

Western Balkans WBIF



iC consulenten

## EE measures and Implementation -Trainings Program for Construction Companies and Supervisors

Commissioning

10/11/2016





### **Commissioning process**

The commissioning process is intended to verify that the installation and performance of the selected building systems meet the specified **design criteria** and to verify that the **design intent** has been met.





## Commissioning

Main objectives:

- Ensure that MEP equipment and systems are installed properly and in accordance with design documents and performance requirements
- Verification and reporting on performance of systems and equipment
- Review and ensure that all Operation and Maintenance documents (O&M) are complete. Within this, verify if manufactures and contractors warranties meet the requirements in the specification and contracts documents
- Review and ensure that all as-built documentation is complete and accurate





- Provide project specific commissioning process guidelines for the commissioning team, to assure compliance with the design, specifications and contract in general
- Define team members for the commissioning process, incl. respective roles and responsibilities
- Define the exact schedules for verification and functional performance testing
- Define procedures for reporting and rectification of possible defects and deficiencies that might be identified
- Define training programme for operations and maintenance staff





## **Testing vs. Commissioning**

### TESTING:

Static tests undertaken during the services installations, to prove quality of the installations e.g.:

- Pressure testing for ductwork and pipework
- Resistance checks for cabling

### **COMMISSIONING:**

Process of undertaking dynamic testing, e.g. balancing, volume testing etc. Carried out to prove that the systems operate and perform to the design intent and specification

Performance testing: often carried out when the building is already occupied to check performance in different weather conditions. For some facilities this all year conditions need to be simulated prior to handover, e.g. server rooms.





### **Commissioning plan Examples**

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Project:																													
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Distribution Board/ Power																													
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Functionality/ Operation																													
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Return Air Volume																													
HRU Demos																													

- General project information
- Define comm. team
- Roles and responsibilities
- Create plan of activities





AAC MECHANICAL & ELECTRICAL LTD UNT 6, MALLOW PARK, WATCHMEND, WELWIN GARDEN CITY, HERTE ALT 10X

REDISTORED IN DISLAND AT & DURINEETCH STREET, LONDON WITH YER COMPANY RDS NO 1883018.

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Lux Level Measurement Sheet

### CommissioningExamples

Date: 20/07/2016 Time

Engineer: Adam Males

Test Instrument: KEW337

Serial No: 15020

Ground Floor

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Room	Position 1	Lux	Position 2	Lux	Position 3	Lı
Entrance	By	110.2	Outside	109.9	Bottom	15
Corridor	Entrance		Disabled		Staircase	
			W/C		corridor	
Main Area	Sliding	120.4	Midway	475.4	Rear Fire	91
	Door				Exit	
Disabled				526.0		
Toilet						
Office 1				49.6		
Office 2				110.6		
Office 3				106.6		
Office 4				91.2		

#### 1<sup>st</sup> Floor

1 11001						
Room	Position 1	Lux	Position 2	Lux	Position 3	Lux
Staircase 1	Bottom	377.1	Mid	81.6	Тор	286.2
	Landing		Staircase		Landing	
Staircase 2	Bottom	284.7	Mid	83.5	Тор	303.6
	Landing		Staircase		Landing	
Main Area	Front	128.7	Middle	278.4	Back	143.6
	Window				Window	
Toilet	Male	16.16	Basin	602.1	Female	17.13

Ground Floor					Senativo: 150204540					
CTOBER A POOL										
Room Po	sition 1	Lux	Position 2	Lux	Position 3	Lux	Note			
Entrance By Corridor En	trance	110.2	Outside Disabled W/C	109.9	Bottom Staircase corridor	157.2	Note			
Main Area Sh Do	ding	120.4	Midway	475.4	Rear Fire Exit	91.6	2			
Disabled Toilet				526.0						
Office 1				49.6			1			
Office 2				110.6		<u> </u>	1			
Office 3				106.6			1			
Office 4				01.2			13			

Room	Position 1	Lux	Position 2	Lux	Position 3	Lux	Note
Staircase 1	Bottom Landing	377.1	Mid Staircase	\$1.6	Top Landing	286.2	
Staircase 2	Bottom	284.7	Mid Staircase	83.5	Top Landing	303.6	
Main Area	Front Window	128.7	Middle	278.4	Back Window	143.6	1
Toilet	Male	16.16	Basin	602.1	Female	17.13	3

#### <sup>d</sup> Floo Rottom Staircase 286.2 Top Landing Staircase Bottom Top 241.1Staircase Landing Back Window Window Toilet Male Female

Room	Pesition 1	Lux	Position 2	Lux	Position 3	Lux	Note
Staircase 1	Bottom	289.7	Mid Staircase	86.6	Top Landing	274.7	

2

#### 2<sup>nd</sup> Floor

Room	Position 1	Lux	Position 2	Lux	Position 3	Lux	Note
Staircase 1	Bottom	286.2	Mid	84.8	Тор	289.7	
	Landing		Staircase		Landing		
Staircase 2	Bottom	303.6	Mid	83.6	Тор	241.1	
	Landing		Staircase		Landing		
Main Area	Front	129.4	Middle	294.6	Back	141.2	1
	Window				Window		
Toilet	Male	18.38	Basin	601.0	Female	18.57	3





### Content

AIR DISTRIB	UTION S.	HEE1	-									
Client			-			Floor	General area					
Contract:						Drawng Max	N/a	15				
Contract;						Drwng No;	IN/a					
Contract INO;						Area corried:	Conoral area	Anemome				
System:						Alea serveu,	General area	15				
System,												
Grille Reference	Location	Width	Depth	Diameter	Area	Design Vol L/	s Design Vel	Measured Vel	Measured Vol L/s	% of Design	Comments	
I mal 5												
EG/1	Bathroom 1	N/a	N/a	100dia	0.008	10	1.25	15	26	120%		
EG/2	WC 1	N/a	N/a	100dia	0.008	10	1.25	14	11	112%		
EG/3	Bathroom 2	N/a	N/a	100dia	0.008	20	2.5	2.6	21	104%		
EG/4	WC 2	N/a	N/a	100dia	0.008	20	2.5	2.7	22	108%		
Level 4												
EG/1	WC	N/a	N/a	100dia	0.008	10	1.25	1.5	12	120%		
EG/2	WC	N/a	N/a	100dia	0.008	10	1.25	1.4	11	112%		
1 1 2												
Level 3 FC/1	WC	N/a	NI/o	1004ia	0.008	10	1.25	1.4	11	11294		
EG/2	WC	N/a	N/a	100dia	0.008	10	1.25	1.4	12	120%		
2072		104	10/4	100010	0.000	10	1.20	1.5	12	12070		
Level 2												
EG/1	WC	N/a	N/a	100dia	0.008	10	1.25	1.5	11	120%		
EG/2	WC	N/a	N/a	100dia	0.008	10	1.25	1.5	12	120%		
Level 1												
EG/1	WC	N/a	N/a	100dia	0.008	10	1.25	1.4	11	112%		
EG/2	WC	N/a	N/a	100dia	0.008	10	1.25	1.4	11	112%		
Loval 1												
EG/1	WC	N/a	N/a	100dia	0.008	20	25	2.6	21	104%		
EG/2	Shower	N/a	N/a	100dia	0.008	20	2.5	2.7	22	108%		
				200044	0.000	20	2.2	2.7		10070		





## **Commissioning report**

The final commissioning report contains the following information, but not limited to:

- Commissioning plan
- Site visit reports
- Commissioning Checklists
- Test reports and certificates
- Outstanding issues and rectification plan

Usually to be provided with the Operation and Maintenance documents O&M



### Profile





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### Ivan Krofak

- Experience in international team management and project coordination in energy efficiency, renewable energy and new technologies implementation
- Team leader in sustainable design and construction and international green building development
- > Experience in capacity building in developing countries
- > Experience in multidisciplinary and international project engineering and management
- Expertise in sustainability analysis and evaluation of energy & ecological performance of buildings and building components, elements and structures
- > Project experience across CEE

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