

Important

This Technical Data Sheet and the corresponding Installation Instructions provide important information to ensure the installed engine will operate according to the design specification in the Volvo Penta application for certification.

Requirements marked with  are considered as critical for exhaust emissions compliance according to the design specification in the Volvo Penta application for certification.

Failing to follow and meet these instructions and requirements when installing a certified engine in a piece of nonroad equipment for use in the United States violates U.S. federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.

General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel

Number of cylinders			6
Displacement, total		liters	12,78
		in ³	780
Firing order			1-5-3-6-2-4
Bore		mm	131
		in	5,16
Stroke		mm	158
		in	6,22
Compression ratio			17.8:1
Wet weight	Engine only	kg	1325
		lb	2921
	Power pac	kg	1790
		lb	3946

Performance			rpm	1200	1500	1800	1900	
IFN Power	256 kW	without fan	kW	219	256	256	256	
			hp	298	348	348	348	
		with fan	890 mm	kW	215	250	246	244
			hp	292	340	335	332	
IFN Power	256 kW	without fan	kW	219	256	256	256	
			hp	298	348	348	348	
		with fan	890 mm	kW	215	250	246	244
			hp	292	340	335	332	
Torque at:		IFN Power 256 kW	Nm	1743	1630	1358	1287	
			lbf ft	1285	1202	1002	949	
		IFN Power 256 kW	Nm	1743	1630	1358	1287	
			lbf ft	1285	1202	1002	949	
Max torque at engine speed	IFN Power	1200 rpm	Nm	1745				
			lbf ft	1287				
			Nm					
			lbf ft					
Power tolerance			%	±2%				
Mean piston speed			m/s	6,3	7,9	9,5	10,0	
			ft/sec	20,7	25,9	31,1	32,8	
Effective mean pressure at:		IFN Power 256 kW	MPa	1,71	1,60	1,34	1,27	
			psi	249	232	194	183	
Max combustion pressure at:		IFN Power 256 kW	MPa	12,7	13,8	14,2	13,7	
			psi	1842	2001	2059	1987	
Total mass moment of inertia, J (mR ²) (not including flywheel)			kgm ²	3,43				
			lbft ²	81,4				
Friction Power			kW	21	31	45	51	
			hp	29	42	61	69	
Derating see Technical Diagrams								

Cold start performance

*Cold start limit temperature	without starting aid	°C	-15
		°F	5
	with manifold heater 4 kW	°C	-25
		°F	-13
	with manifold heater 4 kW and block heater	°C	-30
		°F	-22
*Specify oil and fuel quality	Oil: VDS3 10W/30, Fuel: MK1		
Block heater type	Make	Power kW	Engaged hours
Self circulating	Volvo 3828643	2	12
			Cooling water temp engine block
			-1°C 30°F

* See also general section in the sales guide

Lubrication system

Lubricating oil consumption at max rpm at:	IFN Power 256 kW	liter/h US gal/h	0,02 0,005
Oil system capacity including filters		liter US gal	Std sump 36 / Aluminium sump 52 Std sump 9,51 / Aluminium sump 13,74
Plastic Oil sump capacity (Std):	Max	liter	30
		US gal	7,93
	Min	liter	19
		US gal	5,02
Aluminium Oil sump capacity:	Max	liter	46
		US gal	12,15
	Min	liter	36
		US gal	9,51
Oil change intervals/specifications	VDS3	h	600
Engine angularity limits:	front up	°	Std oil sump 11 / Aluminium oil sump 35
	front down	°	Std oil sump 11 / Aluminium oil sump 35
	side tilt	°	Std oil sump 11 / Aluminium oil sump 35
Oil pressure at rated speed		kPa psi	300-650 44-94
Oil pressure shut down switch setting		kPa psi	N/A

Lubrication system

Lubrication oil temperature in sump:	max	°C °F	130 266
Oil filter micron size		µ	40

Fuel system

rpm

1200

1500




1800

1900

Fuel to conform to

 EN590
 ASTM D 975 No 1D and 2D
 (Max 20 ppm sulphur and 7% FAME)
Fuel system

System supply flow at max. speed	liter/h	100
	US gal/h	26,4
Fuel supply line max. restriction (Measured at fuel inlet connection)	kPa	30
	psi	4,4
Fuel supply line max. pressure, during engine stand still (measured at fuel inlet connection)	kPa	0
	psi	
System return flow at max. speed	liter/h	18,0
	US gal/h	4,8
Fuel return line max. restriction (Measured at fuel return connection)	kPa	20
	psi	2,9
Max. allowable inlet fuel temp (Measured at fuel inlet connection)	°C	60
	°F	140
Prefilter / Water separator micron size	μ	10
Fuel filter micron size	μ	5
Governor type/make, standard	Volvo/EMS2.2	
Injection pump type/make	Delphi E3	

Intake and exhaust system		Inlet air temp	rpm	1200	1500	1800	1900
Air consumption at: (+25°C and 100kPa)	IFN Power 256 kW		m ³ /min cfm	17,0 600	22,0 777	26 918	27 954
 <p>See front page for important information</p> <p>Max allowable air intake restriction including piping</p>			kPa psi	5 0,7			
Heat rejection to exhaust at:	IFN Power 256 kW		kW BTU/min	145 8246	175 9952	187 10635	202 11488
Exhaust gas temperature after turbine at:	IFN Power 256 kW		°C °F	420 788	385 725	360 680	355 671
 <p>See front page for important information</p> <p>Max allowable back pressure in exhaust line (after turbine) Pipe dimension Ø: 125 mm</p>			kPa psi	15 2,2	22 3,2	26 3,8	28 4,1
 <p>See front page for important information</p> <p>Max allowable temperature drop between turbine and SCR muffler inlet.</p>			°C °F	10 18			
SCR muffler pressure drop			kPa psi	11 1,6	16 2,3	19 2,8	20 2,9
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)	IFN Power 256 kW		m ³ /min cfm	36,0 1271	44,0 1554	48 1695	49 1730
Exhaust gas smoke	IFN Power 256 kW		*Bosch Units	0,013	0,014	0,016	0,02

Cooling system



		rpm	1200	1500	1800	1900
Heat rejection radiation from engine at:	IFN Power 256 kW	kW	4	5	5	5,9
		BTU/min	227	279	284	336
Heat rejection to coolant at:	IFN Power 256 kW	kW	98	110	123	132
		BTU/min	5573	6256	6995	7507
Radiator cooling system type			Closed circuit			
Standard radiator core area		m ²	0,8			
		foot ²	8,61			
Fan diameter	890 mm	mm	890			
		in	35,04			
Fan power consumption	890 mm	kW	4,0	6,0	10,0	12,0
		hp	5	8	14	16
Fan drive ratio	fan Ø890		0,84			
Coolant capacity:	engine	liter	20			
		US gal	5,3			
	std. 0,8m ² radiator with hoses	liter	24			
		US gal	6,3			
Coolant pump		drive/ratio	belt/1.43:1			
Coolant flow with standard system		l/s	3,7	4,7	5,7	6
		US gal/s	1,0	1,2	1,5	1,6
Minimum coolant flow		l/s	3,2	4,2	5,2	5,5
		US gal/s	0,8	1,1	1,4	1,5
Maximum outer circuit restriction incl. piping		kPa	55,0			
		psi	8,0			
Thermostat:	start to open	°C	82			
		°F	180			
	fully open	°C	92			
		°F	198			
Maximum static pressure head (expansion tank height + pressure cap setting)		kPa	100			
		psi	14,5			
Minimum static pressure head (expansion tank height + pressure cap setting)		kPa	70			
		psi	10,2			
Standard pressure cap setting		kPa	75			
		psi	10,9			
Maximum top tank temperature		°C	107			
		°F	225			
Recommended Draw down capacity.						

The difference between min coolant level in the expansion tank and the lowest level where the engine's coolant system still are functioning

liter
US gal

2
0,5

Charge air cooler system

		rpm	1200	1500	1800	1900
Heat rejection to charge air cooler	IFN Power 256 kW	kW	29	44	54	59
		BTU/min	1649	2502	3071	3355
Charge air mass flow	IFN Power 256 kW	kg/s	0,31	0,42	0,49	0,51
Charge air inlet temp. (Charge air temp after turbo compressor)	IFN Power 256 kW	°C	134	150	158	164
		°F	273	302	316	327
 See front page for important information Max allowable Charge air outlet temp. (Charge air temp after charge air cooler)	IFN Power 256 kW	°C	36	41	46	50
		°F	97	106	115	122
 See front page for important information Maximum pressure drop over charge air cooler incl. Piping (throttle not included)		kPa	12			
		psi	1,74			
Charge air pressure at rated power (After charge air cooler)		kPa	165			
		psi	23,93			
Standard charge air cooler core area		m ²	0,8			
		foot ²	8,61			

Cooling performance: 0,8 m² radiator and Pull 890 fan

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 107°C TTT and 40% coolant. Valid at 1 atm.

Engine speed	Engine power	Air on temp		Air flow		External restriction	
		°C	°F	m ³ /s	ft ³ /s	Pa	psi
1900	256	68	154	6,4	226,0	260	0,038
0,84	348	70	158	7	247,2	100	0,015
		71	160	7,3	257,8	0	

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Cooling performance: 0,8 m² radiator and Push 890 fan

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 107°C TTT and 40% coolant. Valid at 1 atm.

Engine speed rpm	Engine power kW hp	Air on temp		Air flow		External restriction	
		°C	°F	m ³ /s	ft ³ /s	Pa	psi
1900 0,84	256 348	68	154	6,4	226,0	255	0,037
		69	156	6,7	236,6	160	0,023
		71	160	7,2	254,3	0	

Engine management system

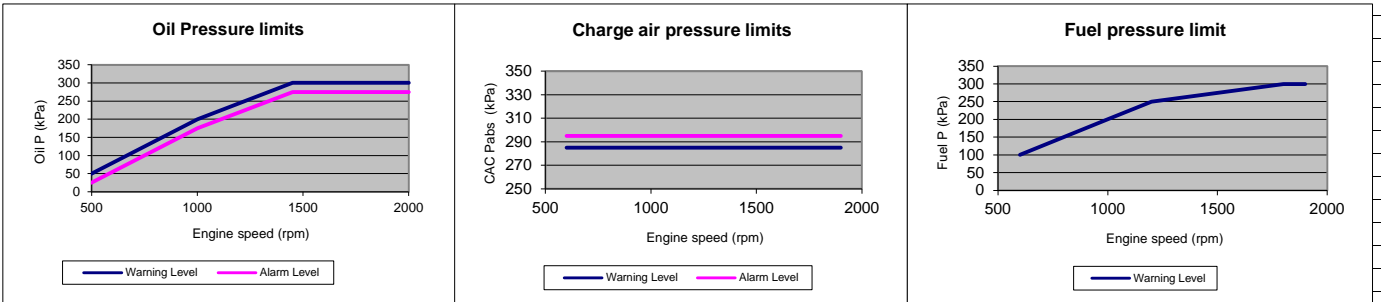
Functionality	Alternatives	Default setting
Governor mode	Isochronus	
Governor droop	0%	
Governor response	Adjustable PI-constants	1
Idle speed	600-900	700
Stop function	Energized to run/Stop	
Preheating function	On/Off	
Lamp test	On/Off	

Parameter	Warning level	Alarm level	Engine protection	
Parameter for Power Pack	Default setting	Level	Action.	Default/Alternative
Oil temp	125°C	Setting +5°C	Shut down. ON/OFF*	
Oil pressure	50 kPa	25 kPa	Shut down. ON/OFF*	
Rated speed	300 kPa	275 kPa	Shut down. ON/OFF*	
Oil level	Min level	-	-	
Coolant temp	105°C	107°C	Shut down. ON/OFF*	
Coolant level	Low level	-	-	
Fuel feed pressure	Low idle	100 kPa	-	
1200	-	250 kPa	-	
Water in fuel	High level	-	-	
Crank case pressure	Press inc	-	Shut down. ON/OFF*	
Air filter pressure drop	5 kPa	-	-	
Altitude, above sea	Automatic derating, see section derating			
Charge air temp	80°C	85°C	Shut down. ON/OFF*	
Charge air pressure	Warning map value + 5kPa	Alarm map value + 5kPa	Shut down. ON/OFF*	
Engine speed	120%	-	Shut down. ON/OFF*	
Cat temp protection (exhaust temp)	-	-	Derates the engine in order to not exceed exhaust T>550°C	

* Off: disables the function, i e no shut down.

Parameter	Warning level	Alarm level	Engine protection			
Parameter for Mobile	Warning	Alarm	Derated 0% to engine protection map	Derated 100% to engine protection map	Forced idle after sec	Forced shut down after 2 sec
Oil temp	125°C	127°C	127°C	130°C	N/A	N/A
Oil pressure	Warning map value	Alarm map value	N/A	N/A	N/A	Alarm map value
Oil level	Min level	N/A	N/A	N/A	N/A	N/A
Coolant temp	105°C	107°C	107°C	108°C	N/A	N/A
Coolant level	Low level	N/A	N/A	N/A	N/A	N/A
Fuel feed pressure	Warning map value	N/A	N/A	N/A	N/A	N/A
Water in fuel	High level	N/A	N/A	N/A	N/A	N/A
Crank case pressure	N/A	Press incr 5kPa	N/A	N/A	N/A	Press incr 5kPa
Air filter pressure drop	5 kPa	N/A	N/A	N/A	N/A	N/A
Altitude, above sea	Automatic derating, see section derating					

Charge air temp	80°C	85°C	85°C	86°C	N/A	N/A
Charge air pressure	Warning map value	Alarm map value	Alarm map value	Alarm map value	N/A	N/A
Engine speed	120%	N/A	N/A	N/A	N/A	N/A
Cat protection (exhaust temp)	-	-	Derates the engine in order to not exceed exhaust T>550°C			



Electrical system

Voltage and type			24 V
Alternator:	make	Bosch	
	output	80	
	tacho output	Hz/alternator rev. 6	
	drive ratio	5,3:1	
Starter motor:	make	Melco	
	type	105P70	
	output	kW	7
Number of teeth on:	flywheel	153	
	starter motor	12	
Max wiring resistance main circuit	mΩ	2	
Cranking current at +20°C	A	180	
Crank engine speed at 20°C	rpm	155	
Starter motor battery capacity	max	Ah/A	2*225
	min at +5°C	Ah/A	-
Inlet manifold heater (at 20 V)	kW	4	
Power relay for the manifold heater	A	1	

Power take off

		rpm	1200	1500	1800	1900
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW	42	53	62	68

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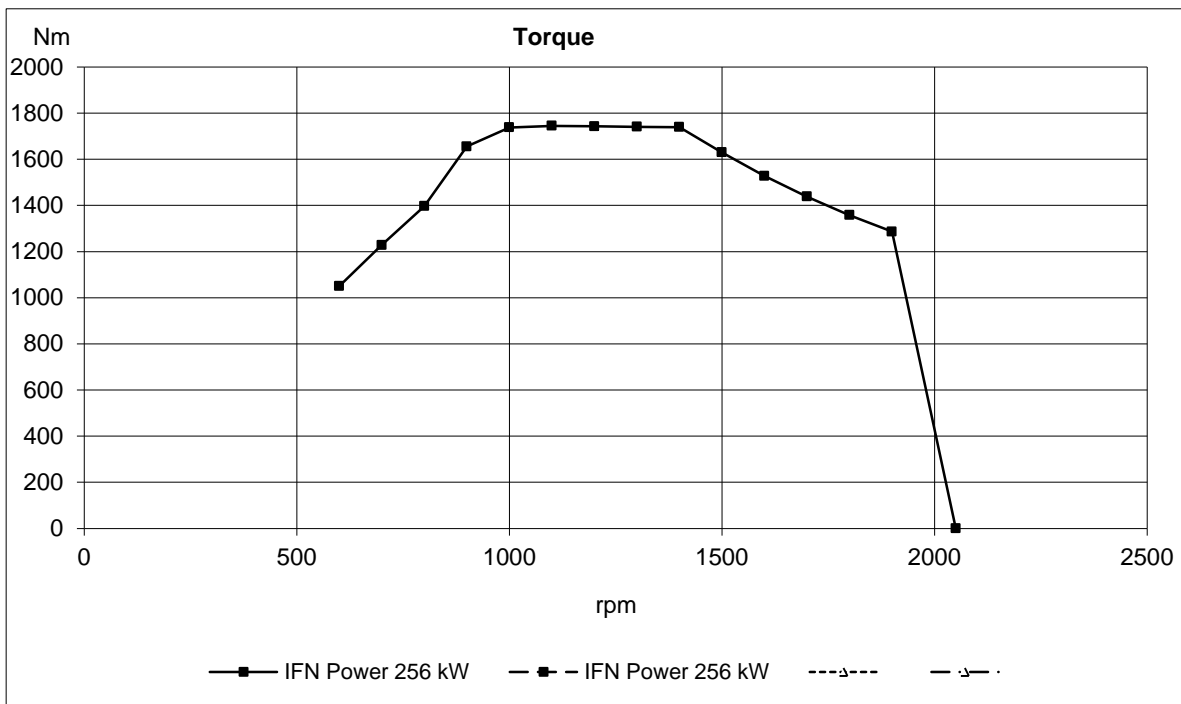
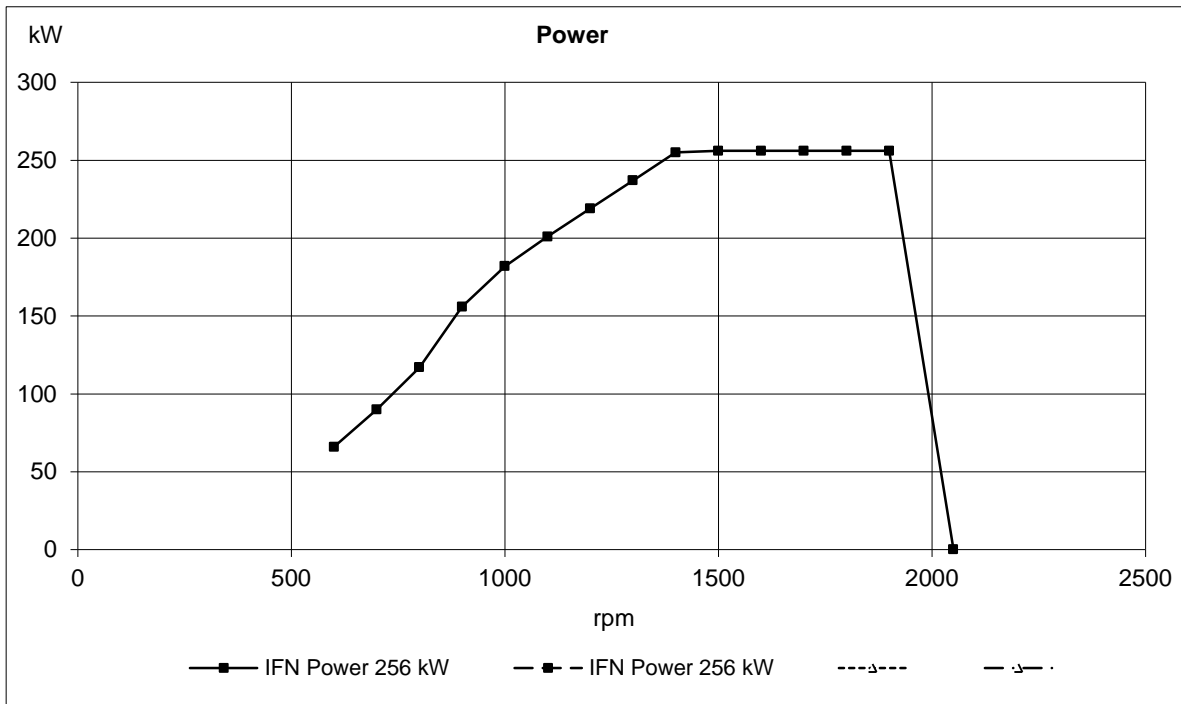
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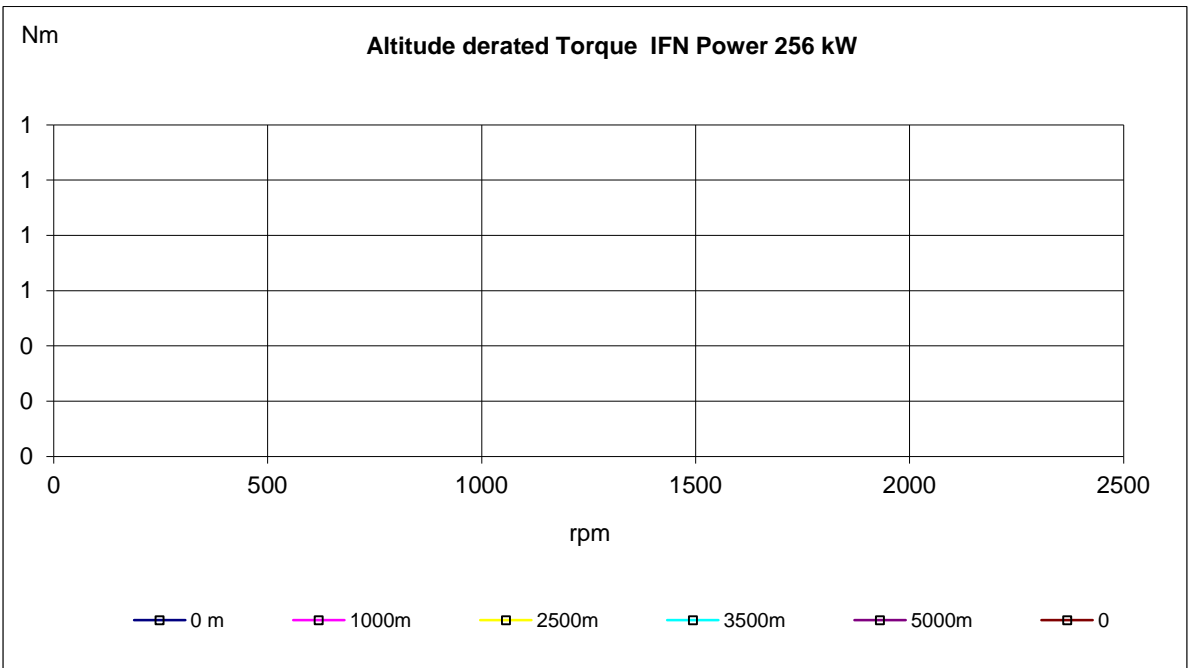
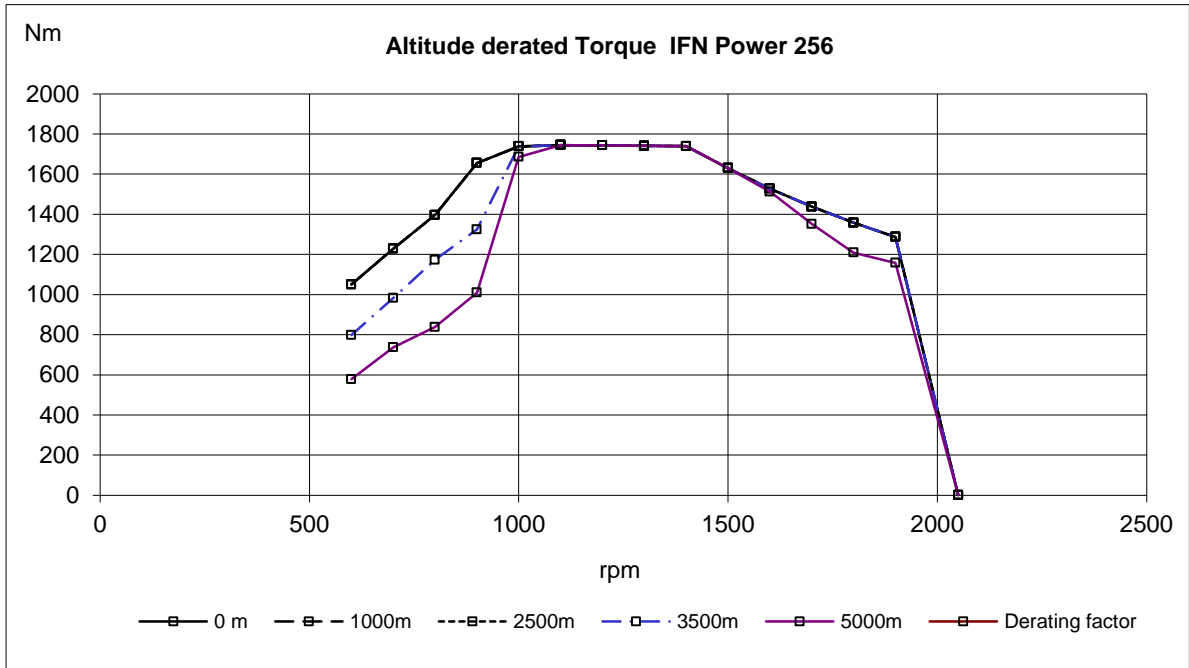
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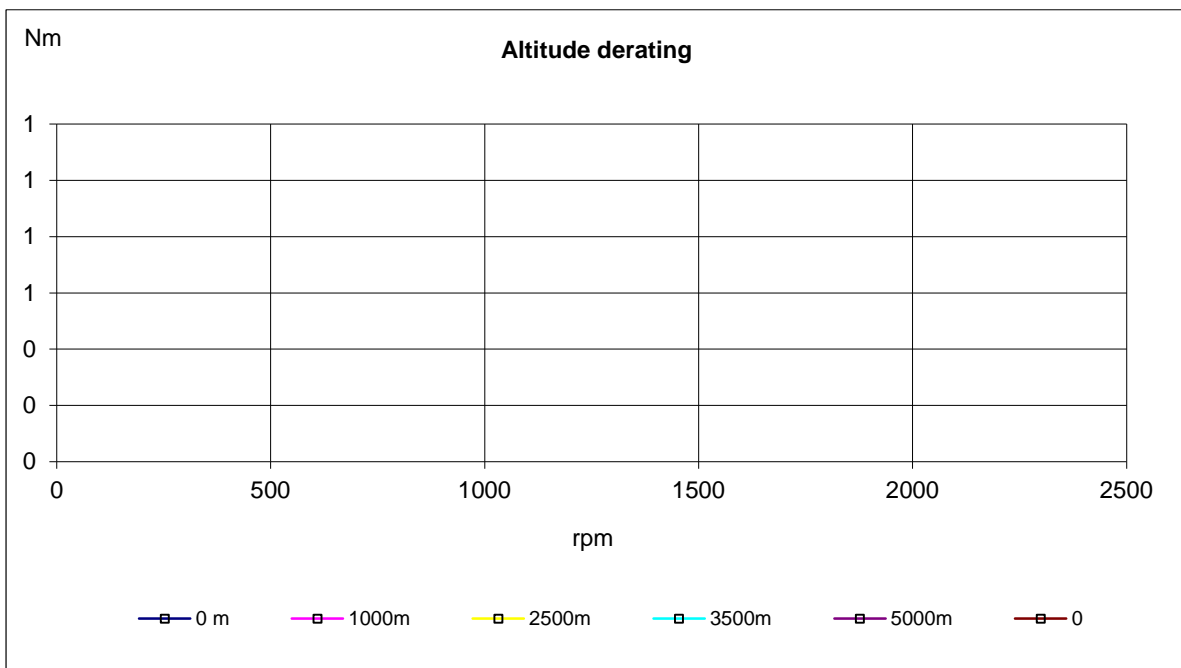
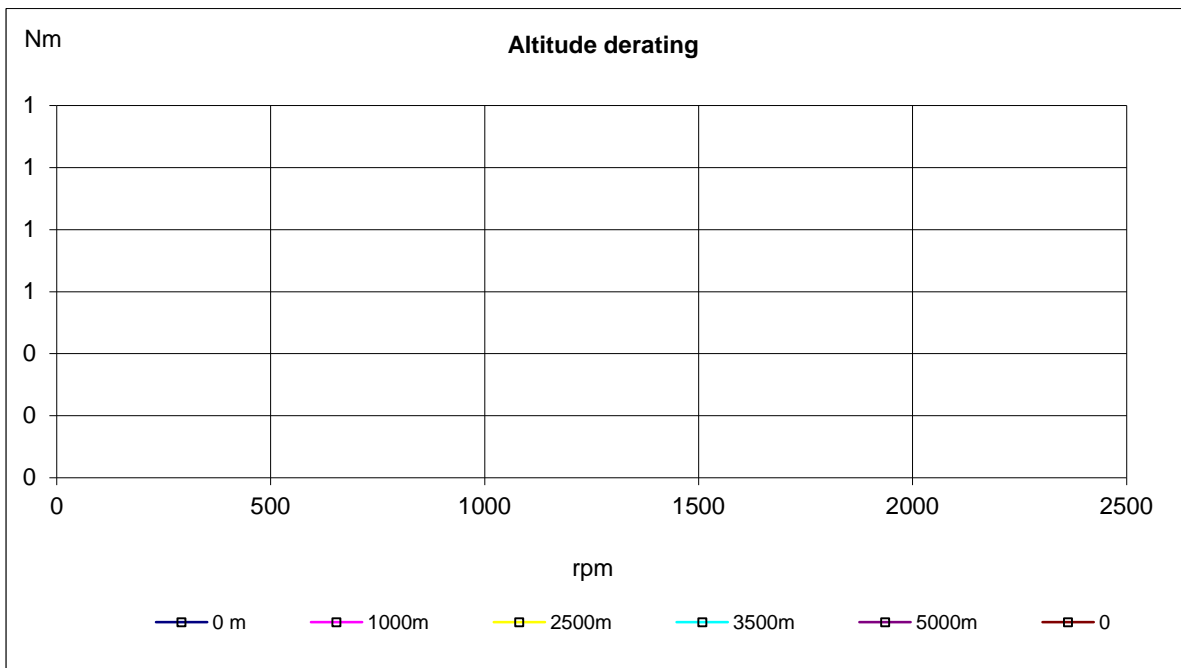
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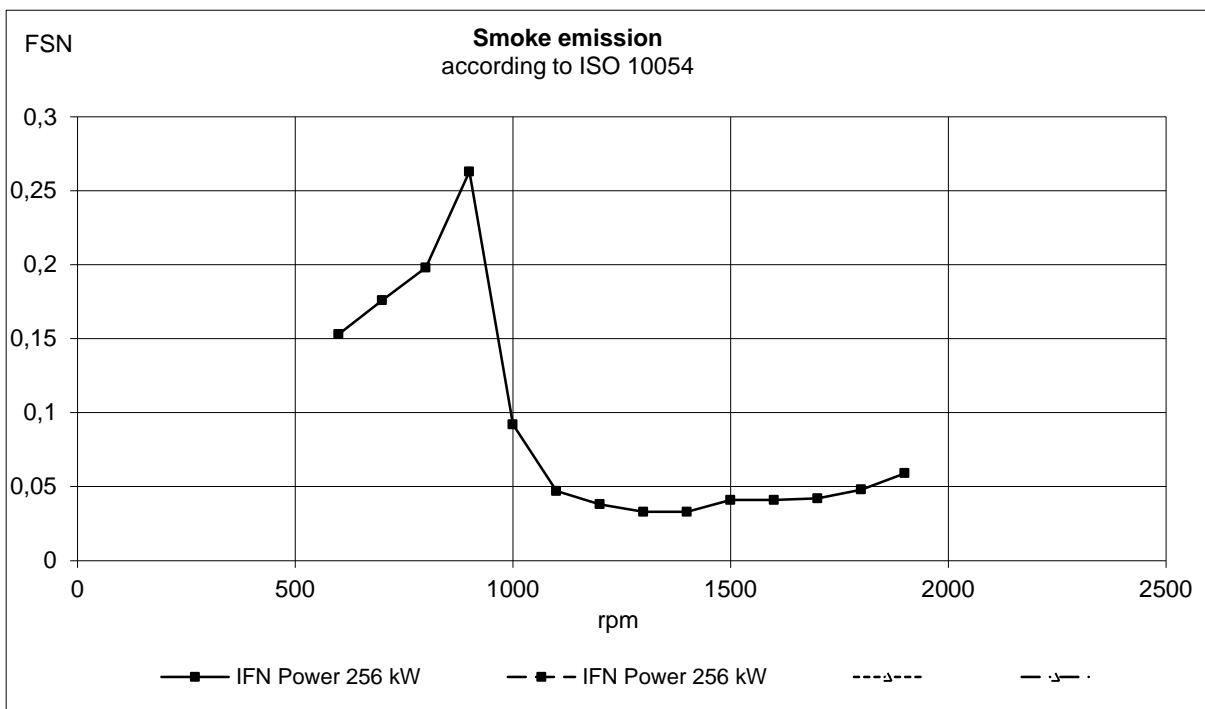
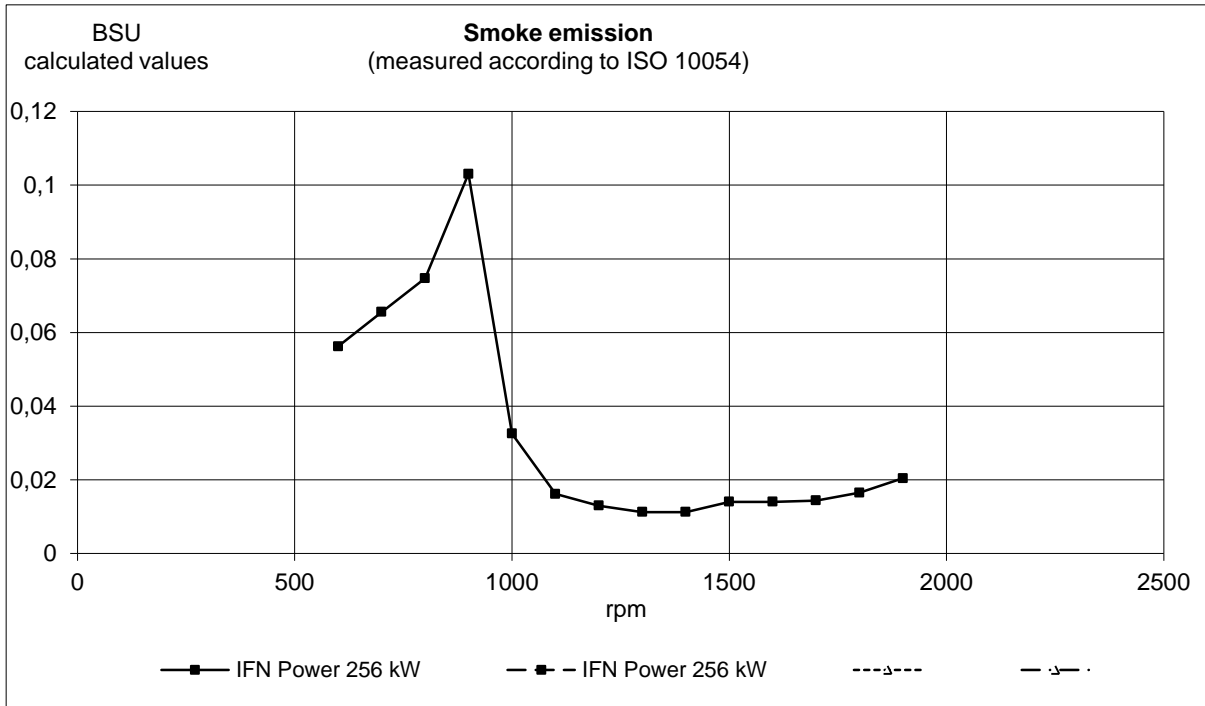
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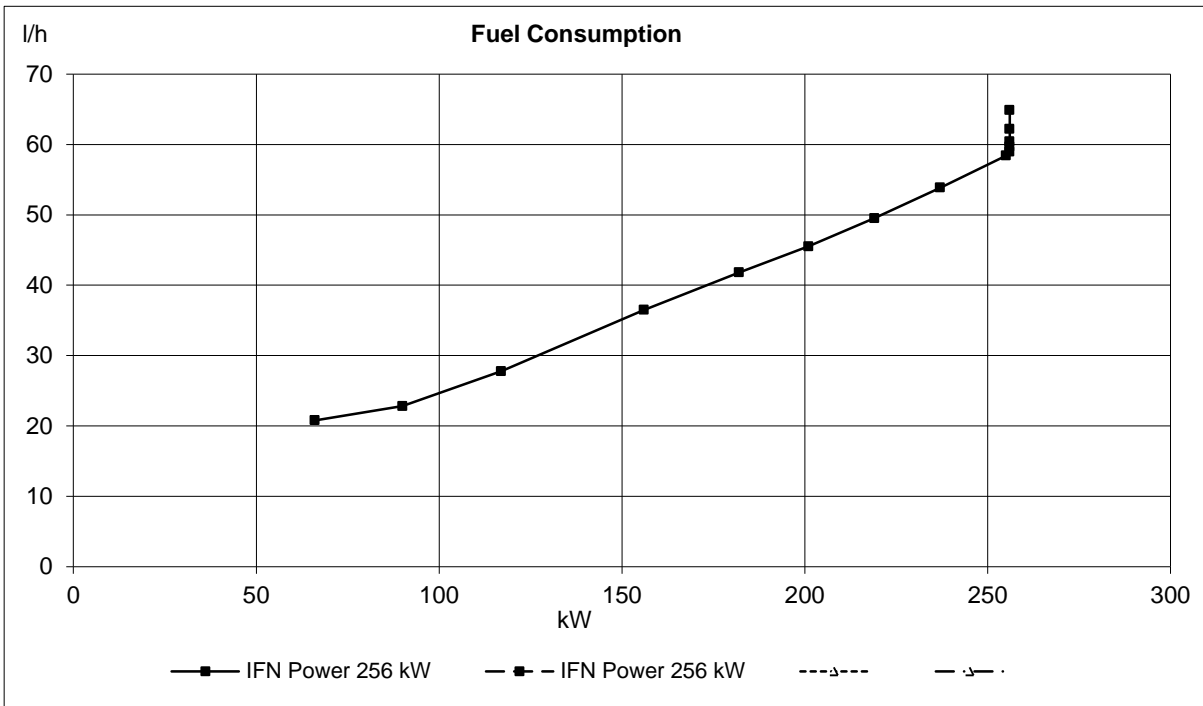
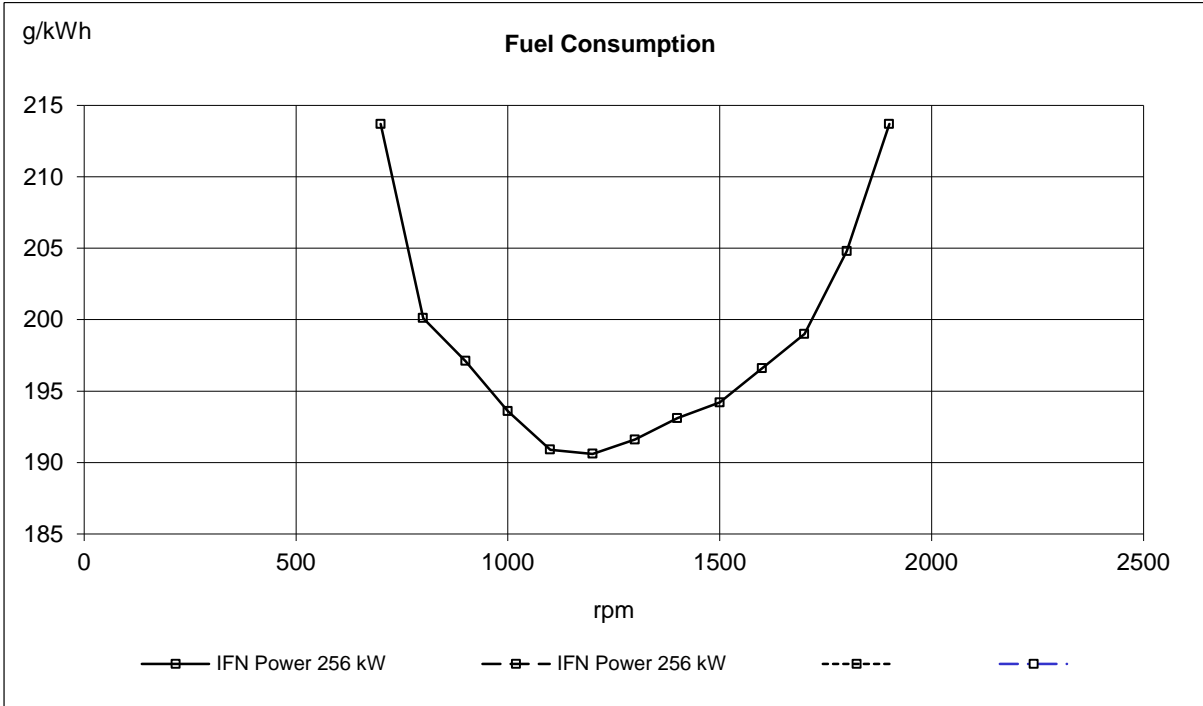
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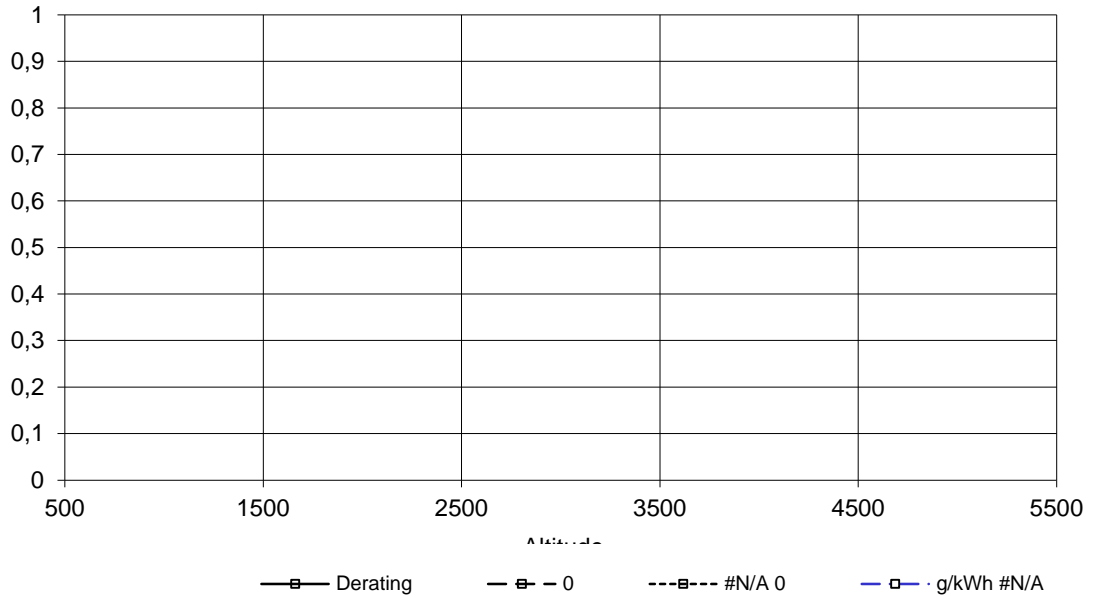
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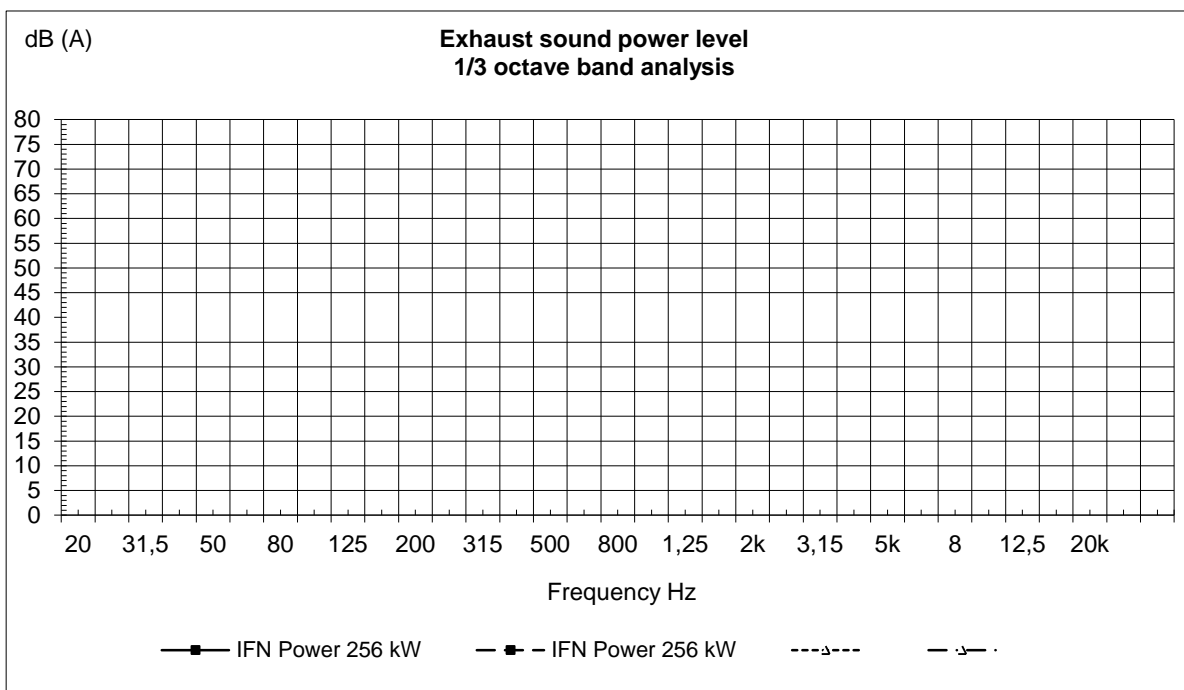
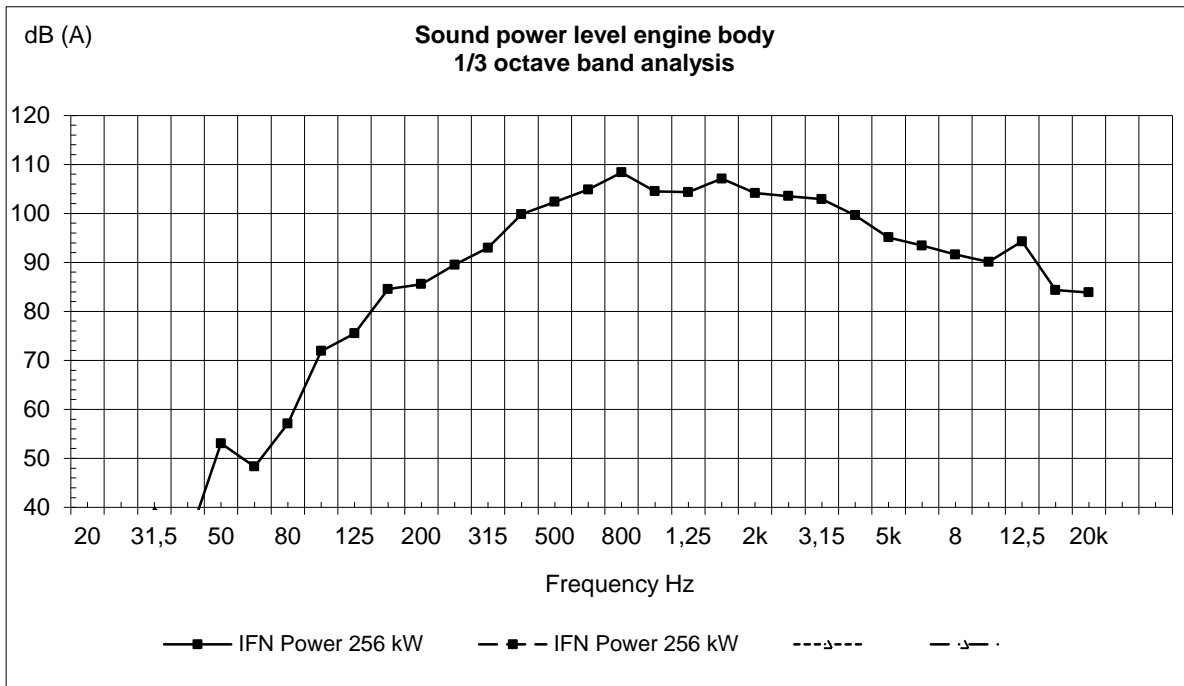


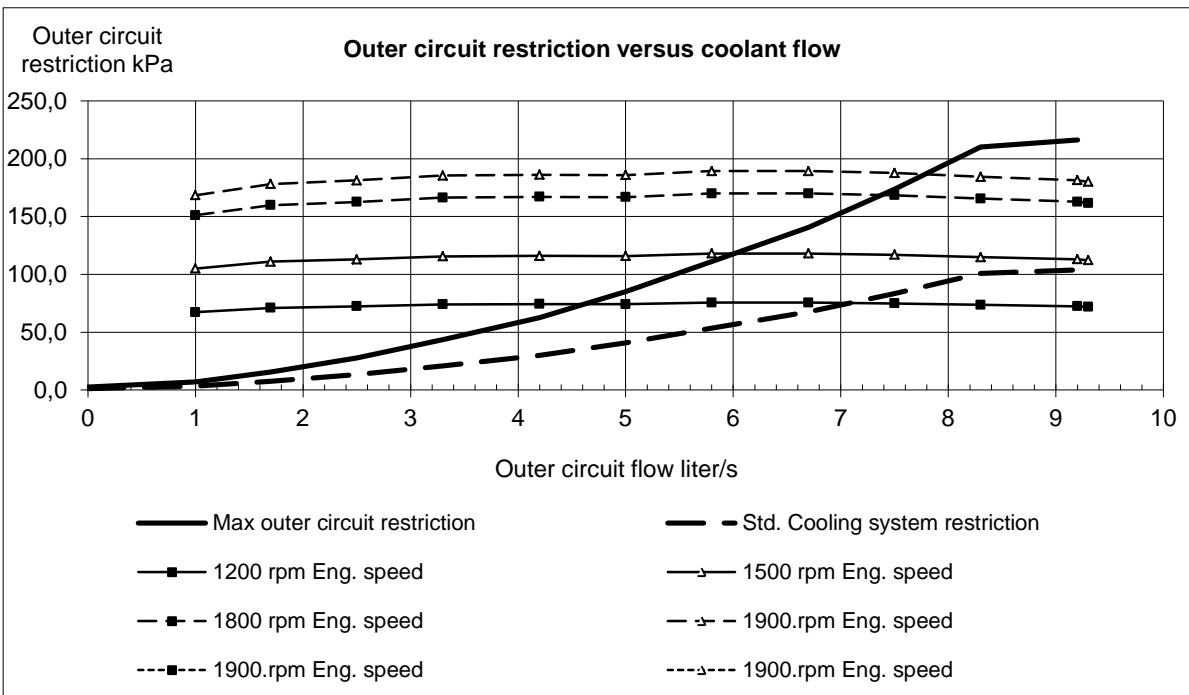
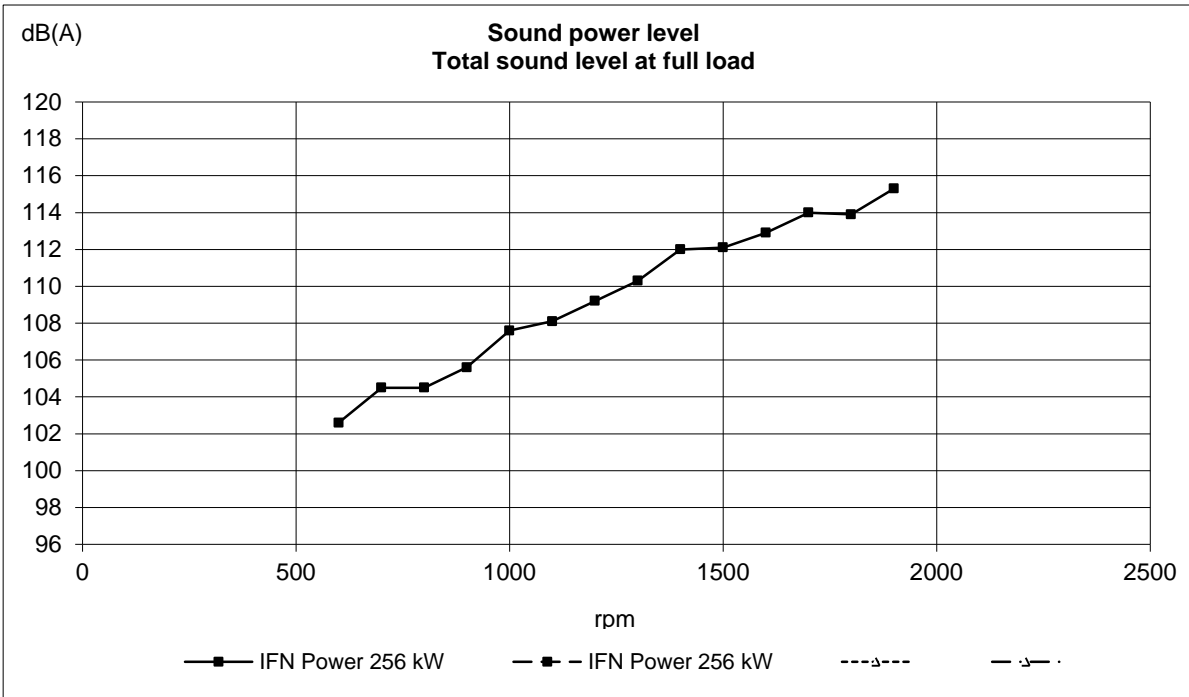


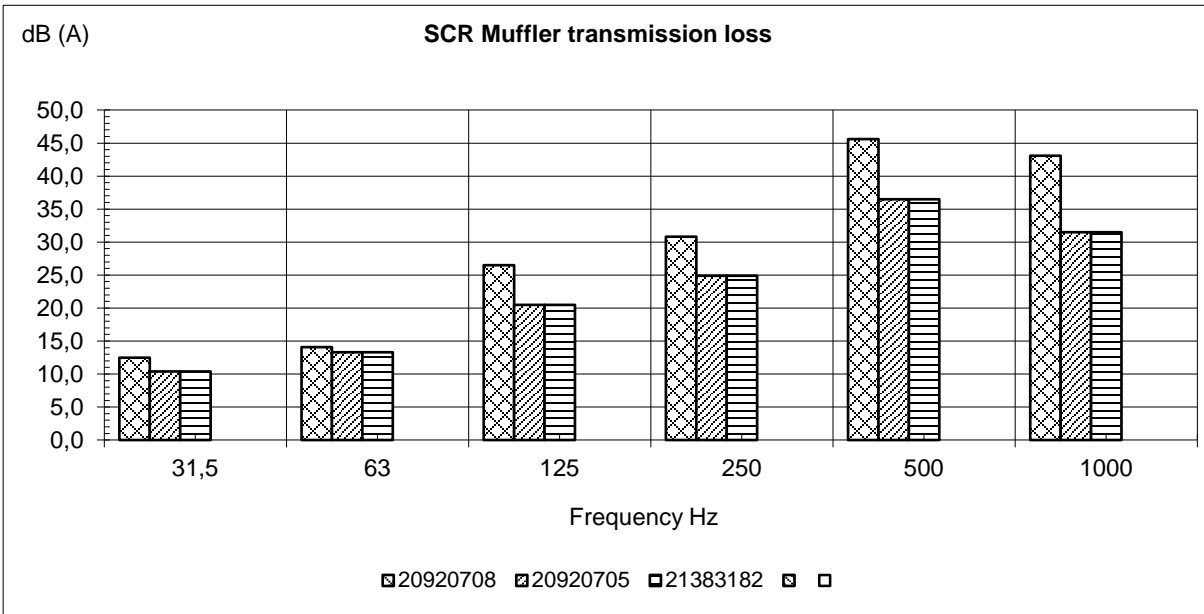


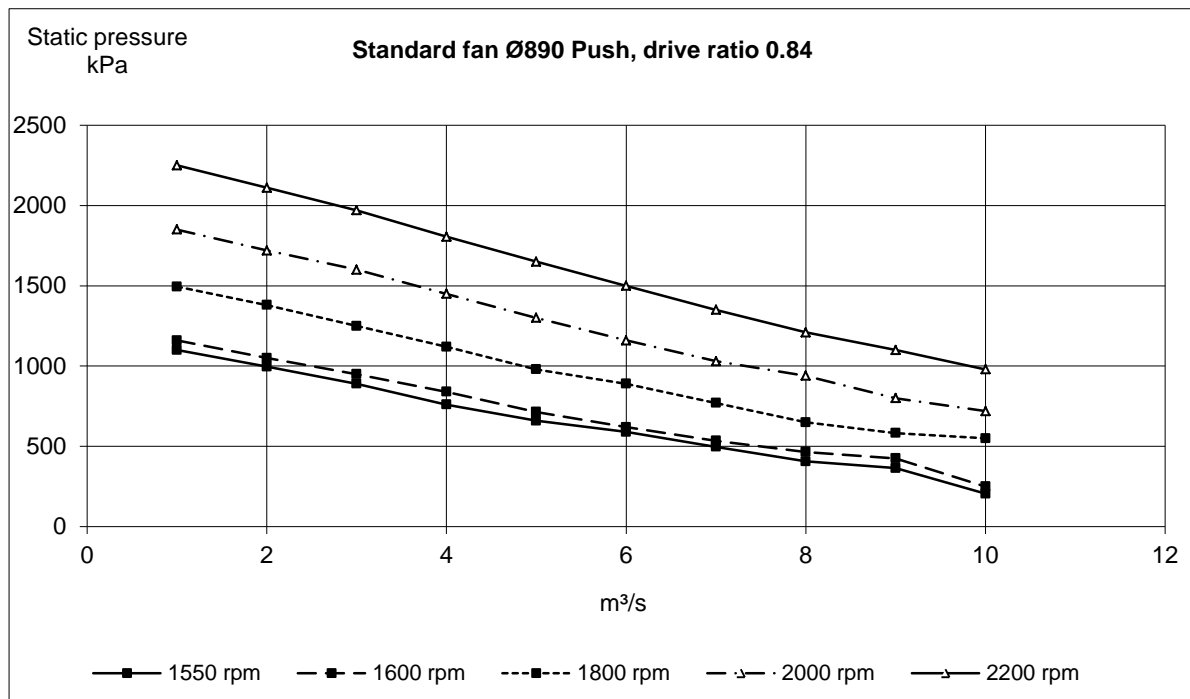
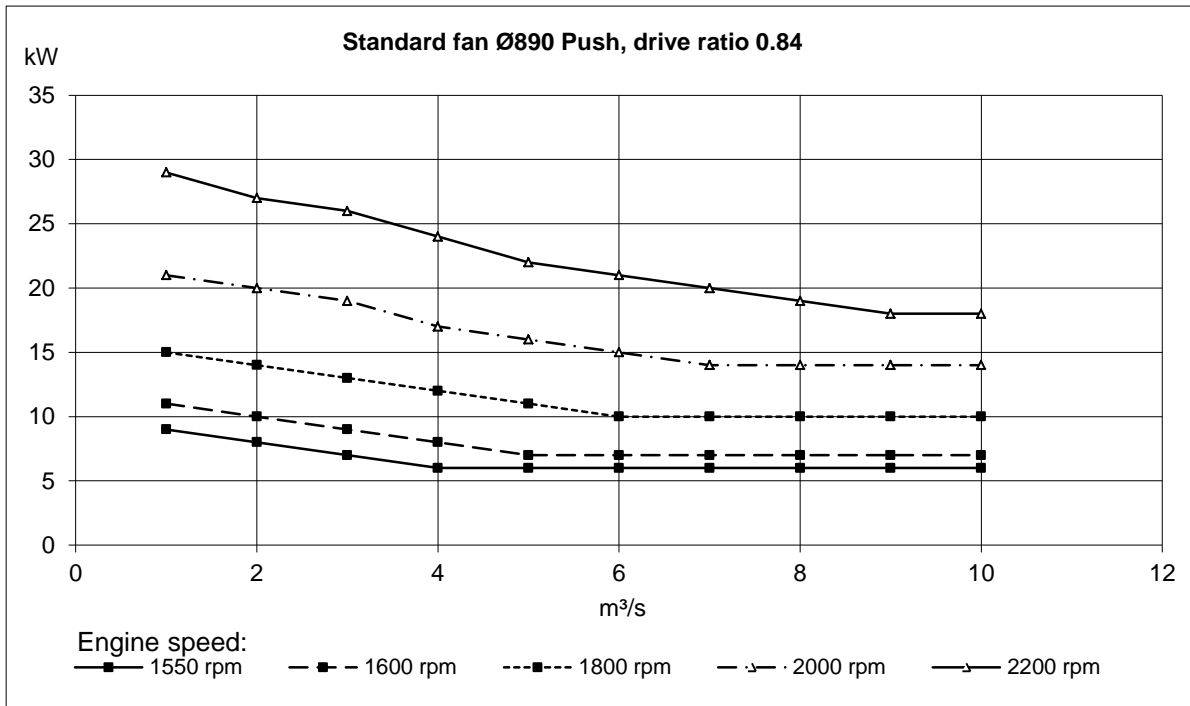
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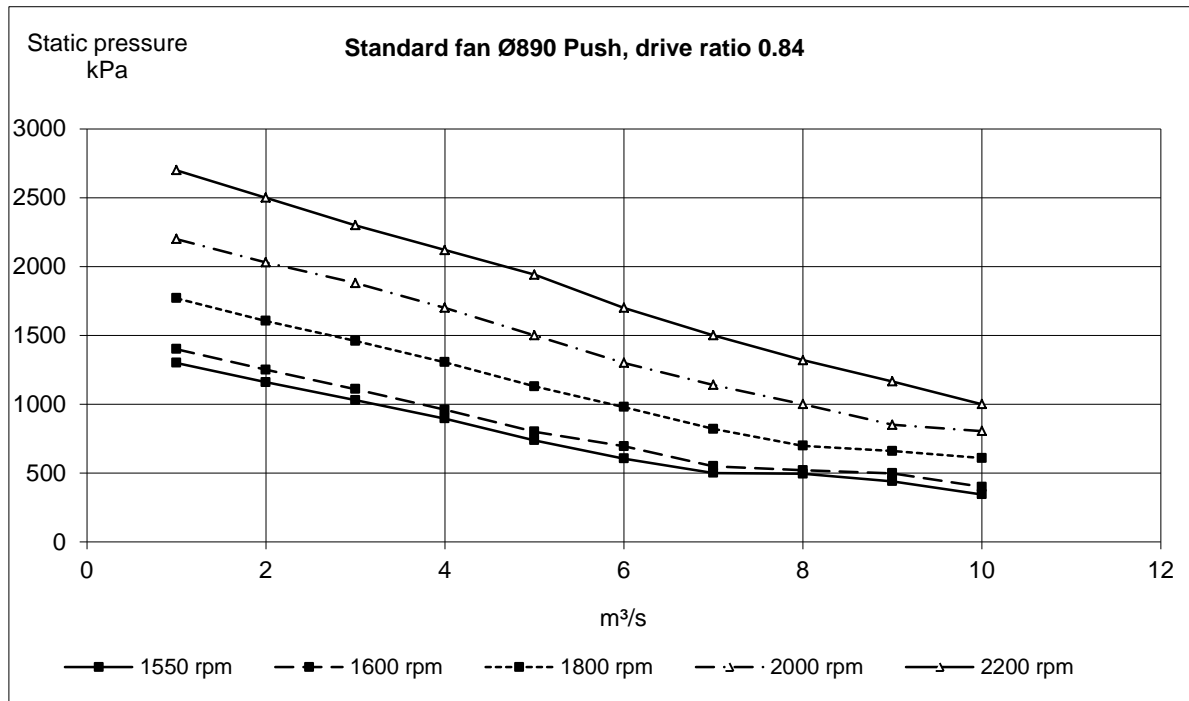
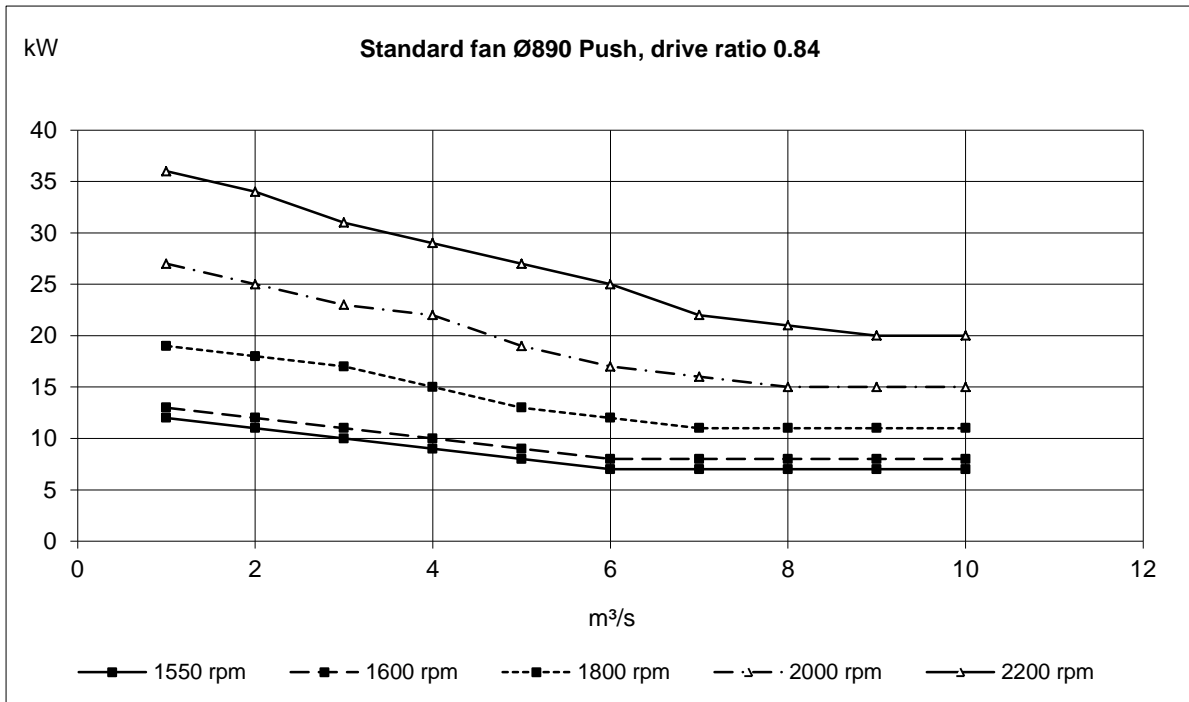


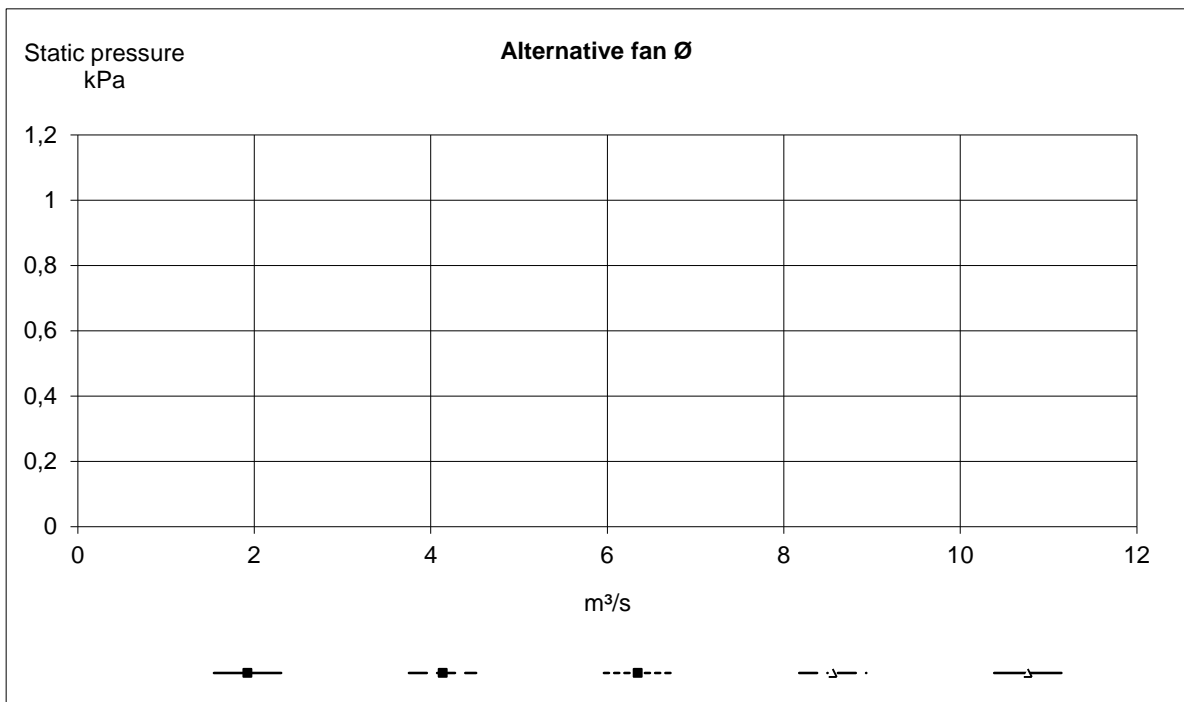
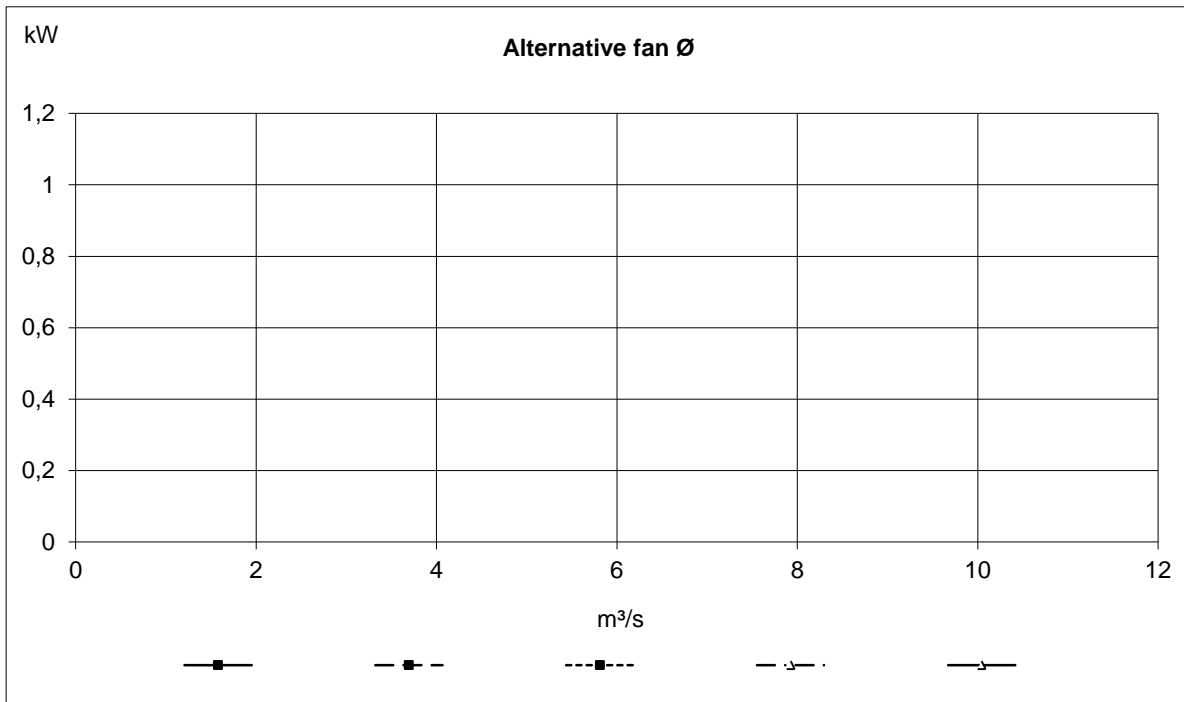


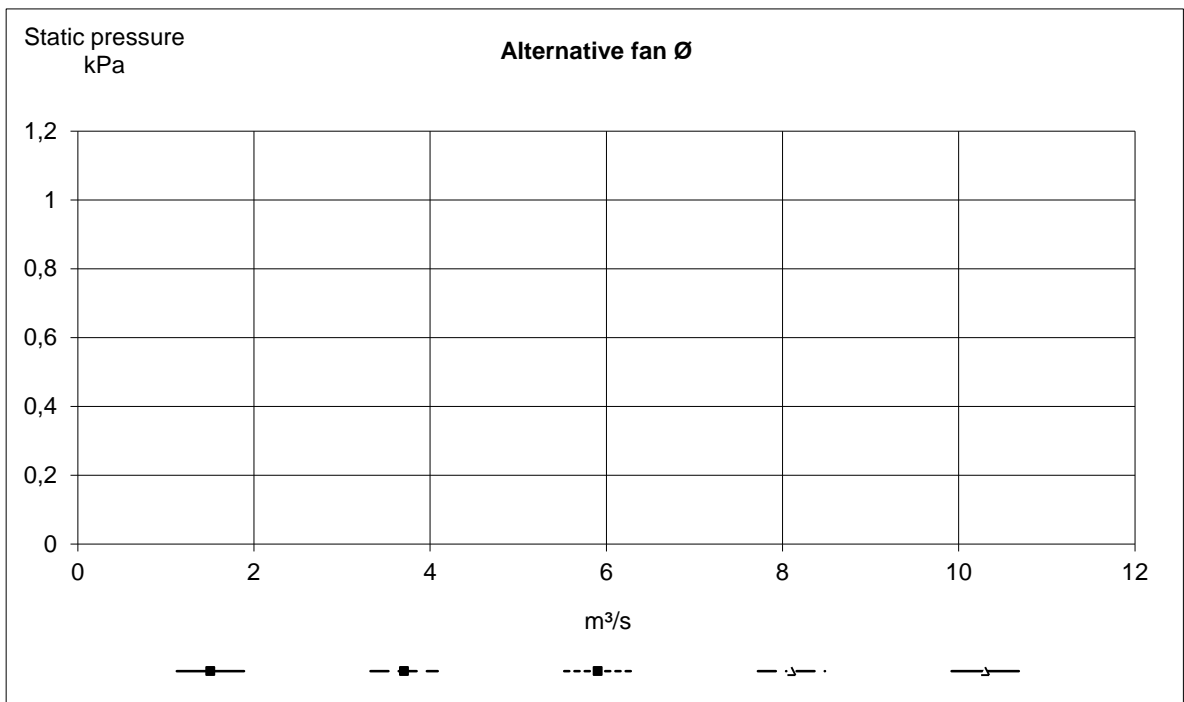
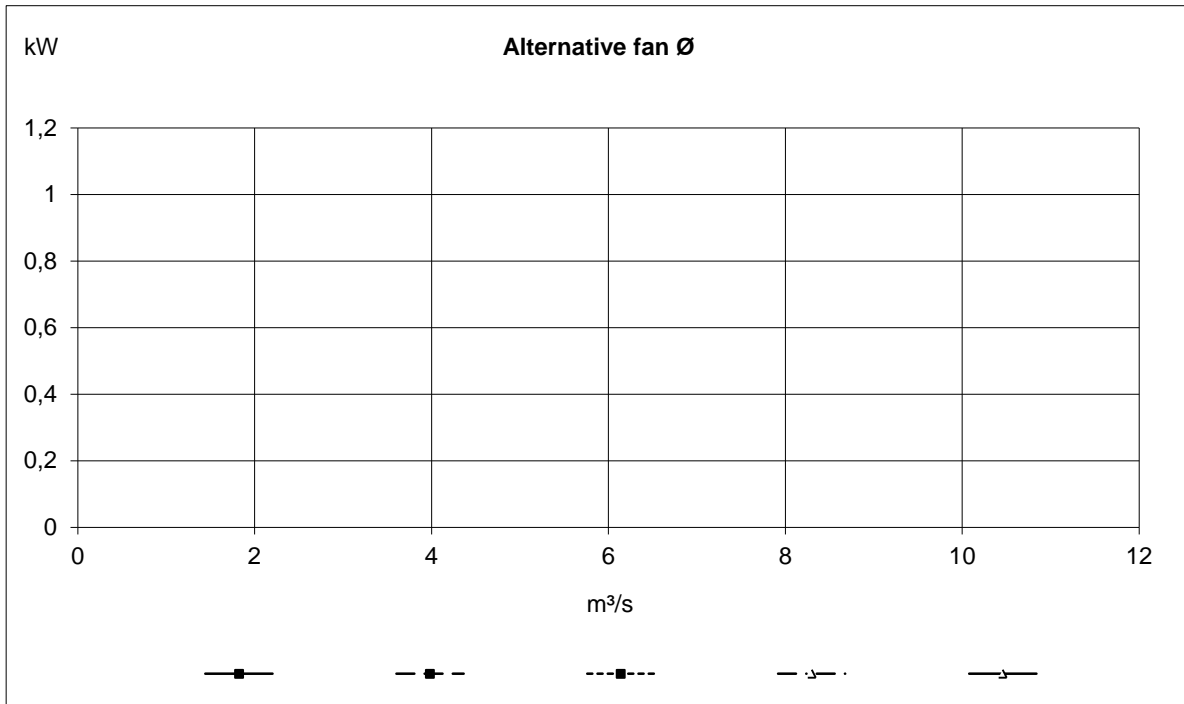












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