An Elite Category Stadium According to UEFA Criteria

Under comparative consideration with FIFA technical recommendations and requirements 2011

Donbass Arena Overview 2015
LOCATION: Donetsk, Ukraine
OWNER / CLIENT: Stadion Shakhtar Limited
BASIC DESIGN: Arup Sport
PROJECT DURATION: Jun 2006 – Sep 2009
CONTRACT SCOPE / TYPE: EPC / Lump Sum Turn Key
CONTRACT VALUE: USD 400 Million

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ENKA
General Information

ENKA acted as the prime contractor. Construction was started in 2006 and completed in 2009. To erect the five-star arena to such a tight schedule (3 years) over 1,600 people worked on site at peak times.

Turn-key construction of UEFA Elite Class stadium in Donetsk, Ukraine for 51,540 visitors of which 3,680 are VIP. The shape of the Stadium has an oval form with an inclined roof. Inside the Stadium, restaurants, bars, cafes, fast food facilities, sports center, Club Museum and Shops are available.

The eye-catching stadium was designed by Arup Sport, which was the creative and inspirational force behind some of the world’s greatest arenas, such as the City of Manchester Stadium (Manchester, England), Allianz Arena stadium (Munich, Germany), the new stadium of Valencia CF (Valencia, Spain), Sydney Football Stadium (Sydney, Australia), Beijing National Stadium (or the Bird’s Nest in Beijing, China) etc. The total project budget was USD 400 mil.

Construction:
- Construction was launched on 27 June 2006
- USD 400 mil. was spent on the stadium construction and the surrounding park landscaping.
- Over 160,000 m³ of concrete was cast into the building frame.
- 12,295 tons of rebar was used for manufacturing the structure frame.
- 458,761 m³ of soil was excavated to make the foundation pit.
- 234,376 sq.m was the total construction site area (inclusive of mobilization areas).
- About 1,200 km of cabling was laid for various systems.
- 1,158 days passed since the construction start until the arena’s grand opening date.
- The stadium was officially opened on 29 August 2009.

Capacity:
- 52,667 is the total seating capacity of the stadium.
- 290 seats for the media, whereof 152 seats for journalists and 138 seats for TV commentators (an aggregate of 46 commentary boxes).
- 196 positions and seats for people with disabilities and their carers (104 and 92 respectively).
- The stadium’s 44 corporate boxes can accommodate 915 people.
- 180 media representatives can always feel at home at a spacious Conference Room at the arena.
- All restaurants, bars and cafés at the stadium have a total of 1,830 covers.
- The stadium has over 1,000 car parking spaces (245 of which are underground).
ARENA:

- The total area of the stadium’s glazed facade is 14,283 sq.m.
- 2,482 triple-pane glass units were used for glazing the stadium’s outer façade.
- Over 16,000 sq.m of vertical surfaces are made of glass, totaling 3,108 heavy-duty panes.
- The underground height of the building is: parking lot area - 12 m, dressing rooms - 8 m, media space rooms - 4 m.
- Height from pitch level to the topmost roof point is 54 m.
- The total floor area of all the stadium’s levels makes 83,823 sq.m.
- 93% of stands are roof-covered, only 3,800 seats in the bottom tier are not covered.
- 24 first-aid stations (18 permanent ones and 6 mobile ambulance groups).
- 53 fast-food outlets, a fan cafe, 4 Silver bars, 3 restaurants (Diamond, Platinum, Gold), a media cafe and a lounge bar will satisfy any visitor’s taste.
- 2,000 lux is the lighting intensity, ensured by 272 high-precision targeting spotlights mounted along the perimeter of the stadium’s roof.
- 6,000 ports installed in the stadium for concurrent network connection.
- The stadium’s video monitoring system comprises 570 CCTV cameras.
- 588 monitors installed throughout the stadium.
- 92 sq.m is the display surface of each of the 2 giant LED screens.
- 267 m is the total length of the LED electronic advertising hoardings.
- 34 staircases available throughout the stadium space.
- 11,978 is the total number of stairs at the stadium. The flights of stairs comprise 4,181 steps.
- 550 heaters aggregately radiate 22 MW of thermal energy.
- The bowl is divided into 24 heated areas.
- The prime cost of heating one spectator seat during the match is about UAH 1.
- The system consumes some 2200-2300 cubic centimetres of gas per hour.

PITCH:

- The pitch size is 105m x 68m.
- The ground surface includes: natural grass - 7,992 sq.m, artificial turf - 1,877 sq.m.
- 810 rolls of natural grass (each 10m long) were brought from Slovakia by 27 trucks.
- 26 automatic sprinklers water the pitch.

PARK:

- 25 ha is the total area covered by the park area.
- 13 ha is the total area of the green lawns in the park.
- 77,000 plants grow in the park (281 trees and about 35,000 rose bushes).
- 40.5 tons is the total weight of the fountain ball which is located at the south entrance (the ball alone weighs 28 tons (made of a single piece of granite) and the stand weighs another 12.5 tons).
- 228 m³ of water circulates within the fountain cascades facing Chelyuskintsev St.

GENERAL INFORMATION

- 810 rolls of natural grass (each 10m long) were brought from Slovakia by 27 trucks.
- 26 automatic sprinklers water the pitch.
## Project Key Quantities

<table>
<thead>
<tr>
<th>Key Quantities</th>
<th>Commodity</th>
<th>Quantity</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concrete</td>
<td>160,000</td>
<td>m³</td>
<td>Over 160,000 m³ of concrete was cast into the building frame.</td>
</tr>
<tr>
<td></td>
<td>Rebar</td>
<td>12,295</td>
<td>ton</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excavation</td>
<td>458,761</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cabling</td>
<td>1,200</td>
<td>km</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pre-cast Element</td>
<td>3,400</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tubular Pile</td>
<td>3,248</td>
<td>ea</td>
<td></td>
</tr>
</tbody>
</table>

- **Total Construction Area:** 235,000 m²
- **Total Closed Area:** 84,000 m²
- **1,680 workers worked in the construction at peak (majority Turkish & Ukrainian).**
- **Stadium facade is 22,058 m², with 16,003 m² glass and 6,055 m² louvre area**
- **Stadium roof is 34,764 m², out of which 5,188 m² is glass.**
- **Total weight of metal construction of roof is more then 6,000 tons (Including 3,800 ton of support structure).**
Stadium Net Capacity

**Project Commitment**

- Press: **856** seats
- Commentator: **46 cabins** (138 seats)
- Observer: **168** seats

**UEFA Requirements**

- Press: **700** seats
- Commentator: **40 cabins** (138 seats)
- Observer: **168** seats (UEFA Final & Semifinal)

**FIFA Requirements**

- Press: **800** for Semifinal & Third Place Game; **1000** for Opening & Final Game
- Commentator: **50-90 cabins, 130-160** seats
- Observer: **200-375** seats

52,667 is the total seating capacity of the stadium. Net total accredited seating: **50,105**.
Special Seats

Disabled Seating

Seating Places for disabled and companion seats: Acc. to UEFA they need to be situated at minimum 2 sectors with minimum 50 capacity each sector.

FIFA requires 0,5-1,0% of total capacity

Donbass Arena:
Total 104 capacity with 92 companion seats at 4 sectors, two access ramps at two sectors with 18 special disabled turnstiles

VIP Seating

Acc. to UEFA Min. 1,500 VIP seats are required, min 200 reserved for visiting team.

FIFA Requirements

FIFA requirement for hospitality seating 8% for Opening Game and Final, 5% for the rest games;

VIP Boxes:
300-1,350

Donbass Arena:
VIP Boxes: 830
VIP seats: 3,680
Visibility – Seat Arrangement

For net capacity of the stadium **UEFA** accepts all seats with a visibility of min. **C=90** without any obstacles such as balustrades, barriers and segregation etc.

**Recommended FIFA minimum C=90**

To achieve **C=90**, the tiers have to raise with a parabolic arrangement and distance to field is essential. In order to achieve that, tiers have been designed with different heights and seats have been mounted on different levels. (between 40-55 cm)

Donbass Arena seating design has been conducted considering near to **C=90** values at corners at upper tier, and more then **C=90** values have been achieved elsewhere. **250** seats behind substitute benches and other **100** obstructed seats with less **C=90** value are not considered in net capacity of the stadium for **UEFA** Games (Allowed max. is 10%)

**UEFA** accepts 190 m as maximum distance to the field, whereas this distance is **142** m in Donbass Arena

Different price category seats, as well as away fan seats have been separated with glass partitions in order not to obstruct visibility near such segregations.

**FIFA** Spectator Seat requirements : Riser min : 30cm, Tread min : 80cm, Width min : 45cm opt: 50cm and Rake angle max : 34°
PARKING AREAS

Project Commitment

- 250 VIP parking places in covered garage
- 500 open parking places at stadium area
- 2,000 parking places around stadium area
- 70 bus parking places at stadium area
- 330 bus parking places around stadium area

UEFA Requirements

- Min 150 VIP parking places
- 1,400 parking places
- 400 bus parking places

FIFA Requirements

- 80-200 VVIP parking places
- 150-200 VIP parking places
- 1,800 Host+Visitor parking places
- 545 bus parking places

“Donbass Arena has over 1,000 car parking spaces (250 of which are underground)”
PRESS FACILITIES

UEFA is asking 16 camera positions for live broadcast of semi-final and final games. (FIFA 22 fix, 15 temporary)

Min 12 m² main camera platform is needed (FIFA requires 1 camera platform 2x10-20m)

In Donbass Arena, 20 m² main camera platform (with 3 cameras) and 9 other camera platforms have been built.

Including field cameras, the match is recorded with 17 cameras in total.

All Press tables are equipped with network connection as well as wireless network. All over the entrance level, level 3, wireless internet access is available.

<table>
<thead>
<tr>
<th>Project Commitment</th>
<th>UEFA Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB-Van Area:</td>
<td>2000 m²</td>
</tr>
<tr>
<td>TV Studios:</td>
<td>1 panoramic 20 m²</td>
</tr>
<tr>
<td>Press Center:</td>
<td>3 standard 25 m²</td>
</tr>
<tr>
<td>Press Working Area:</td>
<td>100 seats, UEFA final: 250 m²</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<th>UEFA Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB-Van Area:</td>
<td>4000-6000 m²</td>
</tr>
<tr>
<td>TV Studios:</td>
<td>4x160 m² – 8x320 m²</td>
</tr>
<tr>
<td>Press Center:</td>
<td>3 standard 25 m²</td>
</tr>
<tr>
<td>Press Working Area:</td>
<td>150-200 seats, 500 m²</td>
</tr>
</tbody>
</table>

Stadium Media Center for 800-2000 people 4000 – 7000 m² (temporary)

“* EURO 2012 final requirement 9000 m² ”
**Prep Rooms**

<table>
<thead>
<tr>
<th>Dressing Rooms:</th>
<th><strong>Project Commitment</strong></th>
<th><strong>UEFA Requirements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2x220 m² both teams</td>
<td><strong>11 showers, 2 massage rooms,</strong></td>
<td>125 m², <strong>5 showers, 1 massage room,</strong></td>
</tr>
<tr>
<td>2 dressing rooms, 4 shower &amp; toilet, 27 m² meeting room</td>
<td><strong>27 m² meeting room</strong></td>
<td>1 shower &amp; toilet, 5 seats</td>
</tr>
<tr>
<td>47 m², fully equipped with X-Ray, shower &amp; toilet</td>
<td><strong>Fully equipped, min 24 m²</strong></td>
<td>Fully equipped, min 24 m²</td>
</tr>
<tr>
<td>46 m², office room with toilet and with communication capabilities</td>
<td><strong>Min 16 m², near referee room with communication capabilities</strong></td>
<td>Min 16 m², near referee room with communication capabilities</td>
</tr>
<tr>
<td>46 m², shower, toilet and waiting room, near to dressing rooms without access from press rooms</td>
<td><strong>Min 20 m², with toilet and waiting room including min 2 test cabins</strong></td>
<td>Min 20 m², with toilet and waiting room including min 2 test cabins</td>
</tr>
</tbody>
</table>

**FIFA Requirements**

<table>
<thead>
<tr>
<th>Dressing Rooms:</th>
<th><strong>2x80 m², 11 showers each, 1 massage room 40 m² for 8 people,</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>3 showers &amp; toilet, 5-7 seats</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Fully equipped, 50 m²</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Unlike UEFA, FIFA requires not only Delegate room but many FIFA Offices at main stand at lower level</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Min 36 m² waiting room for 8 people with toilet including 4 medical offices</strong></td>
<td></td>
</tr>
</tbody>
</table>
VIP HOSTING AREAS

<table>
<thead>
<tr>
<th>Project</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>V VIP Lounge:</td>
<td>Diamond Club, 563 m² restaurant, 265 VVIP Seats, special covered garage</td>
</tr>
<tr>
<td>VIP Hosting:</td>
<td>Platinum Club, 463 m² restaurant, 315 VIP Seats, dedicated parking place</td>
</tr>
<tr>
<td></td>
<td>Gold Club, 546 m² restaurant, 372 VIP Seats dedicated parking place near stadium</td>
</tr>
<tr>
<td></td>
<td>Silver Club, 4 bars, 297 m², 2,147 premium seats, dedicated parking place near stadium</td>
</tr>
<tr>
<td></td>
<td>Tribune Lounge, 870 m² lounge bar, 581 premium seats, dedicated parking place in stadium area</td>
</tr>
</tbody>
</table>

**UEFA / FIFA Requirements**

| V VIP Lounge: | UEFA: Min 100 seats with min. 2 m² space each, |
| VIP Hosting: | **FIFA: Min 150 seats with min. 1,8 m² space each** |
| | **UEFA Final: 450 seats, CL Final: 700 seats VIP hosting with easy access to seats (min.1,5 m²/person)** |
| | Min. 250 VIP Guest hosting area for each team (min. 1,5 m²/person) |
| | VIP Hosting area for min. 1000 UEFA guests (not necessarily within the Stadium) |
| | **FIFA, 550 – 1350 seats (min. 1 m²/person)** |
## Spectator Restrooms & First Aid

<table>
<thead>
<tr>
<th>Spectator Restrooms &amp; First Aid</th>
<th>Project Commitment</th>
<th>UEFA Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restrooms:</td>
<td>487 urinal, 619 toilet cabin</td>
<td>1 toilet for each 200 seats and 1 urinal for each 125 seats (411 urinal, 257 toilet for 50,000 capacity)</td>
</tr>
<tr>
<td></td>
<td>40% dedicated for women</td>
<td></td>
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<tr>
<td></td>
<td>16 pieces for disabled</td>
<td></td>
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<tr>
<td></td>
<td>Each sector at each level 1 room; in total 21 first aid rooms, 2 of which are fully equipped</td>
<td></td>
</tr>
</tbody>
</table>

| First Aid:                      | 3 WC, 15 Urinal, 6 wash basin for each 1000 male spectator                         | FIFA Requirements                                                               |
|                                 | 28 WC, 14 wash basin for each 1000 female spectator                                |                                    |
|                                 | Every hall 1 First Aid Room, 1 fully furnished FA min. 20 m² for players and match officials |                                    |
**Pitch**

- **UEFA** requires natural turf for semi-final and final games.
- In today’s modern stadiums, the closed structure is an obstacle for natural light and natural ventilation of the pitch, which is vital for the healthy growth of the grass.
- The roof of Donbass Arena is partially transparent to allow natural light to the grass for longer periods of time.
- To achieve good ventilation on pitch, entrance level 3 has louvered doors all over. In addition to that, sides and upper parts of all stair cores and façade to roof connection all over the stadium has been equipped with louvres.
- In addition to all such natural ventilation measures, the drainage system of the pitch has been integrated to a patented ventilation system to blow or vacuum air as and when necessary.
- Due to freezing winter conditions the pitch has been equipped with undersoil heating system. System has all means of control to achieve +2°C on the surface at min. -10°C ambient temperature and prevent the roots from boiling, assuring a maximum temperature of (20°C) at the roots.
- Automatic irrigation system of the pitch has been designed to water the field with 26 sprinklers during 15min. half time when necessary. There is an irrigation water tank of 200 ton capacity inside the stadium.

All the above are included in FIFA Recommendations
**Technical Features**

- For the comfort of VIP premises, heating and cooling is supplied from Energy Center built near the stadium. All comfort zones are equipped with HVAC Systems. Piping passing through unheated spaces are equipped with trace heating system controlled via Building Management System (BMS).
- Toilets in unheated areas are equipped with electrical heaters to assure min +5°C in coldest design ambient temperatures.
- All Comfort systems of the stadium are connected to BMS and are controlled and monitored from a single dispatcher center. BMS also monitors fire alarm, CCTV, PA/VA Systems, Pitch heating, irrigation and aeration systems, elevators and façade lighting, and also commands some of those.
- There are 20 elevators in the stadium dedicated to VIP visitors and for Catering purposes. *(UEFA requirement: min.4) FIFA Recommends elevator and escalators with required number for VVIP, VIP and Media and Services.*
- 106 turnstiles, one for each 500 visitor has been installed whereas UEFA is asking one for 660 visitor. In addition to that, 18 disabled turnstile is present.
- 2 off each 92 m² electronic scoreboard are installed at east-west axis on upper tier, to serve maximum number of visitors. *(FIFA requires minimum 2 scoreboards each with min. 70 m² for Stadia with >50,000 spectator capacity.)*
- Premium Class Public Announce and Voice Alarm Systems to serve both inside and the bowl have been installed. System is backed up with UPS for announce purposes.
- 588 pieces 46” and 52” plasma monitors have been installed in concourse areas to serve commercial and emergency needs with closed circuit broadcasting.
- Interior and exterior signage systems, illuminated as and when necessary, have been designed and installed to lead the home and away fans without crossing each other.
IT & Security Systems

• According to UEFA an Elite Stadium needs to have a closed circuit TV system, to show messages to lead the visitors as necessary. Camera surveillance and picture taking must be possible whenever required. An Elite Class stadium CCTV system must have minimum 240 cameras. Donbass Arena is monitored with 448 cameras.

• IT system has been designed to command CCTV, Access Control, Security, Parking System, Cashless Shopping and TV & Data systems for the beginning. All such systems are connected to fiberoptic structural Cabling System. In the future the system will be retrofitted to cover other hi-tech comfort services such as; digital signage, electronic trade, mobile platform, web platform, call center, Full wireless network.
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