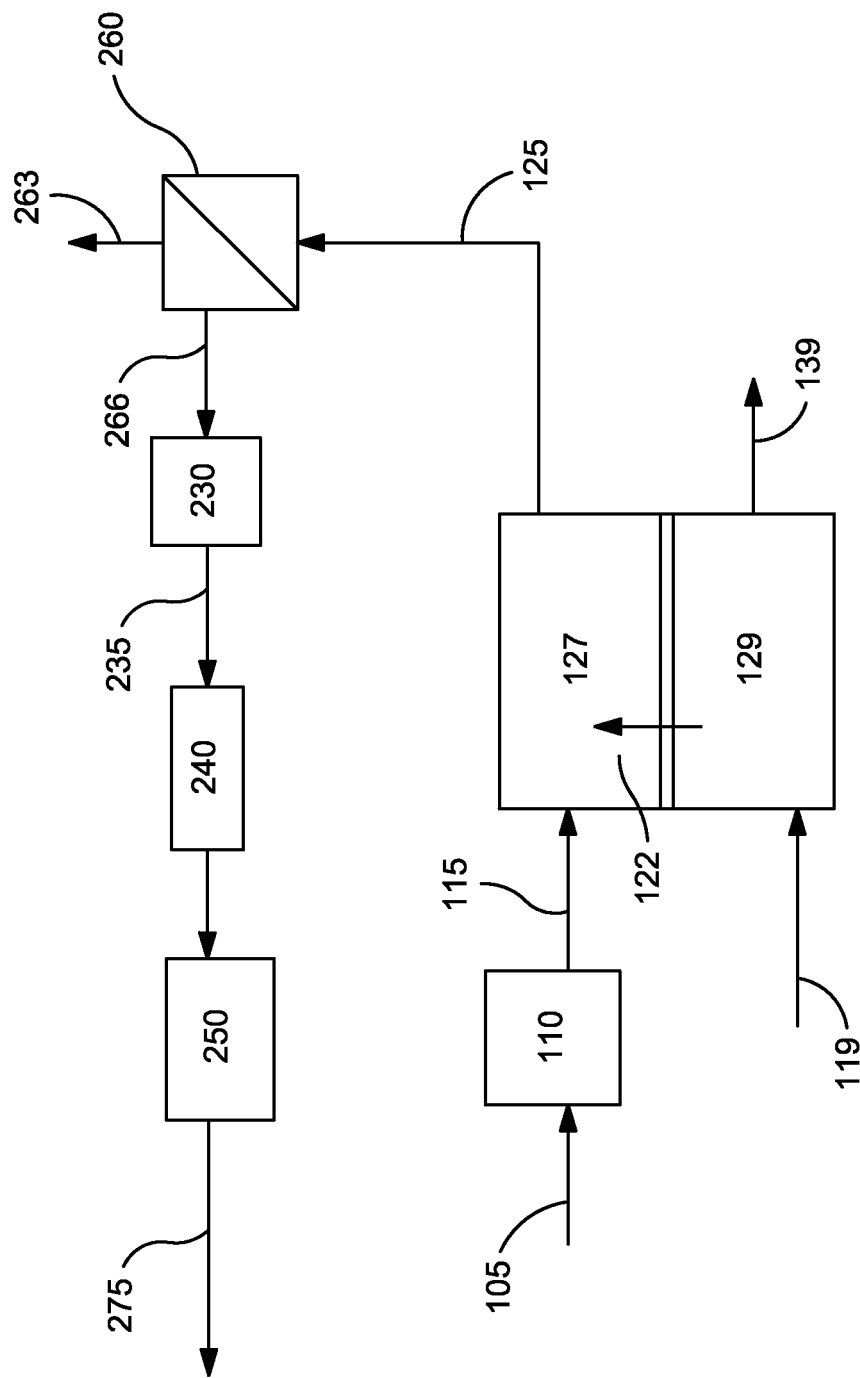


FIG. 2

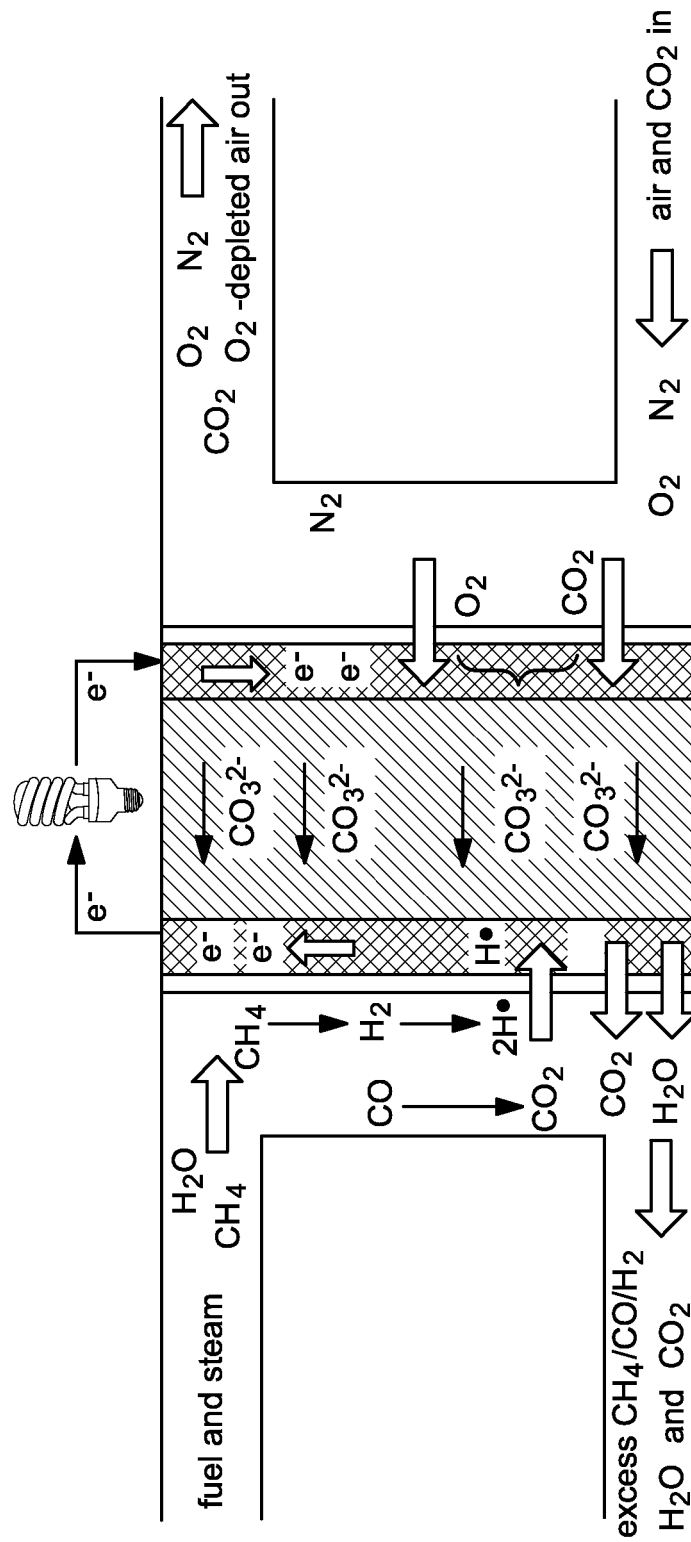


FIG. 3

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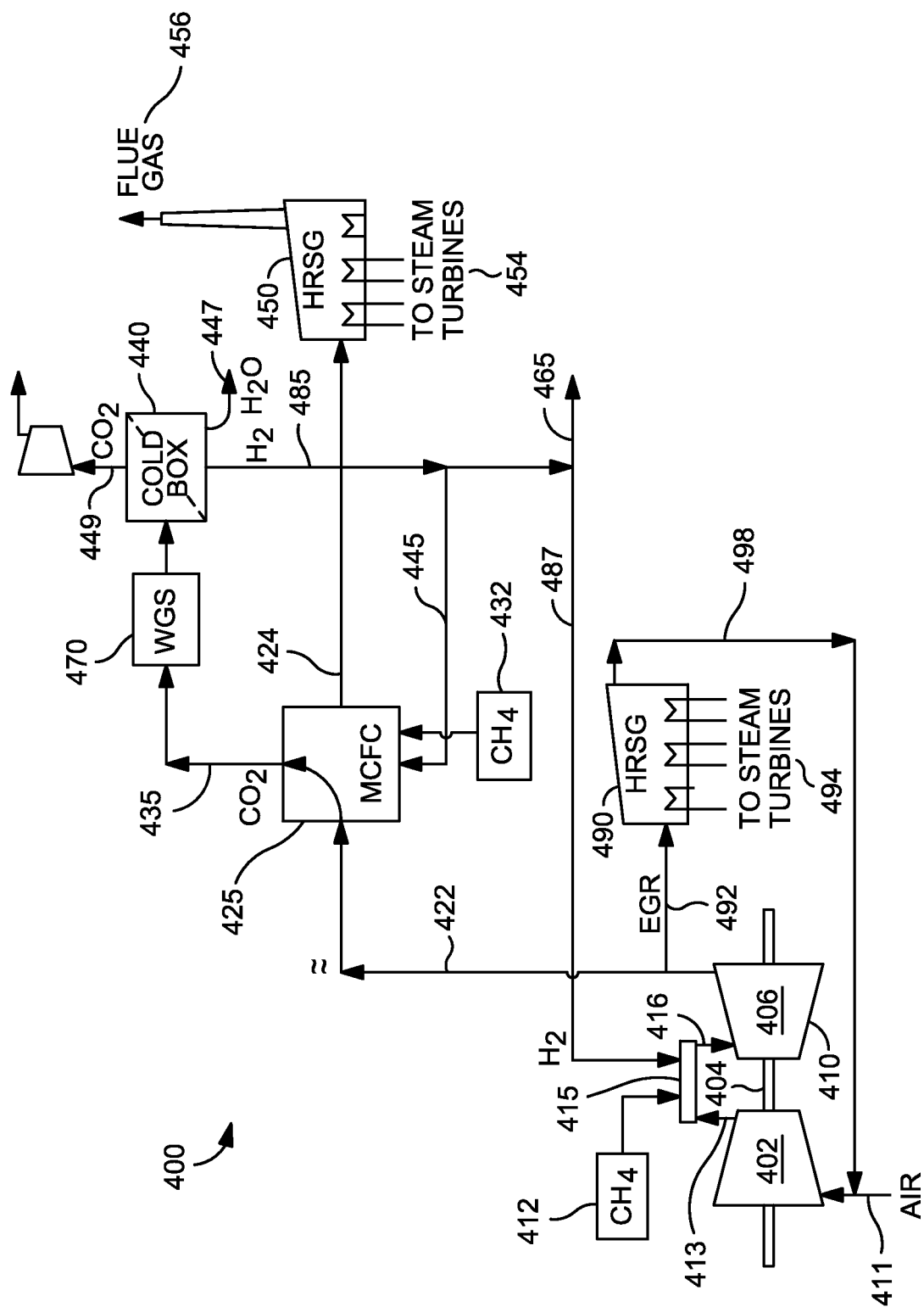


FIG. 4

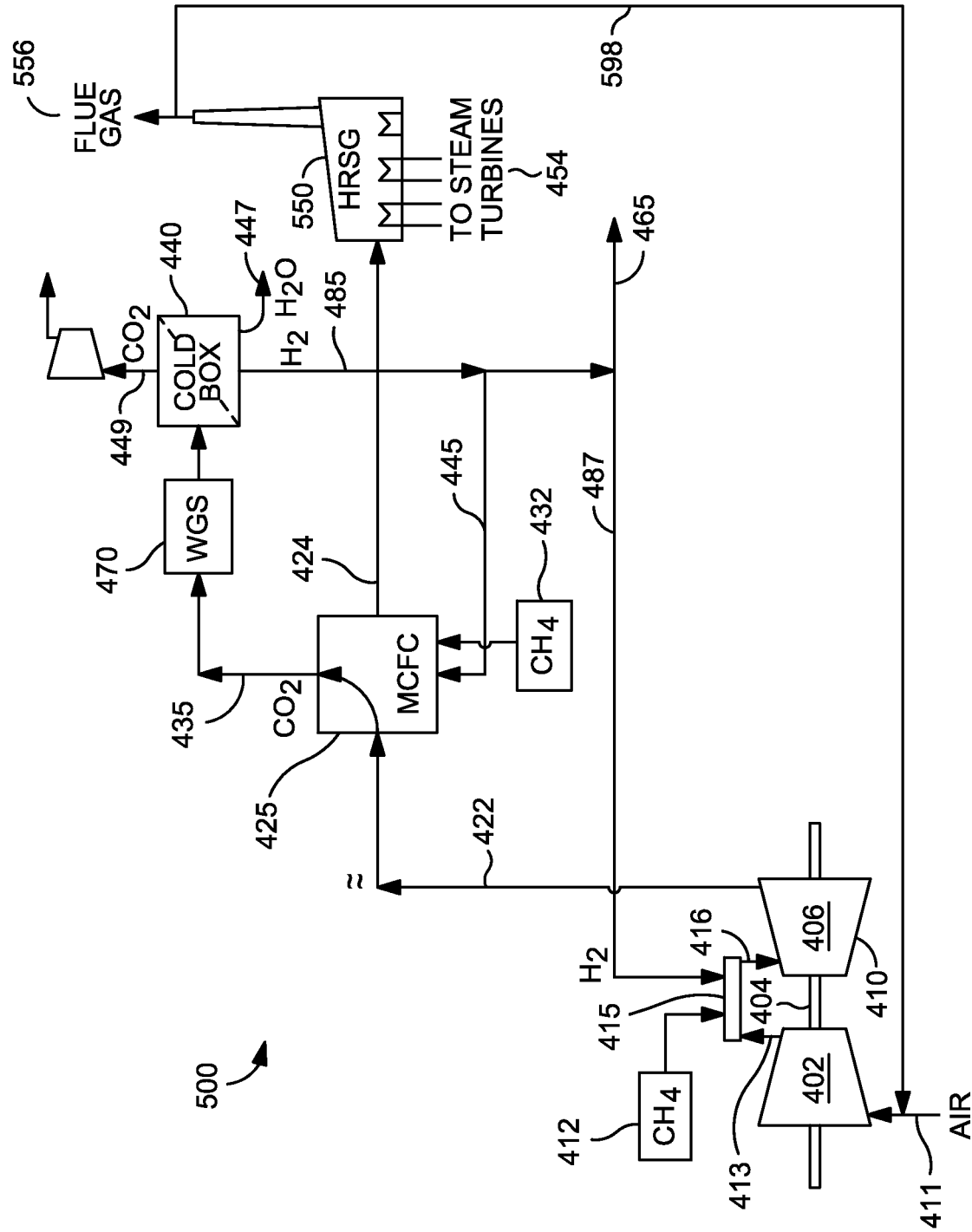


FIG. 5

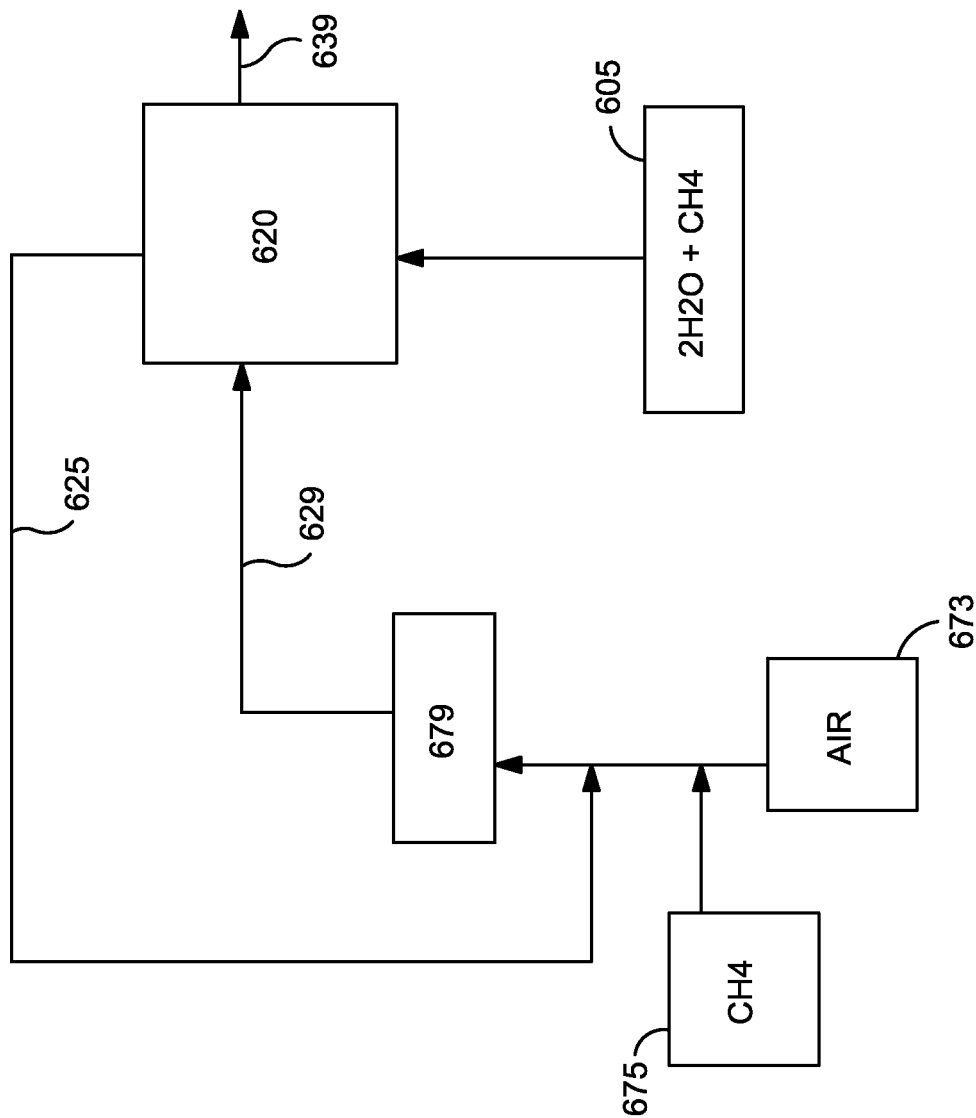


FIG. 6

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1	Anode inlet CH4	mole/s	10.3	11.5	12.7	14.6	17.2	21.6
2	Anode inlet H2	mole/s	0.0	0.0	0.0	0.0	0.0	0.0
3	Fuel	Anode outlet unreformed fuel	mole/s	0.0	0.3	1.1	2.8	6.3
4	Molar	Anode outlet CO / H2	mole/s	3.1	4.8	6.2	7.5	8.8
5	Values	H2 Reacted	mole/s	7.2	7.6	7.3	6.9	6.5
6		Reformed H2 reacted	%	70%	60%	50%	40%	30%
7		Excess Reform. Fuel	%	43%	67%	100%	149%	232%
8	Anode inlet CH4	MWth	2.06	2.30	2.54	2.92	3.44	4.32
9	Fuel	Anode inlet H2	MWth	0.00	0.00	0.00	0.00	0.00
10	LHV	Anode outlet unreformed fuel	MWth	0.00	0.00	0.22	0.60	1.30
11	Values	Anode outlet H2	MWth	0.78	0.86	1.20	1.53	1.86
12		H2 Reacted	MWth	1.3	1.4	1.3	1.2	1.0
13		Reformed H2 reacted	%	62%	62%	50%	40%	29%
14		Excess Reform. Fuel	%	61%	61%	98%	150%	241%
15	Reformable Fuel Surplus Ratio		1.61	1.61	1.98	2.50	3.41	4.91
16	Uf	%	70%	70%	60%	50%	40%	30%
17	Fuel Cell Power	MWe	1.00	1.12	1.05	1.01	0.96	0.90
18	Voltage	V	0.72	0.72	0.72	0.72	0.72	0.72
19	Current Density	A/m2	1317	1478	1401	1344	1263	1192
20	Area	m2	1057	1051	1049	1048	1052	1049
21	Tin	C	536	538	536	536	536	536
22	MCFC	Tout	C	616	608	582	554	532
23	Temps	Tavg	C	576	572	559	545	534
24	Delta T	C	80	102	72	46	18	-4
25	Fresh to Burner	MWth	0.00	0.78	0.78	0.78	0.78	0.78
26	Fuel	Fresh to Anode	MWth	2.06	2.30	2.54	2.92	3.44
27	Balance	Anode Fuel - All	MWth	2.06	2.30	2.54	2.92	3.44

FIG. 7

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802		804		806		808		810		812		814		816		818		820	
30	1	Reformable Fuel - Molar	Anode Inlet - Non CO/H ₂ - H ₂ Equiv.	mole/s		10.3		11.5		12.7		14.6		17.2		21.6		27.7	
	2		Anode Inlet - CO/H ₂	mole/s		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
	3		Anode Outlet - Non CO/H ₂ - H ₂ Equiv	mole/s		0.0		0.0		0.3		1.1		2.8		6.3		7.2	
	4		Anode Outlet - CO/H ₂	mole/s		3.1		3.4		4.8		6.2		7.5		8.8		12.2	
	5		H ₂ Oxid'd	mole/s		7.2		8.1		7.6		7.3		6.9		6.5		8.3	
	6		Reform. H ₂ Oxid'd	%		70%		70%		60%		50%		40%		30%		30%	
	7		Excess Reform. Fuel	%		43%		42%		67%		100%		149%		232%		234%	
32	8	Reformable Fuel - LHV	Anode Inlet - Non CO/H ₂ - H ₂ Equiv.	MWth		2.06		2.30		2.54		2.92		3.44		4.32		5.53	
	9		Anode Inlet - CO/H ₂	MWth		0.00		0.00		0.00		0.00		0.0		0.0		0.0	
	10		Anode Outlet - Non CO/H ₂ - H ₂ Equiv	MWth		0.00		0.01		0.06		0.22		0.6		1.3		1.4	
	11		Anode Outlet - CO/H ₂	MWth		0.78		0.86		1.20		1.53		1.86		2.18		3.01	
	12		H ₂ Oxid'd	MWth		1.3		1.4		1.3		1.2		1.0		0.9		1.1	
	13		Reform. LHV Oxidized	%		62%		62%		50%		40%		29%		20%		20%	
	14		Excess Reform. Fuel	%		61%		61%		98%		150%		241%		391%		407%	
15			Reformable Fuel Surplus Ratio			1.61		1.61		1.98		2.50		3.41		4.91		5.07	
34	16	Fuel Cell Parameters	Uf	%		70%		70%		60%		50%		40%		30%		30%	
	17		Power	MWe (DC)		1.00		1.12		1.05		1.01		0.96		0.90		1.04	
	18		Voltage (V)	V		0.72		0.72		0.72		0.72		0.72		0.72		0.65	
	19		Current Density (j)	A/m ²		1317		1478		1401		1344		1263		1192		1524	
	20		Power Density (= V * j)	W/m ²		948		1064		1009		968		909		858		991	
	21		Area	m ²		1057		1051		1049		1048		1052		1049		1050	
	22		Tin	C		536		536		536		536		536		536		536	
36	23	MCFC Temperatures	Tout	C		616		640		608		582		554		532		549	
	24		Tavg	C		576		588		572		559		545		534		543	
	25		Delta T	C		80		104		72		46		18		-4		13	
	25		Fresh to Burner	MWth		0.00		0.78		0.78		0.78		0.78		0.78		0.78	
38	26	Fuel Balance	Fresh to Anode	MWth		2.06		2.30		2.54		2.92		3.44		4.32		5.53	
	27		Recycle to Anode	MWth		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	28		Anode Fuel - All	MWth		2.06		2.30		2.54		2.92		3.44		4.32		5.53	

FIG. 8

902		904		906		908		910		912		914		916		918		920		922		924		
0	1	Anode Inlet - Non CO/H2 - H2 Equiv.		mole/s		10.3		13.1		16		20.2		26.4		30.7		33.8		40.7		36.4		
	2	Anode Inlet - CO/H2		mole/s		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		
	3	Reformable Fuel - Molar	Anode Outlet - Non CO/H2 - H2 Equiv		mole/s		0.0		0.0		0.0		0.1		0.3		0.6		0.7		0.8		1.0	
	4		Anode Outlet - CO/H2		mole/s		3.1		3.9		6.4		10		15.5		19.4		21.3		25.6		24.5	
	5		H2 Oxid'd		mole/s		7.2		9.2		9.6		10.1		10.6		10.7		11.8		14.3		10.9	
	6		Reform. H2 Oxid'd		%		70%		70%		60%		50%		40%		35%		35%		35%		30%	
	7		Excess Reform. Fuel		%		43%		42%		67%		100%		149%		187%		186%		185%		234%	
2	8	Anode Inlet - Non CO/H2 - H2 Equiv.		MWth		2.06		2.62		3.20		4.04		5.27		6.14		6.75		8.13		7.28		
	9	Anode Inlet - CO/H2		MWth		0.00		0.00		0.00		0.02		0.0		0.0		0.0		0.0		0.0		
	10	Reformable Fuel - LHV	Anode Outlet - Non CO/H2 - H2 Equiv		MWth		0.00		0.00		0.01		0.00		0.1		0.1		0.1		0.2		0.2	
	11		Anode Outlet - CO/H2		MWth		0.78		1.00		1.62		2.53		3.9		4.88		5.34		6.44		6.13	
	12		H2 Oxid'd		MWth		1.3		1.6		1.6		1.5		1.3		1.2		1.3		1.5		0.9	
	13		Reform. LHV Oxidized		%		62%		62%		49%		38%		25%		19%		19%		19%		13%	
	14		Excess Reform. Fuel		%		61%		62%		104%		165%		305%		434%		431%		431%		674%	
15	Reformable Fuel Surplus Ratio				1.61		1.62		2.04		2.65		4.05		5.34		5.31		5.31		7.74			
4	16	Uf		%		70%		70%		60%		50%		40%		35%		35%		35%		30%		
	17	Power		MWe (DC)		1.00		1.27		1.33		1.40		1.46		1.49		1.60		1.79		1.52		
	18	Fuel Cell Parameters	Voltage (V)		V		0.72		0.72		0.72		0.72		0.72		0.72		0.70		0.65		0.72	
	19		Current Density (j)		A/m2		1317		1690		1768		1854		1939		1977		2172		2613		2009	
	20		Power Density (= V *j)		W/m2		948		1217		1273		1335		1396		1423		1520		1698		1446	
	21		Area		m2		1057		1047		1048		1052		1049		1049		1049		1051		1049	
	22		MCFC Temperatures	Tin		C		536		597		613		637		671		693		689		677		717
23	Tout			C		616		705		686		662		629		607		611		622		581		
24	Tavg			C		576		651		650		650		650		650		650		650		649		
25	Delta T			C		80		108		73		25		-42		-86		-78		-55		-136		
8	26	Fuel Balance	Fresh to Burner		MWth		0.00		0.94		1.00		1.08		1.18		1.25		1.27		1.30		1.33	
	27		Fresh to Anode		MWth		2.06		2.62		3.20		4.04		5.27		6.14		6.75		8.13		7.28	
	28		Recycle to Anode		MWth		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	29		Anode Fuel - All		MWth		2.06		2.62		3.20		4.04		5.27		6.14		6.75		8.13		7.28	

Fig. 9

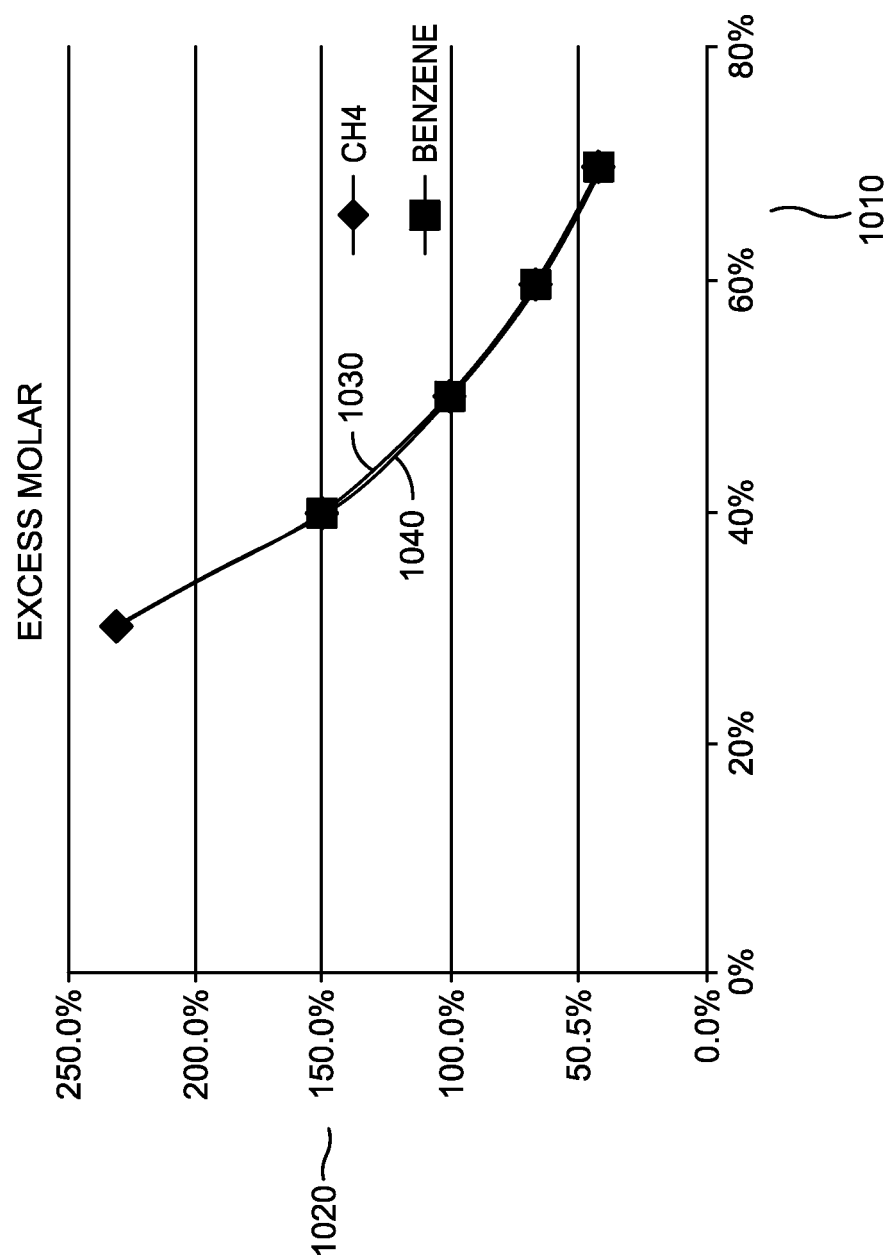


FIG. 10

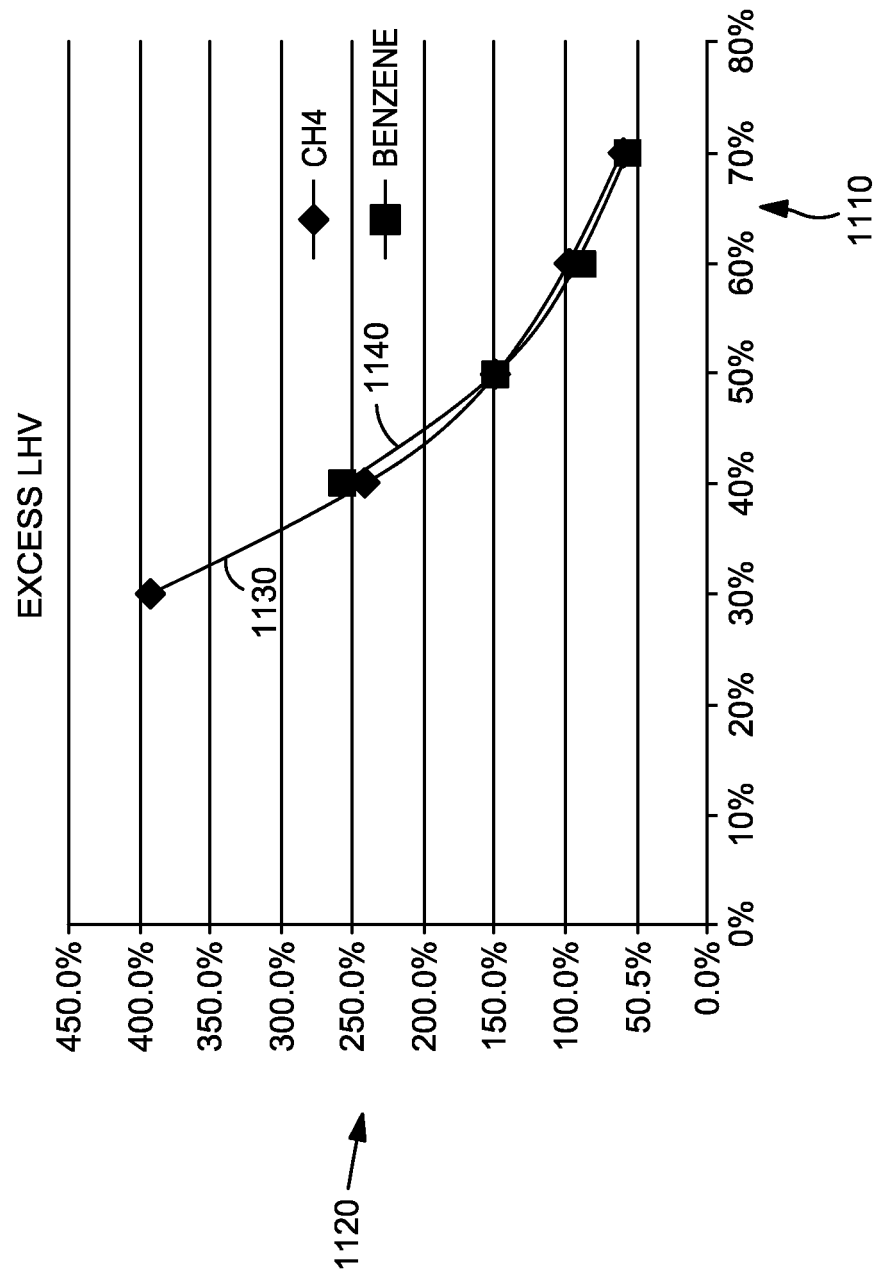


FIG. 11

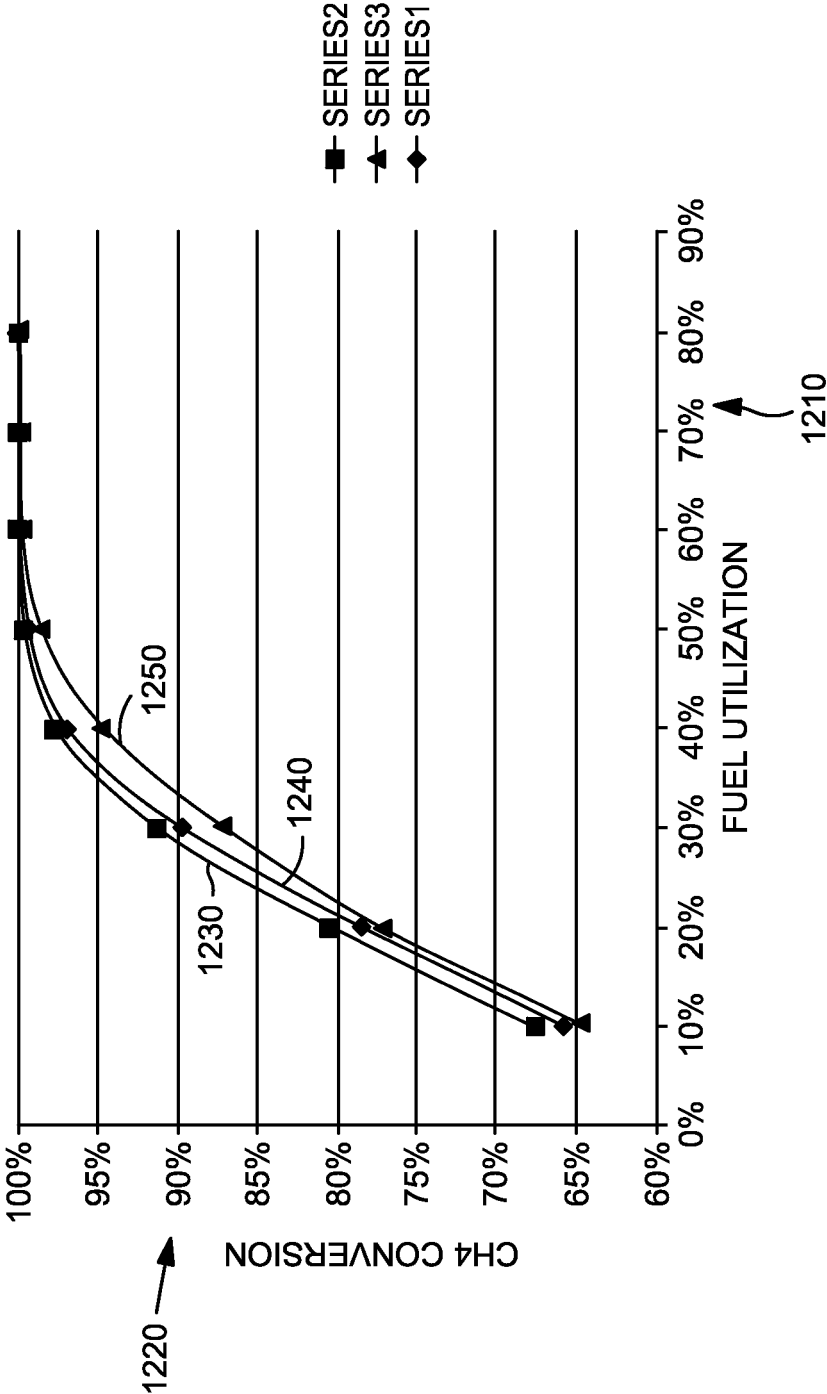


FIG. 12

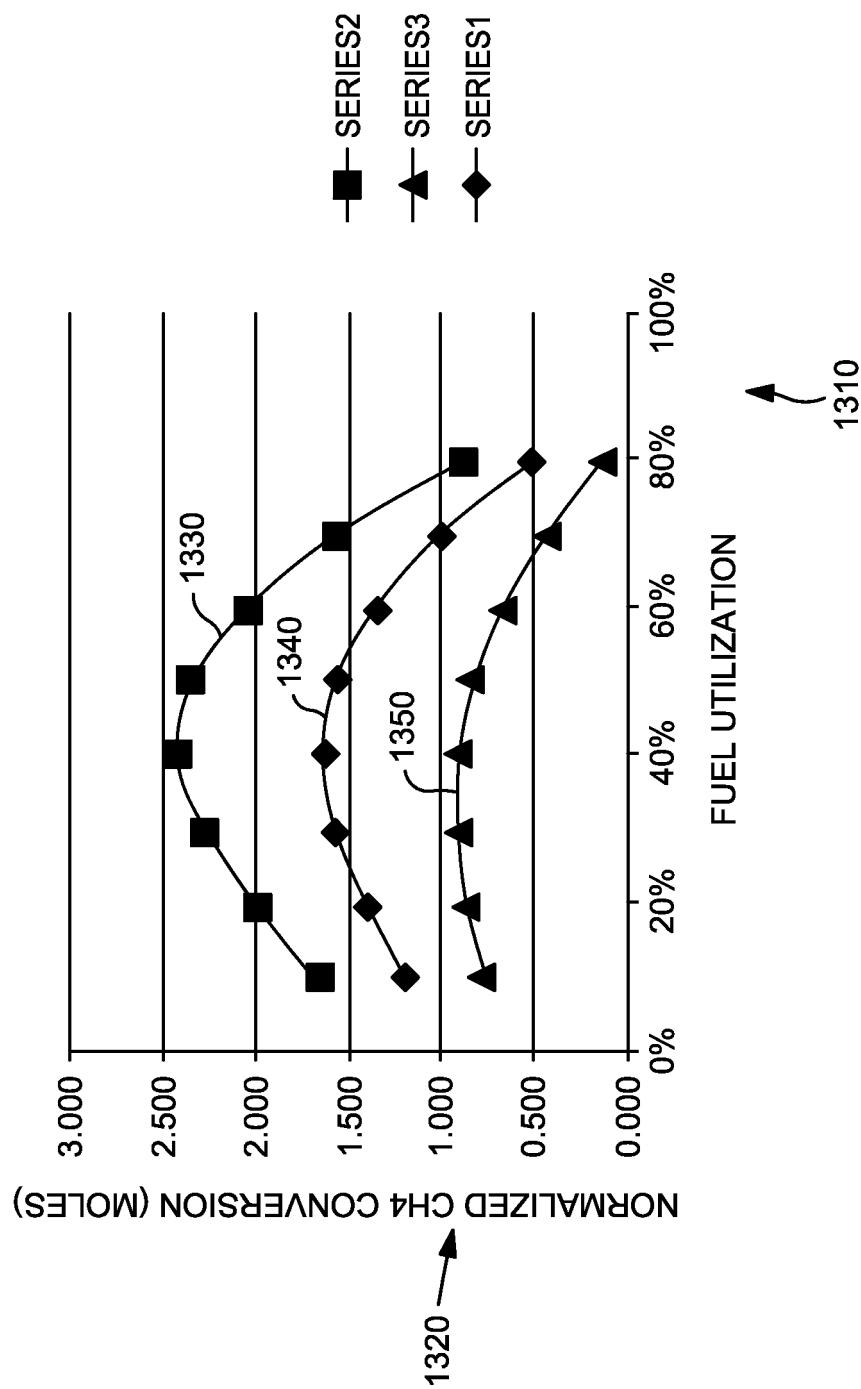


FIG. 13