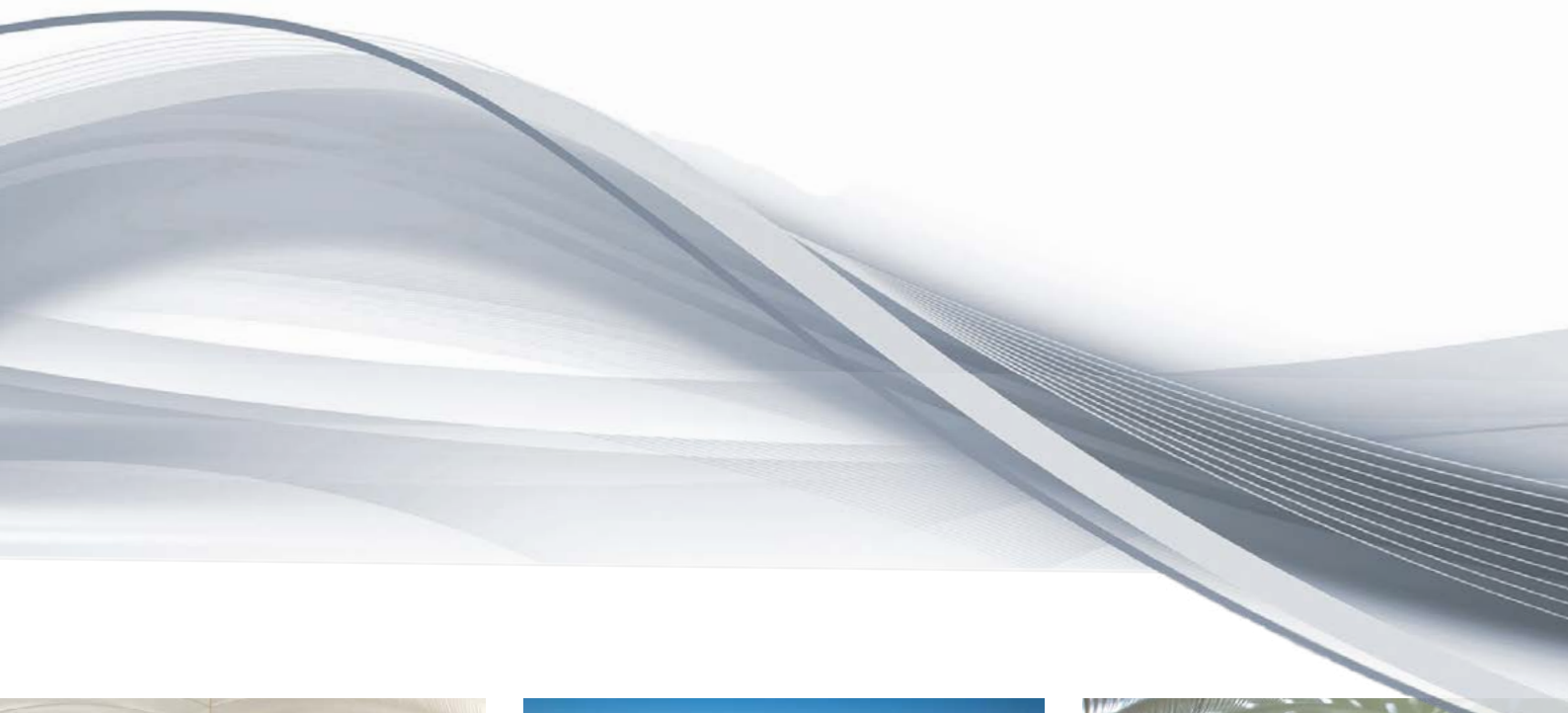




INNOVATIVE STRUCTURE SOLUTIONS



A Better Way to Build
Air supported structures
Metal structures
Wooden structures
Tension structures

www.duol.eu
www.scandihall.no

Company DUOL

Company DUOL designs, manufactures and installs some of the most unique and versatile **fabric structures** in the world. We are experts in Air structures, Prefabricated frame (wooden/metal) structures and Tent Structures.



Air Domes *Metal structures* *Wooden structures* *Tension structures*

DUOL **Air domes / Air Supported Structures** are most recognized products from DUOL. We are global leader in air supported structures and since company foundation 24 years ago, DUOL installed more than 1300 structures all over the world: Europe, Asia, Middle East, Africa and South America:



Focus on quality



As a certified company with the **ISO 9001:2008 quality standards**, we apply this standard to every operation within DUOL organization. DUOL follows strict ISO 9001:2008 quality standards in every process to ensure client **safe and on time delivery**.



Credit worthiness certificate warrants for the **business excellence**. Our certificate guarantee, that we will be a reliable partner also in the future.



Solid company organization, worldwide references, innovative solutions: In 2013 DUOL was awarded for **"Best managed company in Slovenia"**.



DUOL air domes elements are manufactured in EU, designed according EN 13782 standards and all elements are CE certified.

Production process from the start to the end = **Quality and Liability**.



Engineering and R&D **Production** **Assembling** **Maintaining**

The dome is handed over to the client after a detailed maintenance course with complete operation and maintenance manuals for the air dome and equipment included.



- Worldwide service, immediately response and resolution in 99% of cases.
- Analysis and resolution of issues are safely solved by phone or e-mail.
- Sending parts or immediate fly interventions of DUOL technicians.
- After sales service with first degree of intervention carried out by a local partner.
- 10-15 year manufacturer warranty on the fabric and up to 5 years on equipment. Life expectancy more than 40 years.



Duol d.o.o., Kapalniška pot 2, 1351 Brezovica, Slovenia

+386 1 360 14 00

+386 1 360 14 38

duol@duol.si

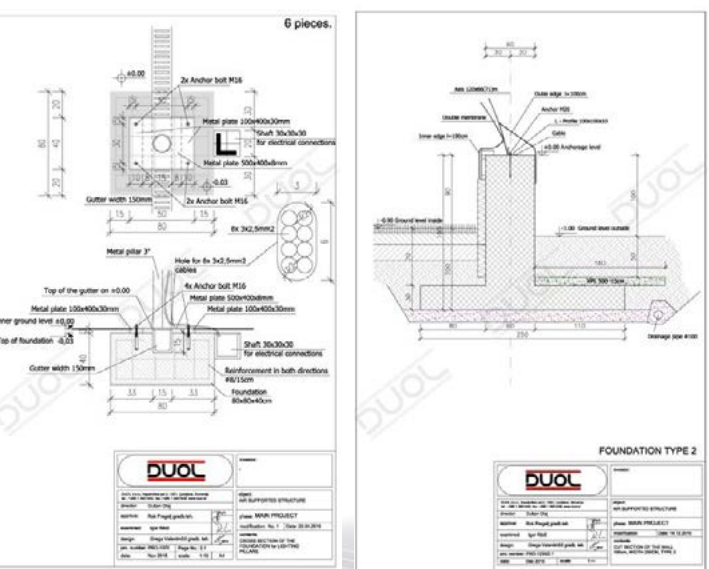
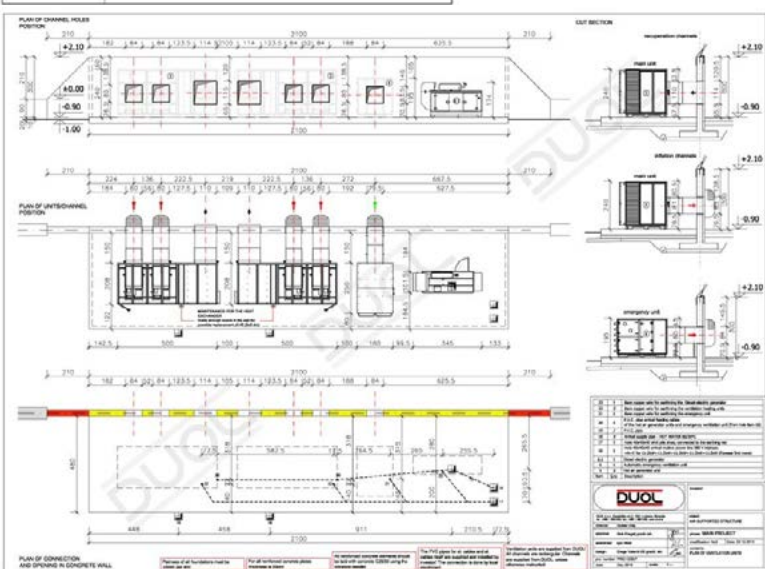
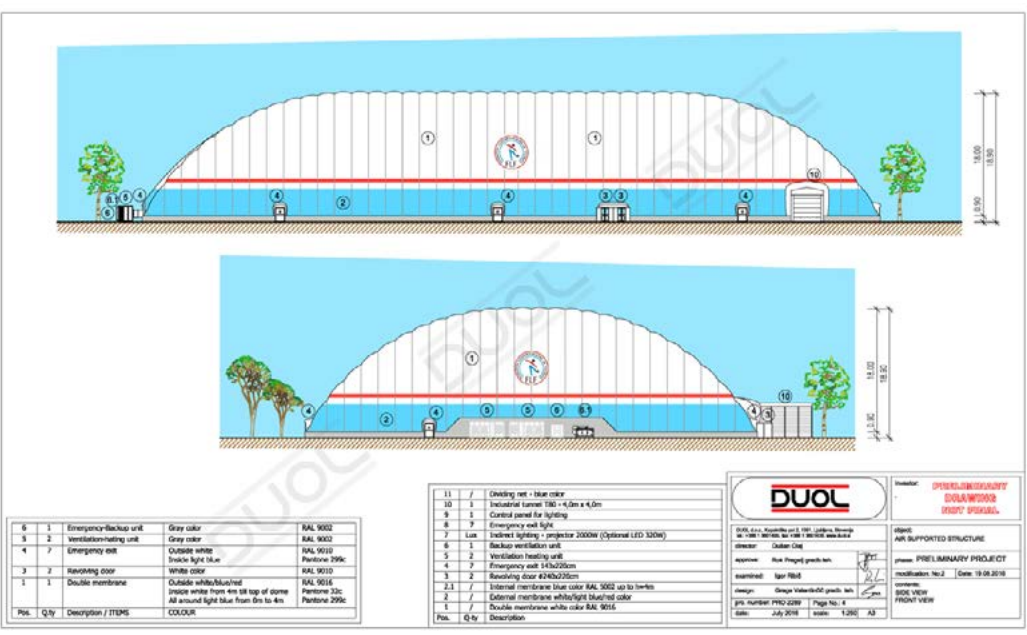
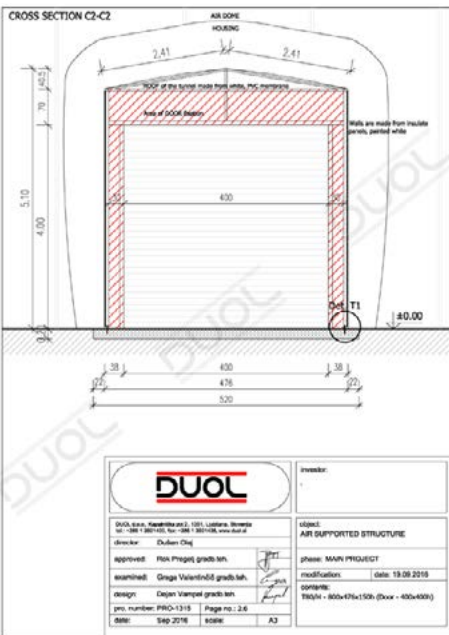
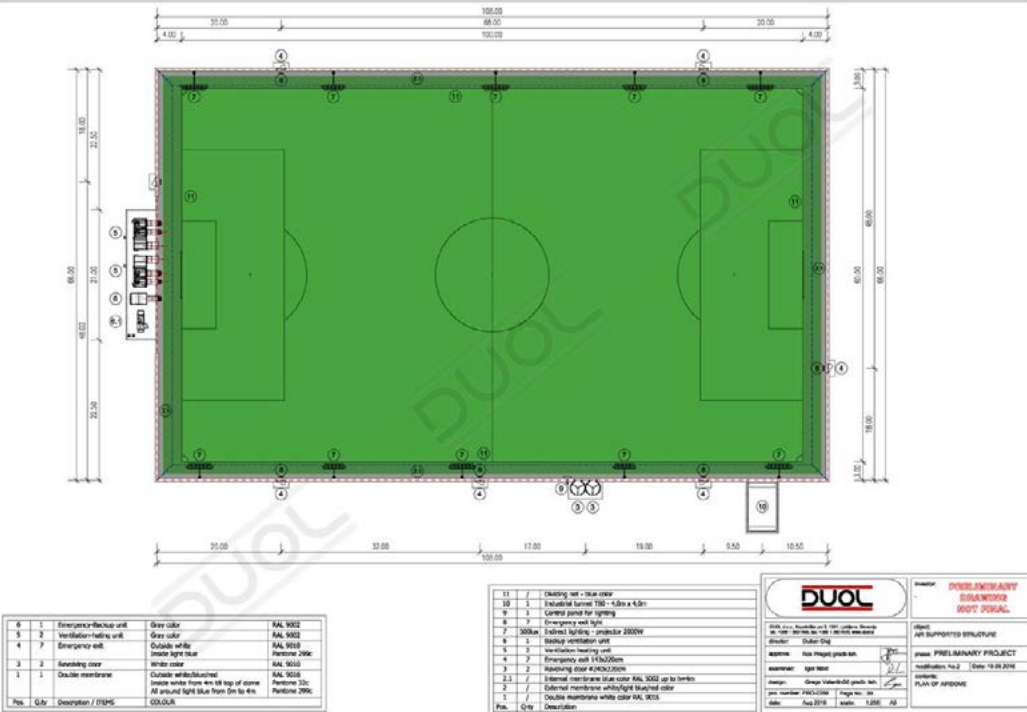
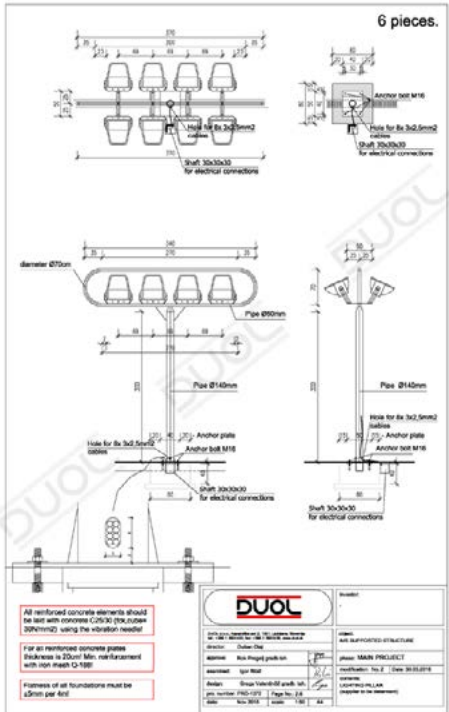
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Complete control over all phases of operations

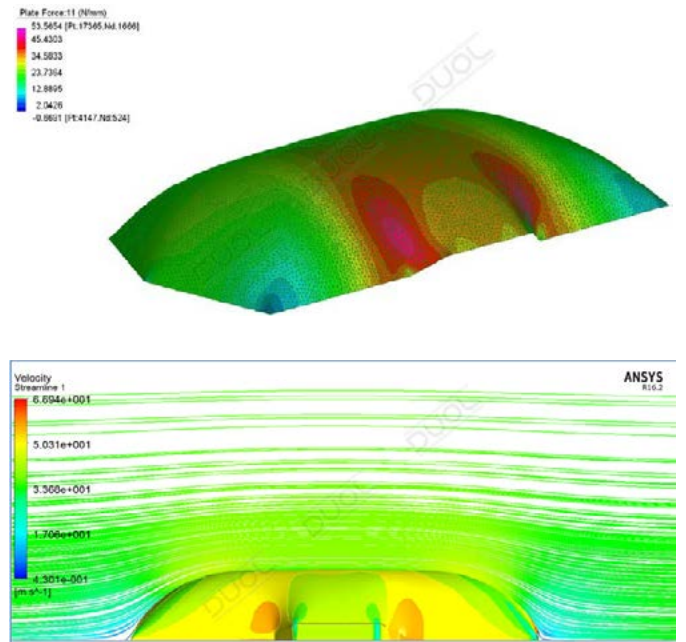
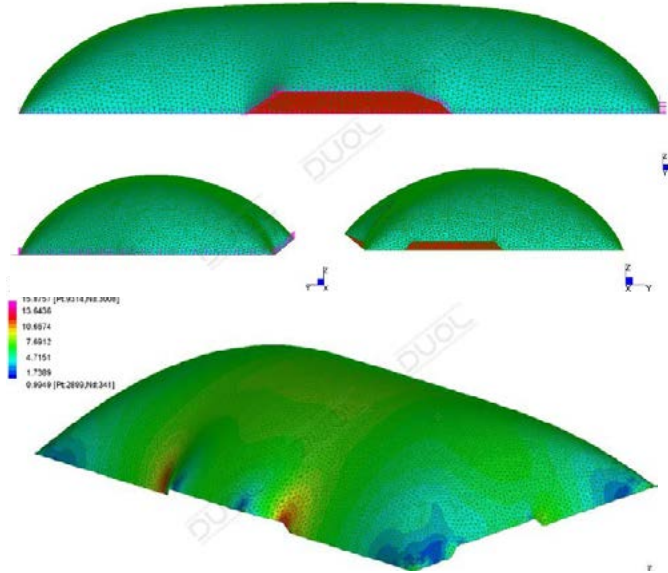
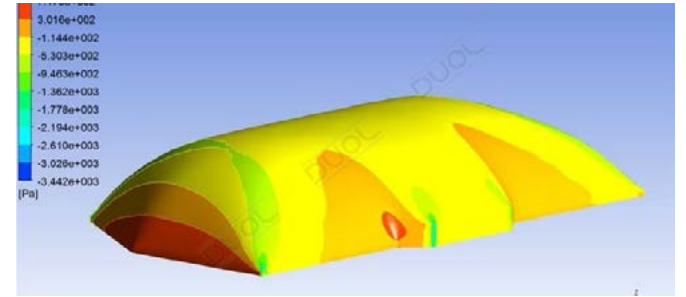
Object handover with complete client support

Efficient and fast after sale support

Contacts



- Study of standard references
- Determination of loads
- FEM modulation of the structure
- CFD analysis
- Pattern drawings
- 3D Visualization





Niort, France



Gmund, Germany



Imatra, Finland



Stadion Yantar, Russia



Valparaiso, Chile



Bern, Switzerland



Vilnius, Lithuania



Tromso, Norway



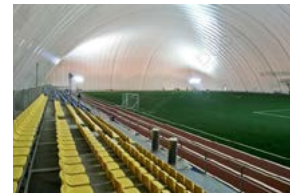
Hveragerdi, Iceland



Dubai, UAE



Kemi, Finland



Kazakhstan, 15.000m² dome



Atakoy, Turkey



Brussels, Belgium



Sochi, Russia



Trondheim, Norway



Copenhagen, Denmark



Abu Dhabi, UAE



Food processing air domes



Agon-Coutainville, France



Jeddah, Saudi Arabia



Kamchatka, Russia



Tallinn, Estonia



Paris, France



Pinsk, Belarus



Cairo, Egypt



Tbilisi, Georgia



Rijeka, Croatia



Kungsbacka, Sweden



Thessaloniki, Greece



White Hart Lane, UK



Belgrade, Serbia



QPR FC, UK



FC Udinese, Italy



Abu Dhabi, UAE



Astana, Kazakhstan



Gipsy Club, Moscow



Copenhagen, Denmark



Moscow, Russia



Ljubljana, Slovenia

From order to completion the project has run like clockwork; we formed a great working relationship with DUOL and they were professional and efficient throughout, keeping us up to date with progress and dealing with any issues promptly and professionally. Importantly the project was delivered within the agreed timescale and we would not hesitate in recommending them to others, in fact we are already planning our next project with them

*Queens Park Rangers Football Club, United Kingdom
Mark Donnelly, Chief Operating Officer*



Nach 20 Jahren hatte die alte Traglufthalle des HTCB ausgedient. Wir suchten deshalb eine neue Halle für die drei Tennisplätze (36m x 54m). Nach einer intensiven Evaluation entschieden wir uns für eine Traglufthalle der Firma DUOL aus Slowenien. Die Vorteile gegenüber der alten Halle waren: Heller, besser isoliert, weniger Energie verbrauchend. Trotz der geografischen Distanz waren die Verhandlungen stets sachlich, fair und zielführend. Der Transport klappte tadellos. Die erste Installation wurde zusammen mit DUOL-Mitarbeitern und Klubmitgliedern durchgeführt. Die Klubmitglieder sind sehr zufrieden mit der neuen Halle und freuen sich darauf, nächsten Winter wieder in der Halle spielen zu können.

*Hallentennisclub Bern, Schweiz
Dr. Wolfgang Neugebauer*



In 2008 company DUOL supplied and installed football dome dim. 70x110x24m in Seinajoki, Finland. Company DUOL proved itself as a trustful business partner making its business obligations according Agreement. The dome is representative object in our community. From our point of view a decision to purchase an air supported structure was correct and done in right time due to rising needs in investments into sport. Thank to DUOL air supported structure playing football is able in every weather conditions, no matter on a season. We do hope that our community has neared an attractive kind sport such football is to wide population. And finally the most important is that our football team has got own facility for undisturbed trainings.

*Wallsport Oy, Finland
Raimo Sarajarvi, Chairman*



We built a perfect designed Olympic Pool dome for the Sports Management of TURKEY in Malatya. From the very beginning till the end, it was a total team work with all the stages are under control of DUOL professional project, production and installation crew. I recommend DUOL extensively, they are professional, reliable and gorgeous.

Oguz Kocak Ankara, Turkey



■ Resistance to extreme weather

Withstand temperatures from -55 ° C and up to +60 ° C, strong winds, storms, heavy snow, ice.

■ Very short project execution time

Just few weeks from the date of agreement till the structures is fully complete and ready to be used.

■ Seasonal flexibility

Only few days to assemble and disassemble the air dome easily and with minimal effort.

■ Ease of structure relocation

DUOL structures can be used as permanent or temporary structures that can be relocated easily.

■ Energy efficient structures

DUOL structures are energy efficient due to the fact that it can be used in a seasonal way or when only needed to be protected from certain weather conditions and can be removed when it is not needed. Besides the possibility of using the translucent membrane feature that allows the transmission of day light.

■ Conforms to all safety standards

All DUOL structures conform to all safety standards and regulations as they are resistant to fire, earthquakes and U/V. Structures are made of a double-layered extremely durable membrane that it is anti-vandal. All structures are provided with an emergency backup unit and they are eco friendly and 100% recyclable. DUOL is also certified with ISO 9001:2008 quality standards.

■ Long life span

DUOL air domes have more than 40 years life span.

■ Less cost than conventional buildings

DUOL structures require much less construction cost than traditional structures as it doesn't need sophisticated site preparation such as concrete foundation and framing and other complications that conventional buildings have. Besides the fact that it doesn't require a construction permit as it is not considered as permanent

■ Modern customizable design and branding

DUOL structures have a modern design and could be -unlike traditional building- easily branded and customized in terms of colors and logos to fit the marketing and branding plan of the client.

■ No wasted space

One of the important advantages of DUOL domes is the space saving inside the structure, due to the fact that it doesn't contain traditional buildings frames and pillars which allows several design options without wasting any available space.

■ Intelligent system

DUOL structures are featured with an intelligent and advanced control and monitoring system that automatically control the entire dome settings, it is also possible to be managed remotely via internet and smart phones.

■ Multi-purpose structures

We are specialized in several types of structures. We construct multi-purpose sports facilities, agricultural halls, logistics and industrial structures, temporary buildings (exhibition halls, entertainment places, temporary warehouses), civil purposes (hospitals, refugee camps, emergency centers) and military purposes.



Sports



Industry



Agriculture



Military



Others

Exhibition halls
Landfill Air Domes
Decontamination halls
Emergency shelters
Temporary shelter

DUOL DMS™ (DUOL Double membrane system) is most advance double membrane system available with improved thermal insulation and mechanical resistance. Thanks to excellent insulation, achieved by DMS™ there is no condensation inside the air dome. DMS™ membrane is coated with special lacquering finish like Polyvinylidene fluoride (PVDF-II) or Titanium dioxide (TiO₂) which increase materials quality, lifespan and are self-cleaning.

DUOL Fabrics

- UV, chemical and weather resistant fabrics
- Self-cleaning, fungus and mildew resistance
- Fire retardant
- High Tensile and tear strength
- Environmentally friendly, 100% Recyclable

Solutions with different thermal transmittance are available, from 3,05 W/m²K to less than 1 W/m²K:

- DUOL DMS™
- DUOL DMS Plus™
- DUOL DMS Thermo™
- DUOL 2x2™

DMS Thermo™

DMS Thermo™ is improved double membrane system without thermal bridges. Special welding system reflects in high isolation quality with U value of 1,2 W/m²K.

DMS 2x2™

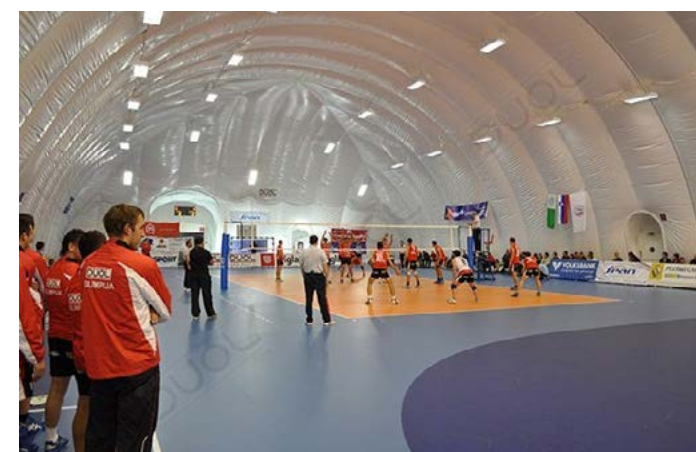
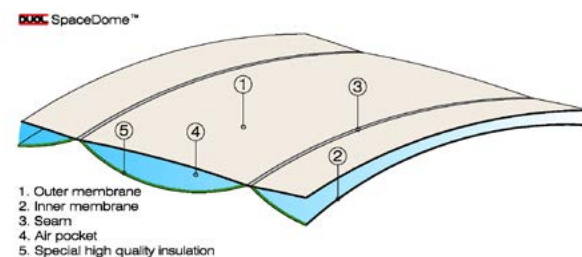
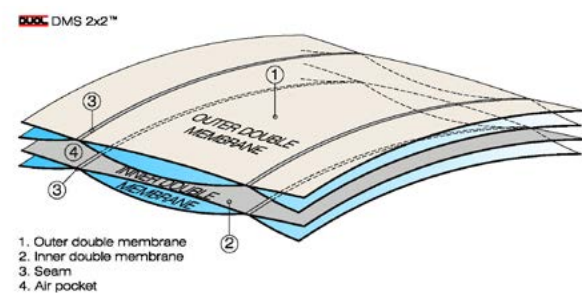
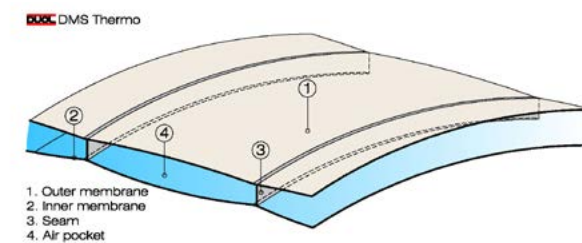
DMS 2x2™ is most advanced double membrane system with two parallel double membranes and between them there's a space without any contact from each other. Thanks to this design thermal insulation is much improved, resulting in a U value of 0,9 W/m²K.

SpaceDome™

SpaceDome™ insulation system has special insulation material placed between double membranes. This additional insulation material was firstly developed in space technology with characteristics of lowest thermal conductivity of any solid material.

Transparent membrane

Transparent membrane offers impressive 64% lights transmittance.



DUOL heating-ventilation system is pre-engineered for stability, furthermore it provides the desired climate conditions inside the dome. System is completely automatically-controlled.

- Variable Pressure Control – frequency converter reducing overall energy costs
- Improved modulating system (saving up to 35%)
- High efficiency heat exchanger
- High efficiency condensing units (up to 105% efficiency)
- Automatic programmable control (wind, snow and pressure sensors)
- Silent operation - radial fan of low noise
- Heating options: natural gas, LPG, oil, hot water or steam, electricity, heat pump, biomass, combined source.

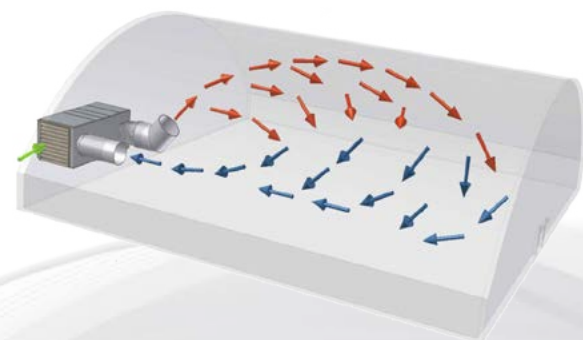


PELLET BURNER

New, self-cleaning boiler with automatic pallet loader.



DESTRATIFICATION SYSTEM



De-stratification system is mounted on the top of the dome and improves temperature distribution inside the dome – pushing the warmer air from top to down. The result is lower energy consumption and pleasant indoor environment.

Air Conditioning is available as well, and is custom designed for each project's specific requirements.



Air dome with AC system. Jeddah, Saudi Arabia.

EMERGENCY BACK-UP SYSTEM

Reliability and safety are the most important features of DUOL air domes and constant supply of power is a critical item that must not be left to chance.

- Auto start function, and automatically shutdown
- 12-24 h autonomy, which can be extended up to 100h, and more.
- Equipped with tested and reliable engines of well-known manufacturers (Iveco, Cummins, perking, Volvo ...) and alternators (Mecc Alte ...), which have service network practically all over the world.



EXTREME WEATHER CONDITIONS EXPERT

DUOL is expert in building air domes for extreme weather conditions. We enhance all elements (membrane, air generators, anchoring system...) to withstand extremely low or high temperatures with strong winds and heavy snow.



North Siberia
Outside / inside temperature:
-55°C / +20°C
Snow load: 600kg/m²



Dubai, UAE
Outside / inside temperature:
+55°C / +25°C



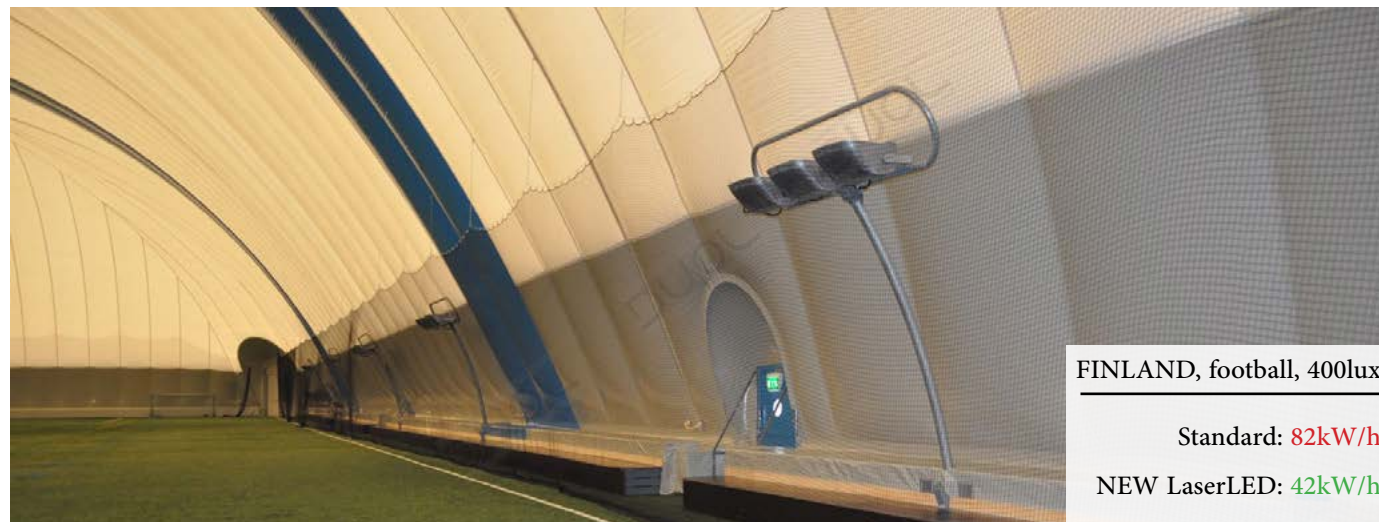
Hveragerdi, Iceland
Wind load: 200 km/h

LaserLed luminaries are using LED source for light emitting. LaserLed luminaries are suitable for operation under most difficult sport application. Construction with optical part is designed for high intensity light source with low glare as well as "no-shadow" effect. Construction is made of steel and aluminum to ensure best possible heat dissipation and long life time. One of the great advantages of LaserLed is its simplicity of construction where all parts can be substituted as well as power supply is standard one. LaserLed has possibility of remote control for dimming purposes if needed. There are many options for individual CCT according to customer needs. We can apply CCT range from 2700K and up to 6500K.

- Precise and high intensity light source
- Very low consumption, saving up to 220%
- High system efficiency (lm/W)
- Unique low glare, wide angle light distribution
- Low maintenance costs
- ECO certificated with environment friendly technology
- Lifetime 100000hours

LASERLED PRO700

- For indirect light applications. Air dome structure height up to 45m
- Power 670W
- Luminaire flux: 97000lm



FINLAND, football, 400lux
Standard: 82kW/h
NEW LaserLED: 42kW/h



NORWAY, football, 1000lux
Standard: 196kW/h
NEW LaserLED: 98kW/h



FINLAND, football, 500lux
Standard: 96kW/h
NEW LaserLED: 48kW/h

LASERLED PRO200

- For direct light applications.
- Air dome structure height from 5m-22m height
- Power 200W
- Luminaire flux: 29000lm



GERMANY, two tennis, 500lux
Standard: 12.7kW/h
NEW LaserLED: 3.8kW/h



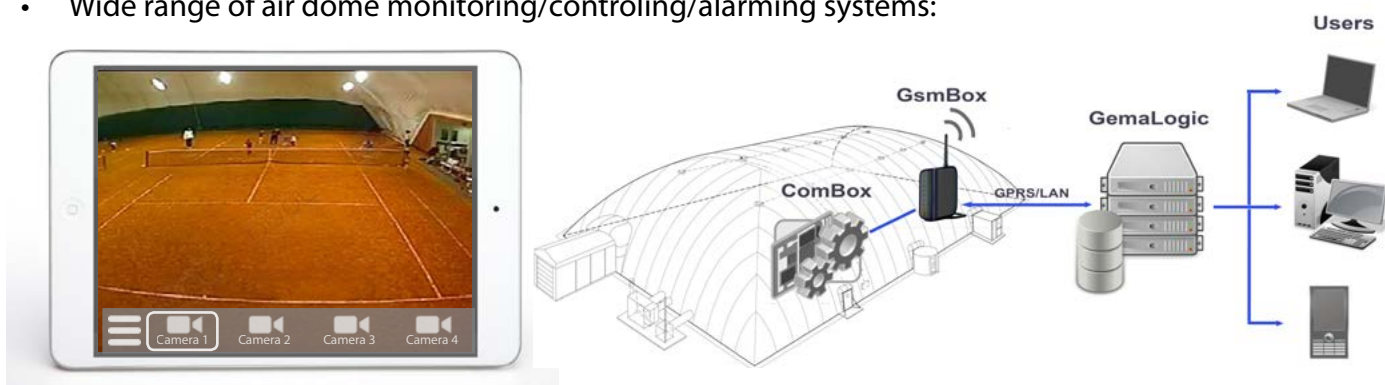
SWITZERLAND, three tennis, 300lux
Standard: 13.2kW/h
NEW LaserLED: 4.9kW/h



FRANCE, multipurpose, 800lux
Standard: 26.5kW/h
NEW LaserLED: 6.6kW/h

DUOL Intellergy is an innovative solution for supervision and automation of air domes. The installed programmable logic controller (PLC) interacts with different air dome systems and is used for supervision, automation and control solution. The technical data and alarms are transmitted (SMS, email, internet) and can be managed remotely. Users have easy access via web cloud base application where data are stored and accessed also by smartphones.

- Supervision, alarming and automation
- Remote data acquisition
- Data logging and history
- Modular design
- Wide range of air dome monitoring/controlling/alarming systems:



WHY TO INSTALL INTELLERGY SYSTEM?

- Saves energy
- Saves time
- Automatization of daily/repeating tasks
- 24/7 monitoring & control, from anywhere through smartphone, tablet or computer
- User-friendly and customisable



Every structure needs a solid foundation to keep it anchored and secure. With the DUOL advanced anchorage system, air loss around the base perimeter is greatly reduced, providing savings on inflation.

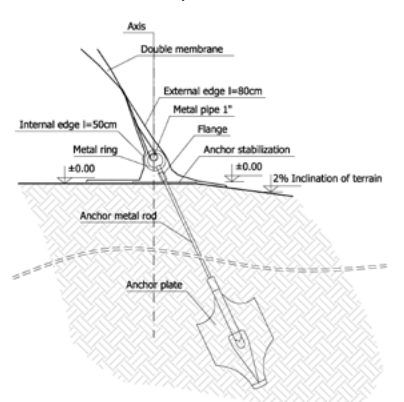
- Perfect airtight
- Powerful fixation.
- Suitable for extreme weather conditions
- For permanent or seasonal use of the dome
- Durable hot galvanized steel. Maintenance free



Rings with peg crossed by a metal tube



Metal profiles



ANCHORING WITHOUT CONCRETE FOUNDATION

With ground-anchoring system there is no need for concrete foundation around air dome. By using ground anchors, air dome is anchored directly into ground.

CONNECTION OPTIONS

Air structures can be fixed to other buildings in a variety of ways. If the need arises for a larger facility, expanding or modifying an air structure is a simple procedure and can be accomplished with a minimum of disruption. Air dome can be shortened, prolonged or relocated at any time, even doors, tunnels and connections to buildings can be added additionally.

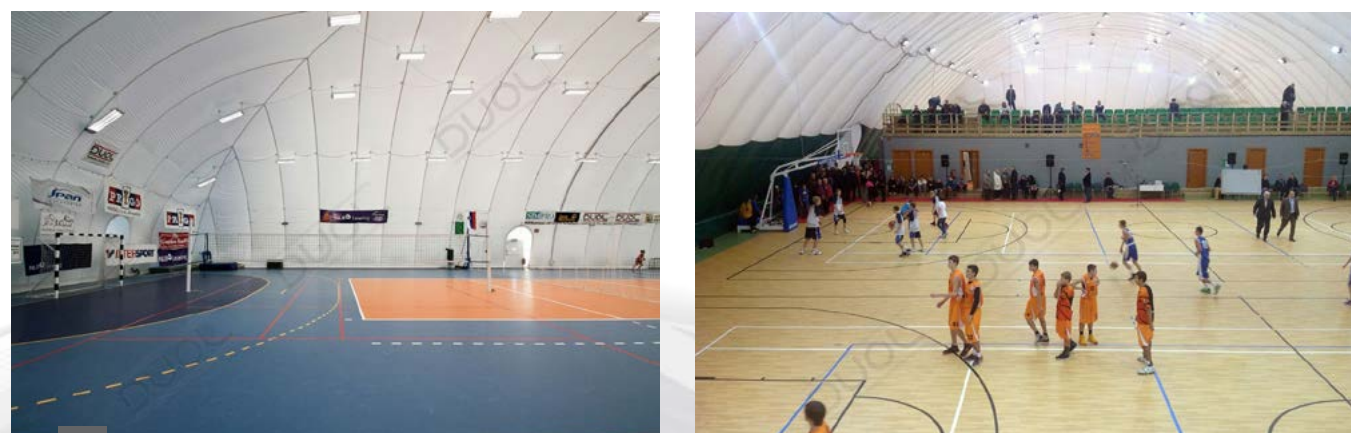


AIR DOME ON THE TOP OF BUILDING

Air dome has a flexible design that it can be installed even on top of existing buildings.



As company involved in sport segment over 20 years we are closely linked to trusted suppliers of air dome interior and we can deliver for you completely equipped turn-key sport object, including: stands, offices, changing rooms, toilets, sports flooring, sports equipment, dividing nets and others.



DUOL air domes can be custom-designed according to client's specifications. Different colors, designs and logos are possible.





DUOL distributor for the Nordic countries

ScandiHall Scandinavia AS

Storgaten 18

NO-3060 Svelvik, Norway



+47 32 26 35 00



+47 32 26 35 01



post@scandihall.no



www.scandihall.eu