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EXAMPLES OF COMPARISON OF INDICATORS ICE OF NEW GENERATION AND EXISTING ICE

The methods developed by us allow us to determine the optimal PTO parameters, as well as the power, economic and design indicators of ICE NG, necessary to assess its effectiveness in the drive of machines for various purposes: mobile and stationary, working on land, in air and on water.

ICE for a car	Type of engine and fuel					
	Petrol		Diesel		Gas	
	ICE BG	VW 1.2TSI (EA111)	ICE BG	VW 1.6TDI (CAYC)	ICE BG	VW 1.4TGI Blue Motion
Engine displacement, l	0,588	1,197	0,809	1,598	0,710	1,395
Rated power, h.p.	101	105	104	102	107	110
at engine speed, rpm	2500	5000	2200	4400	3000	6000
Maximum torque, N•m	348	175	465	230	395	200
at engine speed, rpm	1400	2800	1000	2000	1300	2500
Fuel consumption, l/100 km	3,7	5,9	3,9	6,5	2,9	4,5

ICE for a sports car, 900 h.p.	Type of engine and fuel	
	Petrol	Petrol
	ICE NG	Renault Energy F1 1,6 V6T
Engine displacement, l	0,85	1,6
Rated power, h.p.	900	905
at engine speed, rpm	7500	15000
Maximum torque, N•m	1215	645
at engine speed, rpm	4500	8000
Fuel consumption, l/100 km	61,0	100,0

ICE for motorcycle	Type of engine and fuel	
	Petrol	Petrol
	ICE NG	Yamaha XJ6
Engine displacement, l	0,340	0,600
Rated power, h.p.	80	77,5
at engine speed, rpm	5150	10000
Maximum torque, N•m	124	59,7
at engine speed, rpm	4000	8000
Fuel consumption, l/100 km	1,9	3,1

ICE for a light helicopter	Type of engine and fuel			
	Petrol		Petrol	
	ICE NG	M-14B26B1	ICE NG	D-Motor LF-39
Engine displacement, l	3,1	n.i.	2,0	4,0
Rated power, h.p.	370	370	124	125
at engine speed, rpm	1500	2950	1500	3000
Maximum torque, N•m	2300	н.д.	635	320
at engine speed, rpm	1300	н.д.	850	1700
Fuel consumption, l/h	23,5	43,0	9,9	19,0

ICE for a light-engine aircraft, unmanned aerial vehicle	Type of engine and fuel			
	Petrol		Petrol	
	ICE NG	ДВ-400	ICE NG	ROTAX 914
Engine displacement, l	3,3	n.i.	0,95	1,2
Rated power, h.p.	400	400	130	100
at engine speed, rpm	1500	3000	2800	5500
Maximum torque, N•m	1900	950	497	128
at engine speed, rpm	1300	2500	2800	5500
Fuel consumption, l/h	41,1	72,1	23,8	27,2

ICE for agricultural tractor	Type of engine and fuel			
	Diesel		Gas	
	ICE NG	D-260.1	ICE NG	YAMZ-534 CNG
Engine displacement, l	2,27	4,75	2,22	4,43
Rated power, h.p.	160	150	160	160
at engine speed, rpm	1300	2200	1150	2300
Maximum torque, N•m	992,6	560,7	1095	550
at engine speed, rpm	800	1350	700	1400
Fuel consumption, kg/h	17,7	24,8	18,7	25,7

ICE for small craft	Type of engine and fuel	
	Petrol	Petrol
	ICE NG	Honda BF60
Engine displacement, l	0,502	0,998
Rated power, h.p.	60	60
at engine speed, rpm	2800	5500
Maximum torque, N•m	268	125
at engine speed, rpm	2000	4000
Fuel consumption, l/100 km	8,2	14,3

ICE for a truck	Type of engine and fuel			
	Diesel		Gas	
	ICE NG	Volvo D13K420	ICE NG	Scania OC13 101
Engine displacement, l	6,9	12,8	6,5	12,7
Rated power, h.p.	422	420	415	410
at engine speed, rpm	1050	1900	1400	1900
Maximum torque, N•m	4200	2100	4050	2000
at engine speed, rpm	750	1400	650	1300
Fuel consumption, l/100 km	16,1	43,3	25,1	39,0

ICE for locomotive, ship, motor generator	Type of engine and fuel			
	Diesel		Gas	
	ICE NG	44H30/38	ICE NG	44H30/38 CNG
Engine displacement, l	55,4	107,4	55,4	107,4
Rated power, h.p.	1000	1000	1000	1000
at engine speed, rpm	290	580	350	700
Fuel consumption, kg/h*	120	190	195	285

* at maximum power for TGM23, for corvette pr. 20380, for STAMFORD PI 734 A generator

ICE for mining truck BELAZ 7513	Type of engine and fuel	
	Gas	Diesel
	ICE NG	Cummins KTA 50-C
Engine displacement, l	24,8	49,6
Rated power, h.p.	1605	1630
at engine speed, rpm	750	1500
Maximum torque, N•m	12410	6290
at engine speed, rpm	750	1500
Fuel consumption	144,4 m3/hour	249,6 l/hour

ICE for city bus, 260 h.p.	Type of engine and fuel	
	Gas	Gas
	ICE NG	KAMAZ-820.60
Engine displacement, l	11,762	11,762
Rated power, h.p.	260	260
at engine speed, rpm	1100	2200
Maximum torque, N•m	1860	931
at engine speed, rpm	700	1400
Average temperatures of parts, °C		
- piston;	438,6	477,6
- block heads;	406,1	422,3
- cylinder walls	387,1	407,3
Heat flows through engine parts, J / s		
- piston;	3423,7	6287,7
- block heads;	3620,3	6566,0
- cylinder walls	1855,3	4128,2
Fuel consumption, m3 / h	29,2	53,4