

RCCL Majesty Of The Seas				Date: May-06	Rev: 1	Design by:	Page: 1/1					
Cooling/Heat Load & HVAC Air Flow Calculations				Conditions		SUMMER		WINTER				
Plant: 0				System: CHT/ALT		d.b. °C	w.b. °C	u.r. %	x gr/kg	.b. °C	x gr/kg	
Size	A	9 m	72 m ²	Room: DK MFZ		Outdoor	35		80	28.9	-5	2
	B	8 m	158.4 m ³	5 5		Indoor	24		55	9.4	22	2
	H	2.2 m	158.4 Rvs	Latte-tudes		Difference	11			19.5	27	0
SUMMER LOAD				Peak Load								
Item		Area or Quantity	Sun Gain Temp. Diff.	Factor	W	Month						
						Sun Time						
SOLAR GAIN - glass				People		14						
window (w/shading)		0 m ²	x 240	x 1	= 0	Minimum Air Changes/h		6				
window glare		0 m ²	x 100	x 1	= 0	Calculated Air Changes/h		9				
window		0 m ²	x 350	x 1	= 0							
window		0 m ²	x 350	x 1	= 0	WINTER LOAD						
skylight		0 m ²	x		= 0	Factor K	Temp Diff. (Δ)	Heating Load (W)	%	W		
TRANSMISSION GAIN - glass												
window (twin glass)		0 m ²	x 21	x 2.8	= 0	2.8	x 27	=	+	=	0	
window		0 m ²	x 21	x 2.8	= 0	2.8	x 27	=	+	=	0	
window		0 m ²	x 11	x 6.5	= 0	6.5	x 27	=	0	+	=	0
window		0 m ²	x 11	x 6.5	= 0	6.5	x 27	=	0	+	=	0
skylight		0 m ²	x		= 0		x	=	0	+	=	0
SOLAR & TRANSMISSION GAIN - dk & blkd				Infiltrat ⁿ (1 Air Chng * δT * Air Vol Adj.)		1174						
blkd						0.85	x 27	=	0	+	=	0
light blkd (shg)		0 m ²	x 26	x 0.85	= 0	0.85	x 27	=	0	+	=	0
dark blkd (shg)		0 m ²	x 39	x 0.85	= 0	0.85	x 27	=	0	+	=	0
dk												
light dk (shg)		0 m ²	x 12	x 0.85	= 0		x 27	=	0	+	=	0
dark dk (shg)		0 m ²	x 42	x 0.85	= 0	0.85	x 27	=	0	+	=	0
TRANSMISSION GAIN - internal dk & blkd												
technical rm blkd		0 m ²	x 20	x 0.8	= 0	0.8	x 12	=	0	+	=	0
technical rm dk		0 m ²	x 18	x 0.8	= 0	0.8	x 12	=	0	+	=	0
non air cond blkd		0 m ²	x 22	x 0.8	= 0	0.8	x 12	=	0	+	=	0
spaces dk		0 m ²	x 10	x 0.8	= 0	0.8	x 12	=	0	+	=	0
alleyway blkd		0 m ²	x 2	x 0.8	= 0	2.5	x 5	=	0	+	=	0
dk		0 m ²	x 2	x 0.8	= 0							
SUB-TOTAL HEAT						1174						
SENSIBLE INTERNAL HEAT				PRIMARY AIR LOAD								
resting people			n ^v 14	x 75	= 1050	Winter Flow x Factor x (Room Temp - Delivery Temp) = FA Load						
working people			n ^v 0	x 140	= 0							
light		18 w	72 m ²	x 0	x 0	= 1296	727.97	x 0.337	x 22	- 14	= 1963	
appliance		2000		x 0	x 0	= 2000						
ROOM SENSIBLE HEAT (RSH)				4346 + Inf. 560 = 4906		TOTAL WINTER HEAT LOAD						
LATENT HEAT						1174						
resting people			n ^v 14	x 50	= 700							
working people			n ^v 0	x 250	= 0							
ROOM LATENT HEAT			700	+ Inf. 1282	= 1982	REQUIRED SUPPLY TEMPERATURE						
ROOM TOTAL HEAT (RTH)				6888.4		22 + 1174 / (0.337 x 728) = T °C 26.8						
CALCULATED MINIMUM OUTDOOR AIR						REQUIRED MINIMUM OUTDOOR AIR						
1456		x 1	= 1455.934 m ³ /h	OUTDOOR AIR		14 people x 30 m ³ /p		= 420				
						Outdoor Air		m ³ /h		1456		
SUMMER GRAND TOTAL HEAT (GTH)												
AIR FLOW RATE												
RSH		= 4906	= 0.712289	indoor t.= 24								
RTH		= 6888.4	= 14559.34 m ³ /h	supply t.= 14								
0.337 x 8.1		= 2.7	= 0.337 x 10	HEAT GAINS								