Building:	**Gibba Office Building**
System Tag/Name:	**AHU-1**
Operating Condition Description:	**Peak Cooling**
Units (select from pull-down list)	**IP**

Inputs for System	**Name**	**Units**		**System**
Floor area served by system	As	sf		9500
Population of area served by system (including diversity)	Ps	P	100% diversity	140
Design primary supply fan airflow rate	Vpsd	cfm		1,700
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf		0.08
OA req'd per person for system area (Weighted average)	Rps	cfm/p		6.8

Inputs for Potentially Critical zones			**Potentially Critical Zones**	
Zone Name		*Zone title turns purple italic for critical zone(s)*	***Cafeteria***	***Office space***
Zone Tag			**VAV-1**	**Office**
Space type		Select from pull-down list	**Restaurant dining rooms**	**Office space**
Floor Area of zone	Az	sf	1,500	8000
Design population of zone	Pz	P (default value listed; may be overridden)	100	40
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	1,020	680
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A		
Local recirc. air % representative of ave system return air	Er			

Inputs for Operating Condition Analyzed					
Percent of total design airflow rate at conditioned analyzed	Ds	%	100%	100%	100%
Air distribution type at conditioned analyzed		Select from pull-down list		CS	CS
Zone air distribution effectiveness at conditioned analyzed	Ez			1.00	1.00
Primary air fraction of supply air at conditioned analyzed	Ep				

Results			
Ventilation System Efficiency	Ev		**1.00**
Outdoor air intake required for system	Vot	cfm	**1700**
Outdoor air per unit floor area	Vot/As	cfm/sf	**0.18**
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	**12.1**
Outdoor air as a % of design primary supply air	Ypd	cfm	**100%**

Detailed Calculations									
Initial Calculations for the System as a whole									
Primary supply air flow to system at conditioned analyzed	Vps	cfm	=	VpdDs	=	1700			
UncorrectedOA requirement for system	Vou	cfm	=	Rps Ps + Ras As	=	1700			
Uncorrected OA req'd as a fraction of primary SA	Xs		=	Vou / Vps	=	1.00			
Initial Calculations for individual zones									
OA rate per unit area for zone	Raz	cfm/sf					0.18	0.06	
OA rate per person	Rpz	cfm/p					7.50	5.00	
Total supply air to zone (at condition being analyzed)	Vdz	cfm					1020	680	
Unused OA req'd to breathing zone	Vbz	cfm	=	Rpz Pz + Raz Az	=		1020.0	680.0	
Unused OA requirement for zone	Voz	cfm	=	Vbz/Ez	=		1020	680	
Fraction of zone supply not directly recirc. from zone	Fa		=	Ep + (1-Ep)Er	=		1.00	1.00	
Fraction of zone supply from fully mixed primary air	Fb		=	Ep	=		1.00	1.00	
Fraction of zone OA not directly recirc. from zone	Fc		=	1-(1-Ez)(1-Ep)(1-Er)	=		1.00	1.00	
Unused OA fraction required in supply air to zone	Zd		=	Voz / Vdz	=		1.00	1.00	
Unused OA fraction required in primary air to zone	Zp		=	Voz / Vpz	=		1.00	1.00	
System Ventilation Efficiency									
Zone Ventilation Efficiency (App A Method)	Evz		=	(Fa + FbXs - FcZ) / Fa	=		1.00	1.00	
System Ventilation Efficiency (App A Method)	Ev		=	min (Evz)	=	**1.00**			
Ventilation System Efficiency (Table 6.3 Method)	Ev		=	Value from Table 6.3	=	n/a			
Minimum outdoor air intake airflow									
Outdoor Air Intake Flow required to System	Vot	cfm	=	Vou / Ev	=	**1700**			
OA intake req'd as a fraction of primary SA	Y		=	Vot / Vps	=	**1.00**			
Outdoor Air Intake Flow required to System (Table 6.3 Method)	Vot	cfm	=	Vou / Ev	=	n/a			
OA intake req'd as a fraction of primary SA (Table 6.3 Method)	Y		=	Vot / Vps	=	n/a			
OA Temp at which Min OA provides all cooling									
OAT below which OA Intake flow is @ minimum		Deg F	=	{(Tp-dTsf)-(1-Y)*(Tr+dTrf	=	55			

Building:	**Gibba Office Building**
System Tag/Name:	**AHU-2**
Operating Condition Description:	**Peak Cooling**
Units (select from pull-down list)	**IP**

Inputs for System	**Name**	**Units**		**System**		
Floor area served by system	As	sf		9500		
Population of area served by system (including diversity)	Ps	P	100% diversity	90		
Design primary supply fan airflow rate	Vpsd	cfm		1,020		
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf		0.06		
OA req'd per person for system area (Weighted average)	Rps	cfm/p		5.0		
Inputs for Potentially Critical zones					**Potentially Critical Zones**	
Zone Name		*Zone title turns purple italic for critical zone(s)*			***Conference Rooms***	***Office space***
Zone Tag					**Conference**	**Office**
Space type		Select from pull-down list			**Conference/meeting**	**Office space**
Floor Area of zone	Az	sf			2,000	7500
Design population of zone	Pz	P	(default value listed; may be overridden)		45	45
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm			345	675
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A				
Local recirc. air % representative of ave system return air	Er					
Inputs for Operating Condition Analyzed						
Percent of total design airflow rate at conditioned analyzed	Ds	%		100%	100%	100%
Air distribution type at conditioned analyzed		Select from pull-down list			CS	CS
Zone air distribution effectiveness at conditioned analyzed	Ez				1.00	1.00
Primary air fraction of supply air at conditioned analyzed	Ep					

Results			
Ventilation System Efficiency	Ev		**1.00**
Outdoor air intake required for system	Vot	cfm	**1020**
Outdoor air per unit floor area	Vot/As	cfm/sf	**0.11**
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	**11.3**
Outdoor air as a % of design primary supply air	Ypd	cfm	**100%**

Detailed Calculations									
Initial Calculations for the System as a whole									
Primary supply air flow to system at conditioned analyzed	Vps	cfm	=	VpdDs	=	1020			
UncorrectedOA requirement for system	Vou	cfm	=	Rps Ps + Ras As	=	1020			
Uncorrected OA req'd as a fraction of primary SA	Xs		=	Vou / Vps	=	1.00			
Initial Calculations for individual zones									
OA rate per unit area for zone	Raz	cfm/sf					0.06	0.06	
OA rate per person	Rpz	cfm/p					5.00	5.00	
Total supply air to zone (at condition being analyzed)	Vdz	cfm					345	675	
Unused OA req'd to breathing zone	Vbz	cfm	=	Rpz Pz + Raz Az	=		345.0	675.0	
Unused OA requirement for zone	Voz	cfm	=	Vbz/Ez	=		345	675	
Fraction of zone supply not directly recirc. from zone	Fa		=	Ep + (1-Ep)Er	=		1.00	1.00	
Fraction of zone supply from fully mixed primary air	Fb		=	Ep	=		1.00	1.00	
Fraction of zone OA not directly recirc. from zone	Fc		=	1-(1-Ez)(1-Ep)(1-Er)	=		1.00	1.00	
Unused OA fraction required in supply air to zone	Zd		=	Voz / Vdz	=		1.00	1.00	
Unused OA fraction required in primary air to zone	Zp		=	Voz / Vpz	=		1.00	1.00	
System Ventilation Efficiency									
Zone Ventilation Efficiency (App A Method)	Evz		=	(Fa + FbXs - FcZ) / Fa	=		1.00	1.00	
System Ventilation Efficiency (App A Method)	Ev		=	min (Evz)	=	**1.00**			
Ventilation System Efficiency (Table 6.3 Method)	Ev		=	Value from Table 6.3	=	n/a			
Minimum outdoor air intake airflow									
Outdoor Air Intake Flow required to System	Vot	cfm	=	Vou / Ev	=	**1020**			
OA intake req'd as a fraction of primary SA	Y		=	Vot / Vps	=	**1.00**			
Outdoor Air Intake Flow required to System (Table 6.3 Method)	Vot	cfm	=	Vou / Ev	=	n/a			
OA intake req'd as a fraction of primary SA (Table 6.3 Method)	Y		=	Vot / Vps	=	n/a			
OA Temp at which Min OA provides all cooling									
OAT below which OA Intake flow is @ minimum		Deg F	=	{(Tp-dTsf)-(1-Y)*(Tr+dTrf	=	55			

Building:	**Gibba Office Building**
System Tag/Name:	**AHU-3**
Operating Condition Description:	**Peak Cooling**
Units (select from pull-down list)	**IP**

Inputs for System	**Name**	**Units**		**System**	**Potentially Critical Zones**	
Floor area served by system	As	sf		9700		
Population of area served by system (including diversity)	Ps	P	100% diversity	86		
Design primary supply fan airflow rate	Vpsd	cfm		1,012		
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf		0.06		
OA req'd per person for system area (Weighted average)	Rps	cfm/p		5.0		
Inputs for Potentially Critical zones						
Zone Name		*Zone title turns purple italic for critical zone(s)*			*Conference Rooms*	*Office space*
Zone Tag					Conference	Office
Space type		Select from pull-down list			Conference/meeting	Office space
Floor Area of zone	Az	sf			1,500	8200
Design population of zone	Pz	P	(default value listed; may be overridden)		38	48
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm			280	732
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A				
Local recirc. air % representative of ave system return air	Er					
Inputs for Operating Condition Analyzed						
Percent of total design airflow rate at conditioned analyzed	Ds	%		100%	100%	100%
Air distribution type at conditioned analyzed		Select from pull-down list			CS	CS
Zone air distribution effectiveness at conditioned analyzed	Ez				1.00	1.00
Primary air fraction of supply air at conditioned analyzed	Ep					

Results			
Ventilation System Efficiency	Ev		**1.00**
Outdoor air intake required for system	Vot	cfm	**1012**
Outdoor air per unit floor area	Vot/As	cfm/sf	**0.10**
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	**11.8**
Outdoor air as a % of design primary supply air	Ypd	cfm	**100%**

Detailed Calculations									
Initial Calculations for the System as a whole									
Primary supply air flow to system at conditioned analyzed	Vps	cfm	=	VpdDs	=	1012			
UncorrectedOA requirement for system	Vou	cfm	=	Rps Ps + Ras As	=	1012			
Uncorrected OA req'd as a fraction of primary SA	Xs		=	Vou / Vps	=	1.00			
Initial Calculations for individual zones									
OA rate per unit area for zone	Raz	cfm/sf					0.06	0.06	
OA rate per person	Rpz	cfm/p					5.00	5.00	
Total supply air to zone (at condition being analyzed)	Vdz	cfm					280	732	
Unused OA req'd to breathing zone	Vbz	cfm	=	Rpz Pz + Raz Az	=		280.0	732.0	
Unused OA requirement for zone	Voz	cfm	=	Vbz/Ez	=		280	732	
Fraction of zone supply not directly recirc. from zone	Fa		=	Ep + (1-Ep)Er	=		1.00	1.00	
Fraction of zone supply from fully mixed primary air	Fb		=	Ep	=		1.00	1.00	
Fraction of zone OA not directly recirc. from zone	Fc		=	1-(1-Ez)(1-Ep)(1-Er)	=		1.00	1.00	
Unused OA fraction required in supply air to zone	Zd		=	Voz / Vdz	=		1.00	1.00	
Unused OA fraction required in primary air to zone	Zp		=	Voz / Vpz	=		1.00	1.00	
System Ventilation Efficiency									
Zone Ventilation Efficiency (App A Method)	Evz		=	(Fa + FbXs - FcZ) / Fa	=		1.00	1.00	
System Ventilation Efficiency (App A Method)	Ev		=	min (Evz)	=	**1.00**			
Ventilation System Efficiency (Table 6.3 Method)	Ev		=	Value from Table 6.3	=	n/a			
Minimum outdoor air intake airflow									
Outdoor Air Intake Flow required to System	Vot	cfm	=	Vou / Ev	=	**1012**			
OA intake req'd as a fraction of primary SA	Y		=	Vot / Vps	=	**1.00**			
Outdoor Air Intake Flow required to System (Table 6.3 Method)	Vot	cfm	=	Vou / Ev	=	n/a			
OA intake req'd as a fraction of primary SA (Table 6.3 Method)	Y		=	Vot / Vps	=	n/a			
OA Temp at which Min OA provides all cooling									
OAT below which OA Intake flow is @ minimum		Deg F	=	{(Tp-dTsf)-(1-Y)*(Tr+dTrf	=	55			