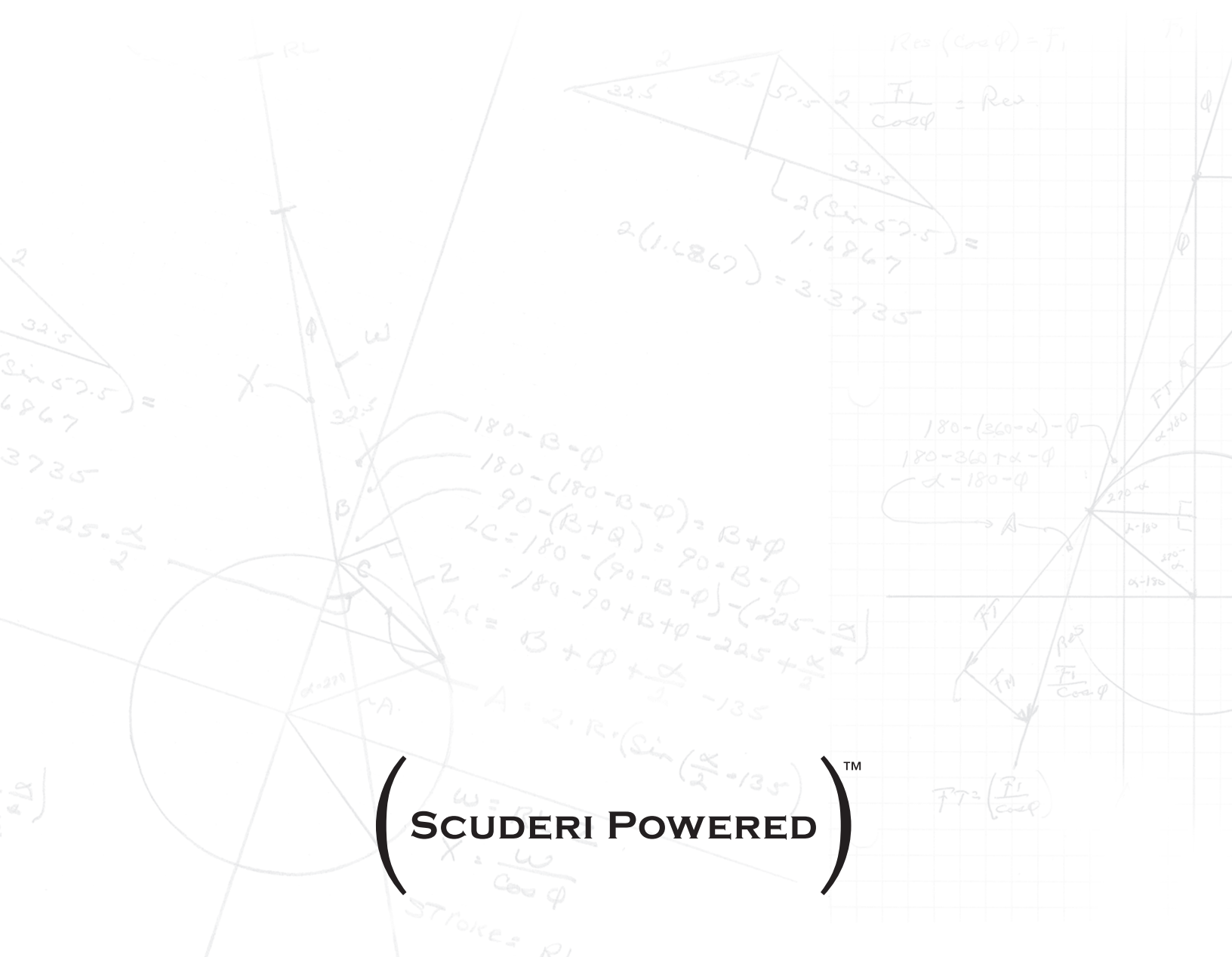




SPLIT-CYCLE ENGINE PERFORMANCE

1400 RPM & 4000 RPM MAXIMUM LOAD



SCUDERI POWERED™

PERFORMANCE - SCUDERI™ SPLIT-CYCLE ENGINE

1400 RPM - Maximum Load

(Constant Knock Margin - 40% Turbo Efficiency)

Boost Pressure [bar-abs]	NA	1.7	2.0	2.3	2.6	2.9	3.2
Engine Displacement (liters)	1.11	0.97	0.91	0.87	0.83	0.81	0.79
Expander Displacement (liters)	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Compressor Displacement (liters)	0.59	0.45	0.39	0.35	0.31	0.29	0.27
Reduction from NA liters-Compressor	----	0.14	0.20	0.24	0.28	0.30	0.32
Percent Decrease	----	23.6%	34.1%	41.5%	47.1%	51.3%	55.0%
Peak Cylinder Pressure Compressor [bar]	50.0	52.5	54.3	55.9	57.4	59.0	60.0
Peak Cylinder Pressure Expander [bar]	60.0	77.5	79.3	81.1	82.9	85.1	86.8
Mass Flow Air (kg/hr)	48.0	63.35	64.81	66.31	67.81	69.56	70.95
Mass Flow Fuel (kg/hr)	3.2	4.25	4.36	4.45	4.55	4.67	4.76
Equivalence Ratio	1	1	1	1	1	1	1
Brake Mean Effective Pressure [bar]	9.3	15.0	16.8	18.4	19.8	21.1	22.3
BMEP Increase [bar]	----	5.7	7.5	9.1	10.5	11.8	13.0
Percent Increase	----	61.0%	80.8%	98.0%	112.7%	126.7%	139.7%
Brake Specific Fuel Consumption (g/kW.hr)	269	251	244	240	237	235	233
Change (g/kW.hr)	----	18.2	24.6	29.3	32.0	34.0	35.9
Percent Decrease	----	6.8%	9.1%	10.9%	11.9%	12.7%	13.4%

SPECIFIC POWER - SCUDERI SPLIT-CYCLE ENGINE

1400 RPM - Maximum Load

(Constant Knock Margin - 40% Turbo Efficiency)

Boost Pressure [bar-abs]	NA	1.7	2.0	2.3	2.6	2.9	3.2
Specific Power (kW/liter)	11	17	20	21	23	25	26
Specific Power Increase (kW/liter)	----	6.6	8.7	10.6	12.2	13.7	15.1
Percent Increase	----	60.3%	80.0%	97.0%	111.7%	125.7%	138.6%

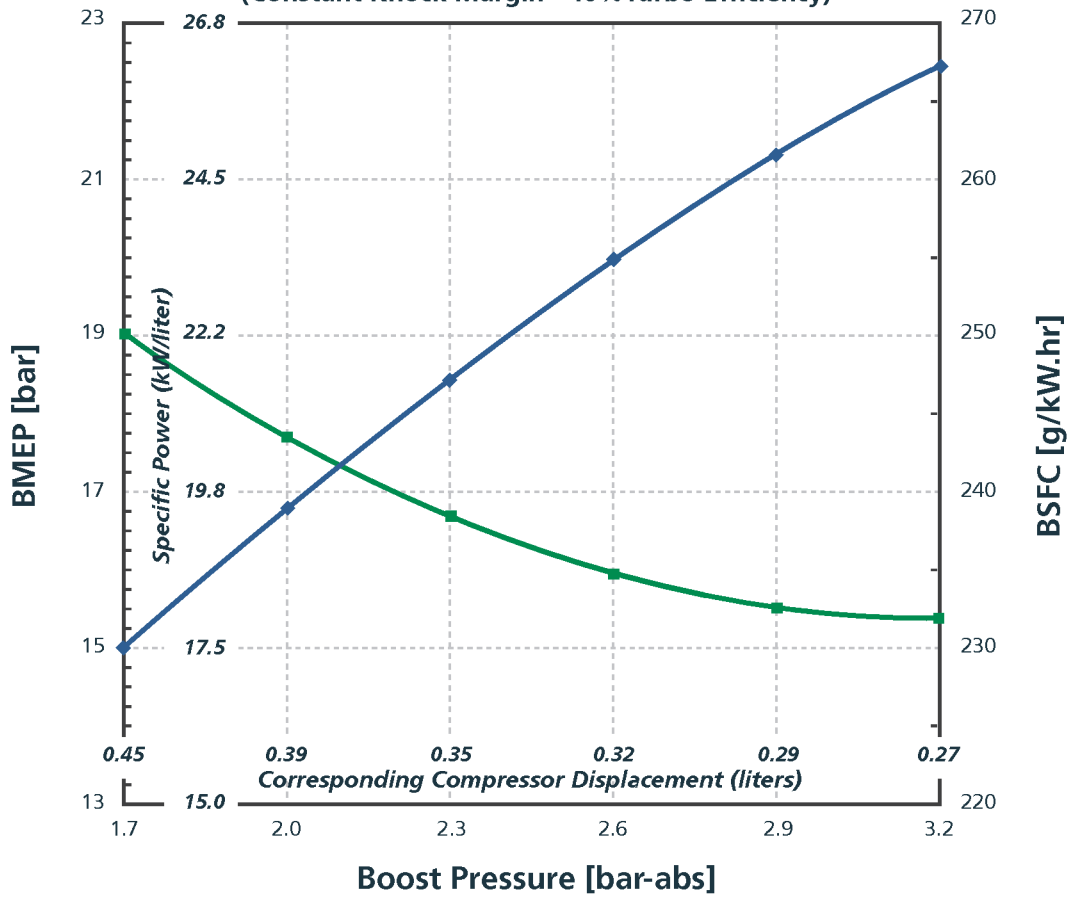
4000 RPM - Maximum Load

(Constant Knock Margin - 40% Turbo Efficiency)

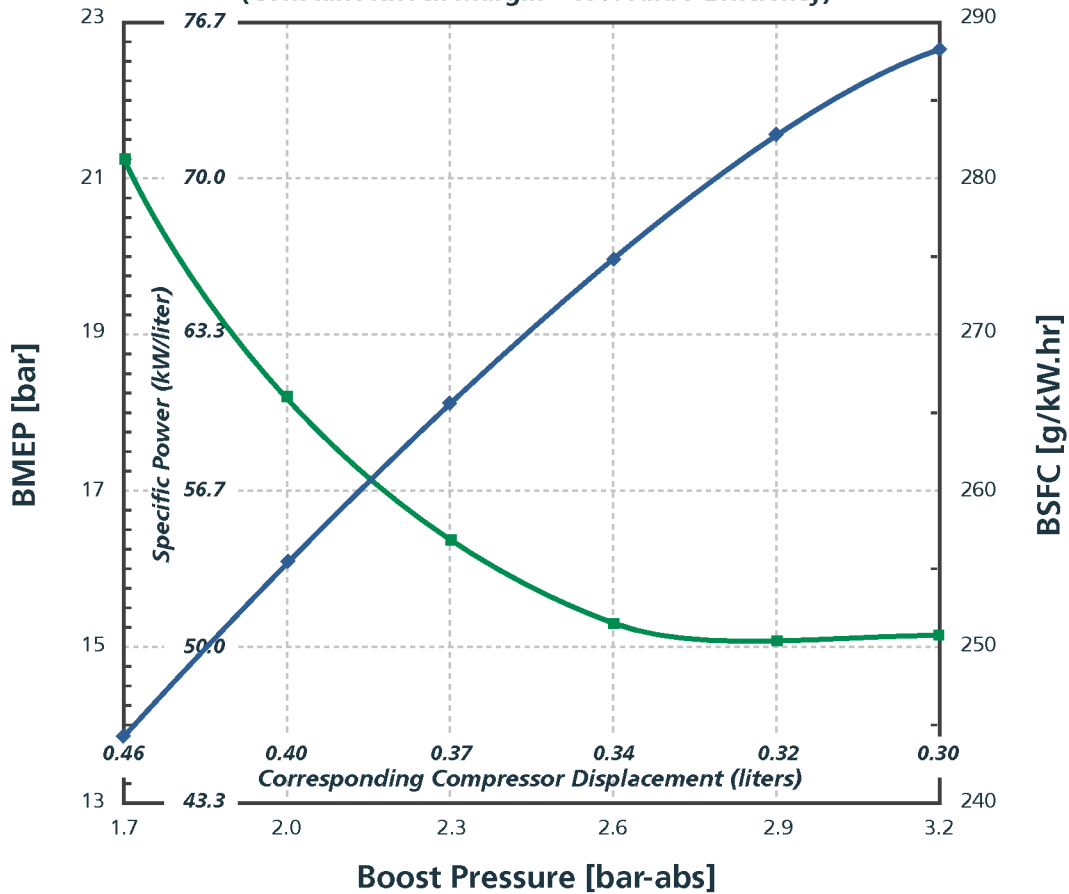
Boost Pressure [bar-abs]	NA	1.7	2.0	2.3	2.6	2.9	3.2
Specific Power (kW/liter)	30	45	53	61	68	72	75
Specific Power Increase (kW/liter)	----	15.3	23.6	31.3	38.3	42.3	45.3
Percent Increase	----	51.4%	79.0%	105.0%	129.0%	142.0%	152.0%

The data in the above tables is simulated.

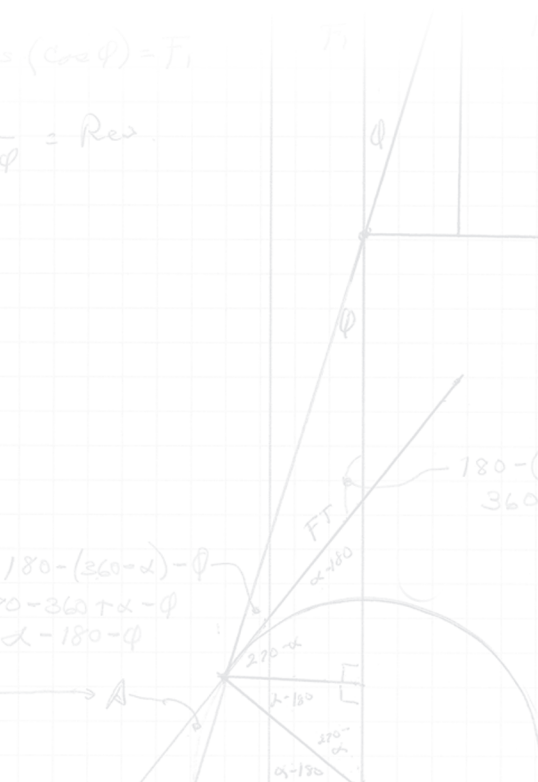
1400 RPM Maximum Load - SCUDERI Split-Cycle Engine (Constant Knock Margin - 40% Turbo Efficiency)



4000 RPM Maximum Load - SCUDERI Split-Cycle Engine (Constant Knock Margin - 40% Turbo Efficiency)



$(\cos \phi) = F_1$
 $\phi = \cos^{-1} \frac{F_1}{R}$



$180 - (360 - \alpha) - \phi$
 $180 - 360 + \alpha - \phi$
 $\alpha - 180 - \phi$

$FT = \frac{F_1}{\cos \phi}$

$R \cdot \sin(\alpha - 90)$
 $R \cdot \sin(\frac{\alpha}{2} - 135)$
 $\frac{225 - \alpha}{2} + 135$
 $\frac{1}{2} \alpha$

$180 - (\alpha - 180)$
 $360 - \alpha$
 $90 - (\alpha - 180)$
 $270 - \alpha$



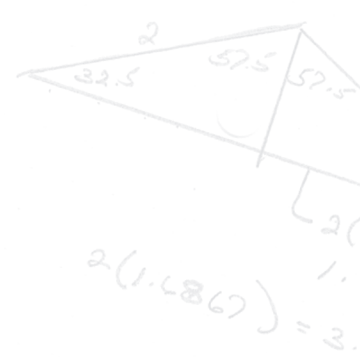
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$180 - B - \phi$
 $180 - (180 - B - \phi) = B + \phi$
 $90 - (B + \phi) = 90 - B - \phi$
 $LC = 180 - (90 - B - \phi) - (225 - \dots)$
 $= 180 - 90 + B + \phi - 225 + \dots$
 $LC = B + \phi + \frac{\alpha}{2} - 135$
 $A = 2 \cdot R \cdot (\sin(\frac{\alpha}{2} - 135))$