

VNL Rider – Appendix H – VCS

Technical Requirements

Operations Area Requirements

VCS would ideally be positioned in a commentary booth or equivalent with dimensions of approximately 3 x 4m within 50m of the court. The location should have a direct and unobscured line of sight to the court, and would ideally be positioned with easy access for wheeled cases (i.e. minimal stairs to reach the area).

Requirements

1. Power:
 - a. Dedicated technical power (230V, 32A or 100-120V 64A minimum);
 - b. Provided on 2 x IEC strips (230V supply) or 4 x IEC strips (100-120V supply);
 - c. Available from 3 days prior to first match day.
2. Three chairs and two 1.5m desks;
3. Suitable air conditioning system to maintain an ambient temperature of 21 degrees Celsius;
4. Cable protection for all cables running back to the operational area (e.g. matting, yellow-jackets);
5. Cabled internet to the booth, provided on an RJ45-terminated ethernet cable, meeting the requirements described in the Internet Requirements section;
6. VCS supplier will provide an HD-SDI signal at the booth to enable integration with the big screen. Event should provide:
 - a. Suitable cabling from the big screen to the location of VCS's decoder (either the booth or the TV truck), and any necessary signal conversion;
 - b. Big screen operator communication channel via radio, or talkback panel;
7. Two high-performance two-way radios w/ chargers;
8. Storage of up to 7 x VCS supplier's flight cases of 920 x 520 x 450 mm before the arrival of operators on-site, during the event, and post-event until they are collected for onward travel;
9. A challenge referee tablet (ETT) in the operational area;

Internet Requirements

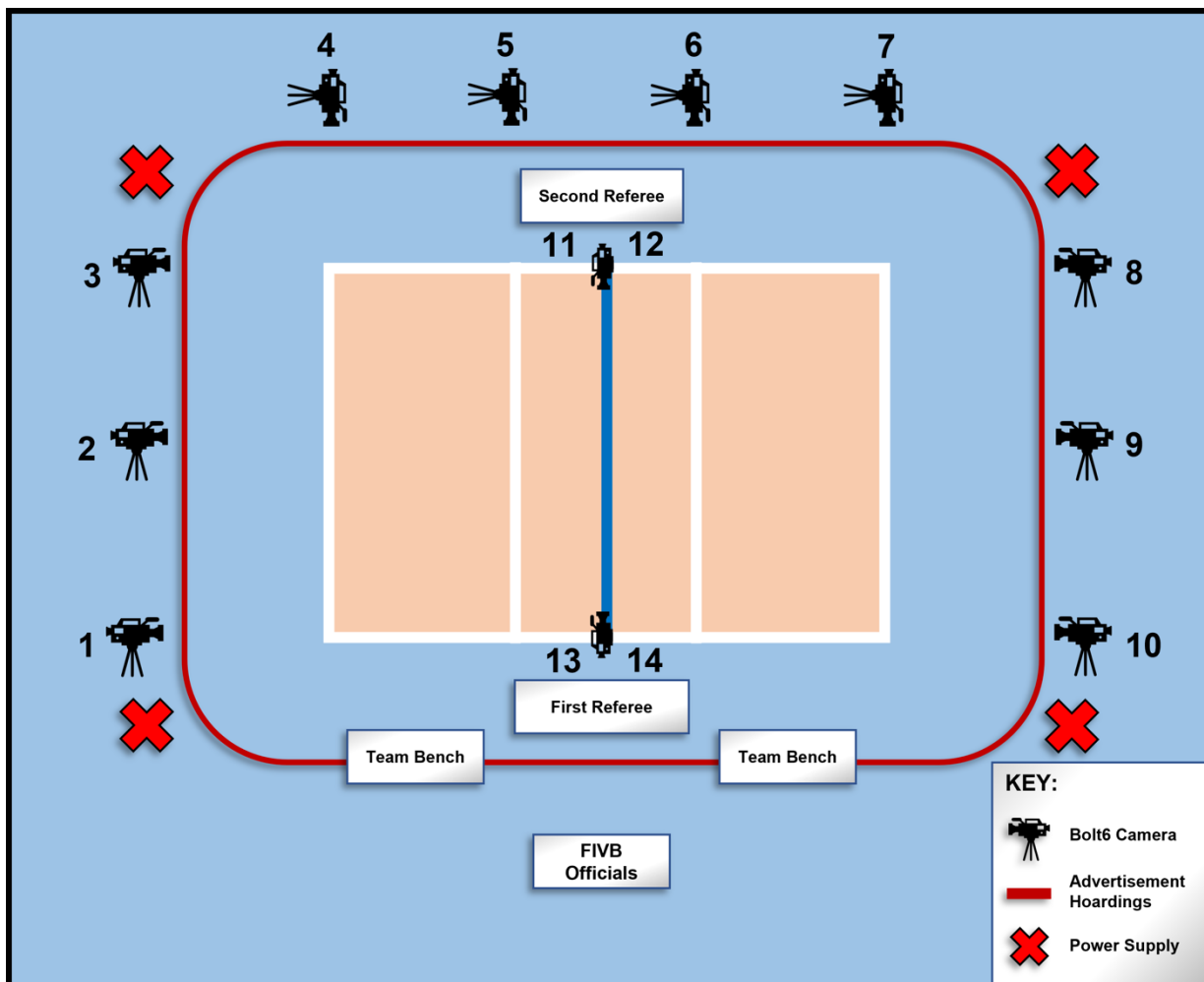
There are some specific internet requirements that are crucial to the correct running of the system:

1. Guaranteed 600Mbps upload, 100Mbps download speed, dedicated for VCS use;
2. Internet available from 3 days prior to the first match day, until the end of the tournament, 24 hours per day.

Court Requirements

VCS supplier will provide 24 color officiating cameras positioned around the court on tripods, often behind floor-level advertising hoardings. On the day prior to the tournament starting, we will require a minimum of 2 hours court time to setup the cameras and test the system in place.

The diagram below shows the relative placement of the courtside equipment with respect to the playing area. Four dedicated power sockets are required at the locations marked with the red cross, these will require the specifications detailed in the Operations Area Requirements section and must be in place at a minimum of three days prior to the first match.

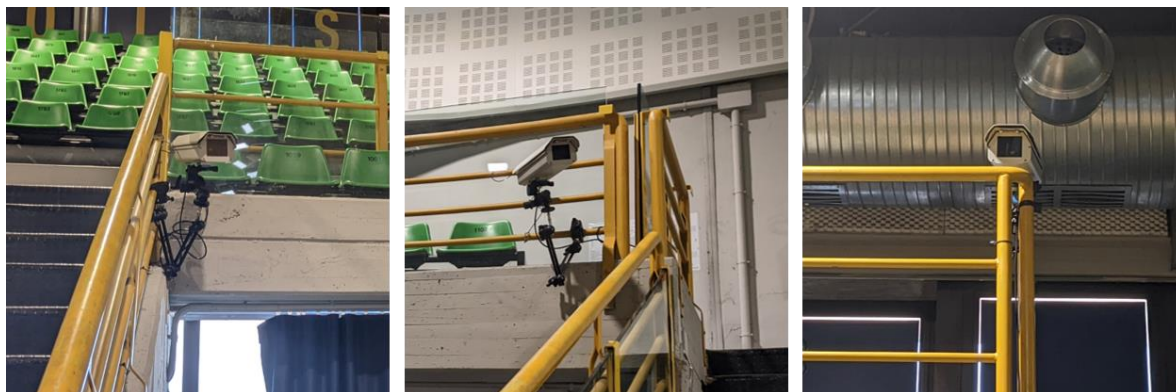


Line Calling Requirements

There will be 10 tracking cameras positioned around the upper-tiers of the stadium, mounted onto suitable parts of the stadium (e.g. handrails) using clamps, or positioned on tripods, where suitable locations for clamping cannot be found.

It may be necessary for some areas or seats to be cordoned off, to protect these cameras from interference from the public.

These camera positions should be discussed and agreed with the stadium/local organiser prior to VCS provider's arrival.



Requirements

1. Photos of the venue and seating at least 3 months prior to VCS's crew arrival;
2. Contact details of the relevant people at the stadium and the local organising committee to grant permission for the mounting of cameras in the locations identified from the above photos, and organise cordons as appropriate to protect the cameras from the public;
3. Access to an A-frame ladder, at a minimum of 6 feet high conforming to Class EN131 or equivalent to allow access to high camera positions;
4. Protection of cables (e.g. matting) run from the cameras to the court or operations area as appropriate;
5. One hour of dedicated access to the court on each of the two days leading up to the beginning of competition, with the ability to modify the lighting as appropriate to the tasks that need fulfilling;
6. Court floor laid, and the design/covering finalised for match days prior to VCS's crew court time;
7. The court should not be moved or re-laid within 48 hours of the first match. Should this happen we will require an additional 1.5 hours of court time, and the system will not be guaranteed to be ready in time for the first match.

TV Broadcast Requirements

The following outlines VCS's provision to, and requirements from, the TV broadcaster:

1. A schedule for TV Broadcast 'on air' timings and dates should be shared a minimum of one week in advance of VCS's arrival on-site, with relevant Broadcaster contacts, production manual, and call sheet;
2. VCS supplier will provide two SDI feeds, one for video challenges, the other for line calls. We can provide these feeds in a variety of formats, however the format required must be communicated to VCS supplier at least two weeks prior to the event. These feeds should be frame-stored by the broadcaster, to ensure they are referenced correctly;
3. VCS supplier will provide an encoder and decoder for taking TV's SDI feeds and providing VCS's SDI outputs to TV (weight, dimensions, and power requirements TBC). This can either be placed in the Operations Area, or in the TV truck depending on where the broadcaster would prefer this to be situated. The broadcaster should be responsible for providing and running the cabling from the TV truck to the location of the encoder and decoder;
4. The broadcaster should run the following feeds to be run to the Operations Area in HD-SDI format, and provide a small SDI monitor for each feed:

- a. Tx;
 - b. VCS Output 1;
 - c. VCS Output 2.
5. The broadcaster should provide one communication panel and foot pedal with access to the Director, Producer and Engineering in the Operations Area;
 6. The broadcaster should provide a small speaker and XLR cable to hear court effects (e.g. umpire's microphone), to be provided in the Operations Area.

Additional Requirements

1. Tournament accreditation for access to:
 - a. Court;
 - b. Camera positions;
 - c. Operations area.
2. Graphics of sponsors, advertising or other images required in the officiating outputs at least 2 weeks prior to the event.

System Set-up Timeline

Three Months Before

- Contact details of Venue Manager and IT Manager provided to VCS supplier;
- Site photos shared with VCS provider;
- VCS provider agrees camera positions with Venue Manager, and confirm IT infrastructure is suitable with IT manager, proactively flagging any issues that arise to VW.

Two weeks before

VW provide:

- Graphics of sponsors, advertising or other images required in the virtual reality world;
- Contact details of the host broadcaster and camera plan where available.

Set Up – Match Day -3

VW provide:

- Accreditation;
- Power in Operations Area and court-side;
- Tables and chairs on the Operations Area;
- Suitable air conditioning in Operations Area;
- Internet in the Operations Area;
- Class EN131 A-frame ladder, at a minimum of 6 feet high to access camera positions;
- Two high performance radios and appropriate chargers;
- Protection of cables being run back to the Operations Area/court-side from Tracking Cameras.

VCS Set-Up Schedule:

- Mount tracking cameras in pre-agreed positions;
- Run cables to tracking cameras;
- Set-up Operations Area;

Set Up – Match Day -2

VW to Provide:

- Minimum of one hour court time with ability to modify lighting;
- Protection of cables being run back to the Operations Area from court-side.

VCS Set-Up Schedule:

- Set-up, run cables to, and align cameras court-side;
- Align and calibrate Tracking cameras;

Set Up – Match Day -1

VW to Provide:

- Cabling for integration with Big Screen;
- Communications with the Big Screen operators;
- Minimum of one hour court time with ability to modify lighting;

VCS Set-Up Schedule:

- System sign off at Dress Rehearsal;
- Integration with TV Broadcaster (arrival time dependent);
- Integration with Big Screen.