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## Technical Consulting

IFBcon provides assistance for assessing room acoustics, sound systems and audio visual installations including media control systems.

Our services listed below may also be employed for testing and optimizing already existing systems and troubleshooting.

All of the services may also be employed for additional specialized consulting support in critical paths of already ongoing design and construction processes (**C**onsulting on **R**equest).

The typical efforts specified distinguish between efforts on the spot and efforts at our office to help you estimate the approximate cost (i.e. 2+1 = 2 units on the spot + 1 unit at the IFBcon offices).

One unit = 8 hours, minimum charges are ½ unit (4 hours).

Travel time and expenses will be charged separately.

### 1. **Acoustic measuring and optimizing of room acoustics; control measuring**

Services 1.1 – 1.4 may be employed for venues with or without electro-acoustic systems.

Services 1.1 and 1.4 may also be employed individually.

#### 1.1 **Assessing room acoustics**

Reverberation measuring, response curves

Energy-time-frequency measuring

Documentation of results including evaluation

Typical effort 1 + ½ units; 1 unit measuring equipment rental

#### **for rooms in the planning stage**

Reverberation calculation for the room as planned

Assessment of critical borders

Documentation of results including evaluation

Typical effort 1 + 1 units

## **1.2 Optimizing room acoustics**

Assessing the necessary measures to optimize room acoustics for an intended purpose (only in conjunction with 1.1).

Typical effort 1 + 1 units

## **1.3 Determining optimizing measures**

Detailing measures including the proposal of materials, amount of materials and mounting areas (only in conjunction with 1.1 and 1.2).

Typical effort 1 + 1 units

## **1.4 Control measuring after realization**

Services as in 1.1

Typical effort 1 + ½ units; 1 unit measuring equipment rental

## **2. Electro-acoustic measuring, optimizing and testing**

IFBcon provides assistance for installing electro-acoustic systems and components.

Services 2.1 – 2.3 may be employed individually.

For assessing room acoustics prior to the installation of a system our services detailed in 1.1 – 1.4 may be employed.

### **2.1 Project assistance**

Electro-acoustic system design and consulting.

Testing, calculation and evaluation of designs and components for the intended purpose.

This service may also be employed for architectural modifications (i.e. the changing of acoustic properties) and system design modification during installation.

#### **Also:**

Expert support during negotiations with other project participants.

Efforts may vary depending on individual project requirements. Please contact our offices for an estimate.

## **2.2 Start-up assistance**

Function control:

Testing all essential components and their specified assignments for proper function.  
Optimizing parameters and settings for critical and/or most common usage.

Testing and optimizing:

Electric and acoustic levels, polarity, direct/reverberant field frequency response, individual level proportions, level distribution, acoustic gain before feedback, speech intelligibility (RASTI, STI, ALCons), maximum levels, noise levels etc. (optional measuring, documentation and evaluation of room acoustics)

Typical effort 2 + 0 units; 2 units measuring equipment rental

Optional documentation of results

Typical documentation effort 0 + 1 unit

## **2.3 Technical approval assistance**

Function testing and acoustic performance measuring including test certificate with full documentation of results.  
Typical effort 2 + 1½ units; 2 units measuring equipment rental

### **3. Audio-Visual measuring, optimizing and testing**

IFBcon provides assistance for installing audio-visual systems, sound system, conference system, projection and there components.

Services 3.1 – 3.3 may be employed individually.

For assessing room acoustics prior to the installation of a system our services detailed in 1.1 – 1.4 may be employed.

#### **3.1 Project assistance**

Audio-Visual system, sound system, conference system and projection design and consulting.

Testing, calculation and evaluation of designs and components for the intended purpose.

This service may also be employed for architectural or other modifications (i.e. the changing of acoustic properties, room geometry, lighting, listening and viewing conditions) and system design modification during installation.

##### **Also:**

Expert support during negotiations with other project participants.

Efforts may vary depending on individual project requirements. Please contact our offices for an estimate.

#### **3.2 Start-up assistance**

Function control:

Testing all essential components and their specified assignments for proper function.  
Optimizing parameters and settings for critical and/or most common usage.

Testing and optimizing:

Electric and acoustic levels, polarity, direct/reverberant field frequency response, individual level proportions, level distribution, acoustic gain before feedback, speech intelligibility (RASTI, STI, ALCons), maximum levels, noise levels etc. (optional measuring, documentation and evaluation of room acoustics)  
Picture brightness, sharpness, resolution, contrast, scan rates, switching and converting functions, background lighting, viewing angle, functions of media control systems, wiring

Typical effort 4 + 0 units; 4 units measuring equipment rental

Optional documentation of results

Typical documentation effort 0 + 2 units

#### **3.3 Technical approval assistance**

Function testing and acoustic performance measuring including test certificate with full documentation of results.

Typical effort 4 + 3 units; 4 units measuring equipment rental

## 4. Technical consulting

### Charges

Consulting and the necessary technical services will be charged by hours according to § 6 HOAI. Typical circumstances do not require technical assistants if the client provides experienced staff for support.

Normal hours/units (first 3 days on the spot)

Engineers per hour	99.00€
Engineers per unit (8 hours)	792.00€
Technical assistants per hour (optional)	71.50€
Technical assistants per unit (optional)	572.00€

### Measuring equipment rental

Per unit only	175.00€
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### Extra charges

Usually there are no extra charges on top of the nominal charges if the hours on the spot have been agreed upon in writing at the time of the confirmation of order.

If unusual and unexpected circumstances result in extra hours that IFBcon cannot be held responsible for we reserve the right to charge extra for

Hours from 00:00 – 06:00	25%
Saturday hours from 14:00	25%
Sunday and holiday hours	50%
Overtime (more than 8 hours per day)	25%

### Travel charges and expenses

Travel time will be charged in daily rates per hour. We charge for return travel by distance and hours.

Car	- 0.50€ per km
Train	- 1st class
Air travel	- business class

Train or air travel may result in additional cost for measuring equipment transport.

### Daily expenses

Daily expenses are charged by tax-deductible flat rates.  
Flat daily rates may be agreed on.

### Overnight stays

Unless the actual cost is charged upon proof a flat rate of 100.00€ is charged for overnight stays.



### **Incidentals**

These are charged by the actual amount. Flat rates may be agreed upon in writing.

All hours, expenses, travel and incidentals will be charged individually. Tax will be added.

### **Miscellaneous**

Any verbal or written agreements with our representatives are valid only if they have been confirmed by IFBcon in writing.

Preliminary efforts may be necessary in special cases. These may include studying project characteristics and circuit diagrams, coordinating those involved in a project, the application for documents (e.g. visa) etc.

Efforts abroad will generally be charged as specified above. Extra efforts and cost (especially for travel and transport) may require suitable agreements.

The contents of this technical consulting information are confidential. They are not intended for 3<sup>rd</sup> party use without our written consent.

## 5. Requirements for acoustic, electro-acoustic and audio-visual measuring

For convenient and trouble-free measuring the client must provide and ensure the following:

- the object must be accessible to IFBcon staff at the date agreed upon. This includes access to all rooms containing system components and electronic access (passwords for switching, distributing, mixing and setting the parameters of audio and video signals and controllers)
- access and parking for a car, easy transport of the measuring equipment
- a 230V AC, 16amp safety contact outlet
- a line level input (if a system has been installed)
- the unrestricted function of system and installations
- a chair and a table for the measuring equipment
- a cart to transport the measuring equipment (if there are several areas or rooms to be measured)
- an uninterruptible power supply (if the measuring equipment must be moved on a cart)
- a block diagram of the system detailing system flow, controls and insert points
- a competent system operator
- the rooms, objects, systems and installations must be quiet and free of noise during measuring. There must be no activities such as rigging, servicing, repairs, cleaning, construction work or events which may cause noise and other interference while measuring
- rooms must be furnished for regular use (e.g. theatre, musical events) or as agreed upon
- a competent operator to arrange and change room layout (e.g. to move dividers, baffles)
- there must be no access for unauthorized persons

IFBcon reserves the right to terminate services if circumstances interfere with measuring and testing that IFBcon cannot be held responsible for and that prevent services within the intended or an acceptable time limit.

Measuring or testing will be continued after IFBcon and their client agree on another date. This may result in additional cost which IFBcon will charge according to their current technical consulting price list.