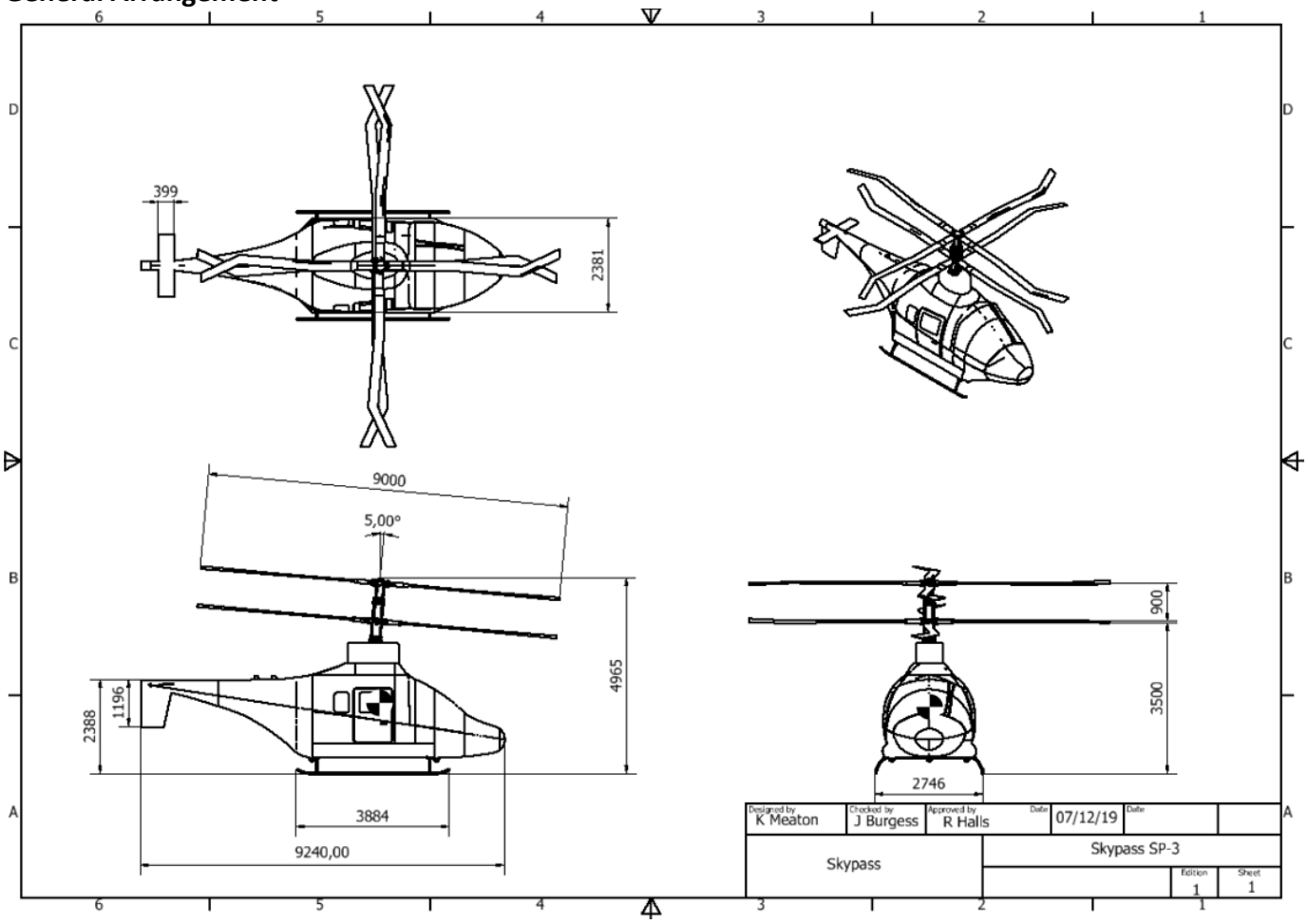
Helicopter Data Sheet – Group 2R

General Arrangement



Weights

Weight Empty:	1519.63	kg (Aircraft as built)
Basic Weight:	2179.63	kg (Weight Empty + Unusable Fuel + Engine Oil + Oxygen)
Operating Weight:	2269.63	kg (Aircraft equipped for service but with no
(primary mission)		mission fuel or payload. Role dependent.
Maximum take-off weight:	2729.63	kg (maximum allowable flying weight)
Maximum internal payload:	550	kg
*Maximum battery weight:	660	kg

Centre of gravity range:
Forward: 110.04 mm Aft: 15.56 mm

Dimensions

Overall length:	9.24 m
Overall height:	4.97 m
Main rotor diameter:	9.00 m
Main rotor blade mean aerodynamic chord:	0.25 m
Number of main rotor blades:	4x2
Main rotor root cut-out:	15 %

Height of the bottom rotor above ground plane, in hover attitude (oleos extended): 4.01 m
Height of the top rotor above ground plan, in hover attitude (oleos extended): 4.97 m

Vertical fin, span:	1	m
Vertical fin, mean aerodynamic chord:	0.69	m
Vertical fin, setting angle:	0	deg
Vertical fin, location (aero centre):	0.17	mm

Rotor speeds

Main rotor RPM at 100% Nr:	392.6
Normal operating NR in hover:	392.6
Normal operating NR in forward flight:	392.6

Power, Torque, NR relationship

100% Torque = 25400 Nm 1040 kW (1395 hp) at 100% Nr

Transmission Rating Structure

Maximum Continuous:

	100 % Tq (equivalent to 998 kW at 100%Nr)
Take-off:	75 % Tq (equivalent to 748 kW at 100 %Nr)
OEI (30 mins):	75 % Tq (equivalent to 748 kW at 100 %Nr)
OEI (2 mins)*:	TBD % Tq (equivalent to kW at %Nr)
Maximum contingency (secs):	TBD % Tq (equivalent to kW at %Nr)
Transmission loss factor:	4 %

*Data unavailable from Siemens

Engine Rating Structure

Engine/Drive type: AC motors
Number of engines/drives: 4

Uninstalled power available :	1040 kW SL ISA	1040 kW SL ISA+30	1040 kW 3300ft ISA	1040 kW 3300ft ISA+30
Maximum Continuous (4 motors):	956.8 kW	956.8 kW	956.8 kW	956.8 kW
Take-off (3 motors):	717.6 kW	717.6 kW	717.6 kW	717.6 kW
OEI (30 mins) (3 motors):	717.6 kW	717.6 kW	717.6 kW	717.6 kW
OEI (2 mins)*:	TBD kW	TBD kW	TBD kW	TBD kW
Maximum contingency: (secs)	TBD kW	TBD kW	TBD kW	TBD kW

Total Energy Consumption (design condition):	7.4 kWh/min
Idle energy consumption (zero output shaft power):	1.3 kWh/min
Battery energy density:	500 W h/kg
Other battery parameters:	500** cycle life, 4 hours max. charge time,
Engine/drive installation loss:	8 %

*Data unavailable from Siemens
**Predicted to be within two years

Performance Factors

Hover download factor:	5 %
Fin Blockage Factor:	N/A

Airframe drag

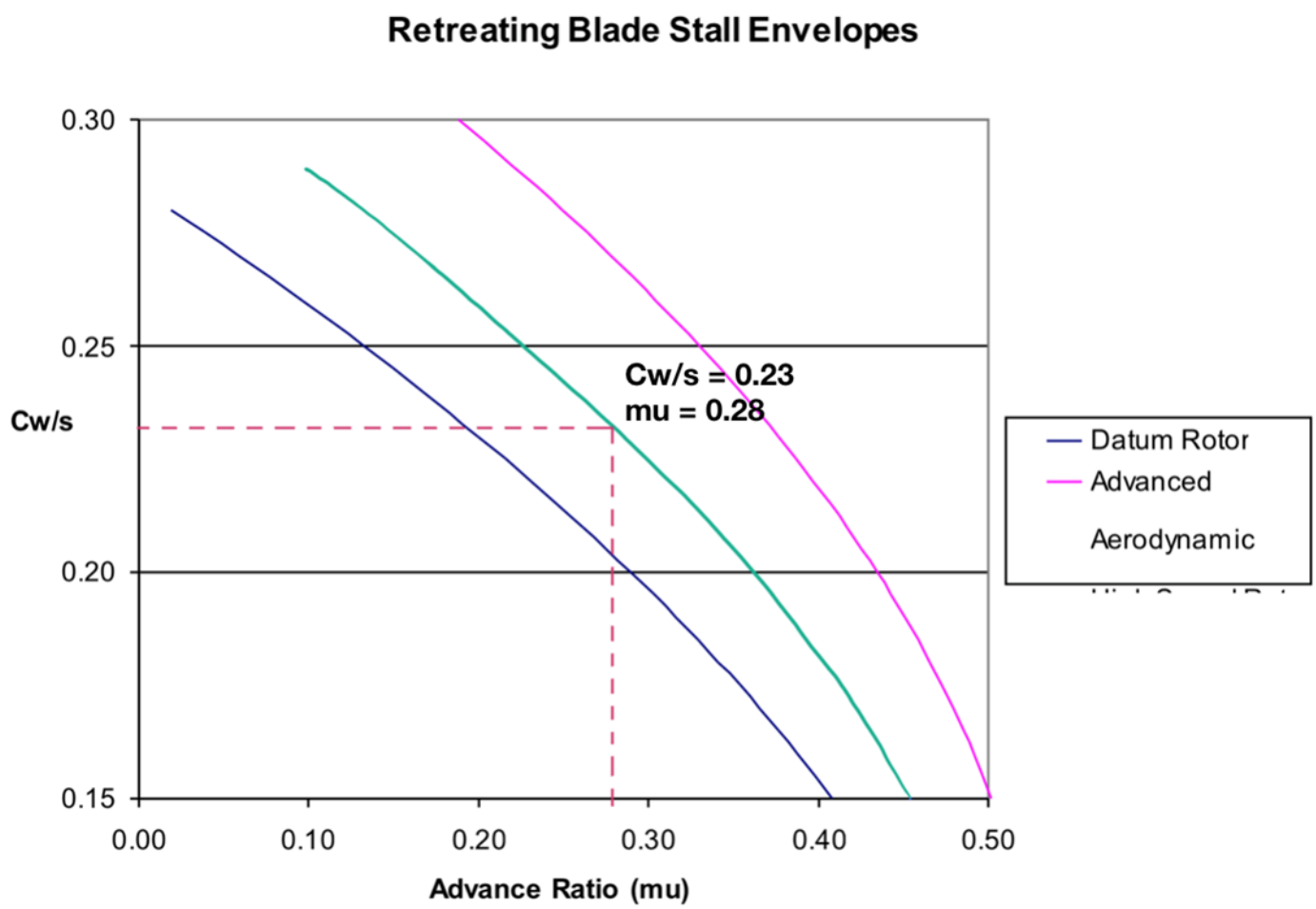
Equivalent flat-plate area: 2.15 m^2, equivalent to: 275 lbf D100 (drag force at 100ft/sec EAS)

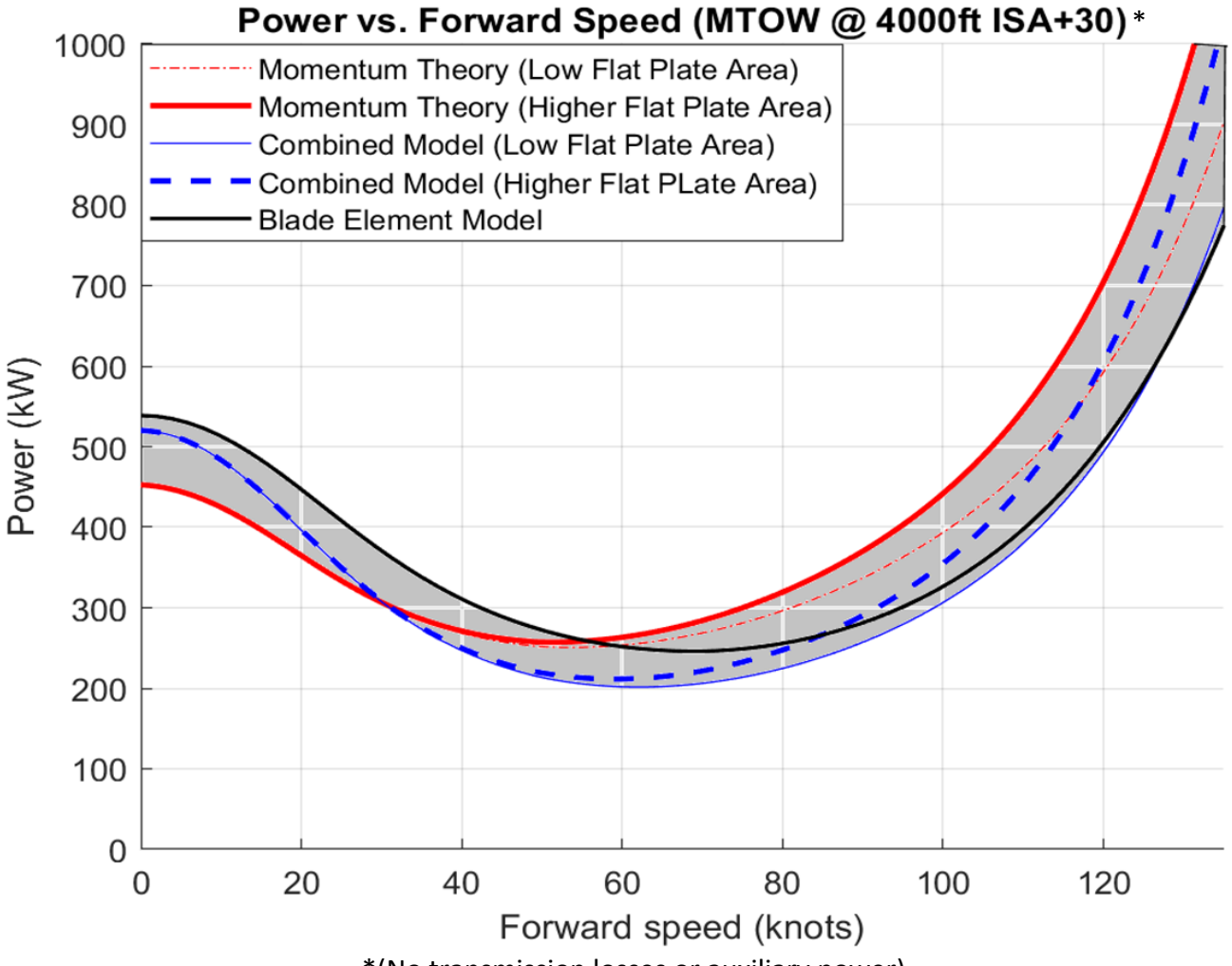
Accessory power

Electrical loads: Anti-icing OFF: 3 kW Anti-icing ON: 27 kW
Hydraulic (or electrical) power: 1.5 kW

Flight Envelope limitations

Airloads:	TBD knots EAS
Bird strike:	115 knots TAS
Advancing blade tip Mach number limit:	0.73
Retreating blade-stall (plot of Cw/s versus μ):	





*(No transmission losses or auxiliary power)

Derived Parameters

Main rotor disc loading (at MAUM):	21.45 kg/m^2	4.39 lb/sq.ft
Main rotor solidity:	0.071	
Main rotor blade aspect ratio:	18	
Main rotor tip-speed in the hover:	185 m/s	606.96 ft/sec at 100 % Nr

Performance Summary

Maximum mass to Hover OGE, Sea Level, ISA: 3000 kg (limited by: Power Available (battery))
Maximum mass to Hover OGE, 3300ft, ISA+30: 2900 kg (limited by: Power Available (battery))

*Maximum Cat-A take-off weight, Sea Level, ISA: 2230 kg (limited by: Battery Power)
*Maximum Cat-A take-off weight, 3300ft, ISA+30: 2230 kg (limited by: Battery Power)

Maximum continuous cruise speed at MAUM:

Sea level ISA:	115 knots TAS	(limited by: Retreating Blade Stall)
5000ft ISA+15:	113 knots TAS	(limited by: Retreating Blade Stall)

Maximum continuous cruise speed at 90% MAUM:

4900ft ISA+30:	115 knots TAS	(limited by: Flight Envelope)

Loiter at best endurance speed:

Sea level ISA, BES:	58 knots TAS	Fuel Consumption: 390 kW	Endurance: 46.0 min
3500ft ISA+30, BES:	60 knots TAS	Fuel Consumption: 391 kW	Endurance: 45.9 min

Engine Failure in the Hover, 95% MAUM, 3300ft, ISA+30**
Distance travelled before landing: N/A m
Run-on landing speed: N/A knots TAS

Engine Failure En-route on in the Loiter, 95% MAUM, 3300ft, ISA+30**
Distance travelled before landing: N/A m
Run-on landing speed: N/A knots TAS

Autorotative landing, 90% MAUM, Sea Level, ISA
Distance travelled before landing*: 450 m
Run-on landing speed: 28 kts 48% of minimum power speed

*Assuming 100m off ground
** 4 engines – after failure, can operate with 3