



WORLD WIDE WEAVE

Muscat International Airport:

Metallic fabric lends the gateway to Arabian Nights a modern face

As one of the most sparsely populated countries in the world, Oman has transformed in just five decades from an underdeveloped Bedouin country to a modern state. Today, the Sultanate in the south-east of the Arabian Peninsula is considered the safest country in the Middle East and, as such, is becoming an ever more attractive destination for business and leisure travel. In order to keep pace with the rapid growth that this has brought about, the Gulf State is investing billions in expanding its airport infrastructure. The largest and most significant project is the reconstruction of Muscat International Airport, designed by Danish architects COWI/LARSEN. In operation since 1972, it experienced the third-largest increase in passenger numbers worldwide in the period 2012 – 2016 according to figures from the International Air Transport Association (IATA). The reconstruction was performed to the latest technical standards and combines great convenience with high-class aesthetics. Metal fabric from GKD – Gebr. Kufferath AG (GKD) makes a considerable contribution to the understated elegance of the passenger terminal: it gives a virtuoso display of the full range of its design possibilities in twelve different applications. Fascinating ceiling and wall solutions, room dividers, and large-scale transparent media façades from the MEDIAMESH® family are setting new standards for contemporary airport design.

Oman borders with Yemen in the south, Saudi Arabia in the west, and the United Arab Emirates in the northwest. Its coastline is almost 2,000 kilometers long with picture-perfect beaches reminiscent of the Caribbean



and a fascinating underwater world. Combined with its spectacular mountain and desert landscapes far from the tourist hoards this makes the country an inside tip for those seeking a relaxing vacation and adventurers alike. Oman pairs this extraordinary diversity of landscapes with authenticity and discreet luxury. You won't find the gigantomania of the Emirates here: there are neither skyscrapers nor artificial natural wonders vying for attention. Instead, oriental souks and an architecture that calmly reflects the evolved culture of the country enable you to experience the Orient as if in a fairytale. The country draws its special charm from a natural interplay between the flair of Arabian Nights and cosmopolitan modernism.

Just 30 kilometers west of the capital, Muscat, lies the largest and most heavily frequented airport in the Sultanate. As the air traffic hub for Oman, it serves 55 international destinations on the Gulf, in the Middle East, Europe, and the Far East. Its 1.8 billion USD expansion is the largest infrastructure project in the history of the Sultanate. A second runway and a new control tower – as a requirement for serving wide-bodied aircraft like the A380 – marked the start of construction in 2014. The opening of the new passenger terminal planned for March 20, 2018 is the response to the increase in passenger volume, which is growing by ten percent every year. 14 million passengers were counted in 2017, 16.5 million are expected in 2018, and 20 million in 2020. For them, the new airport offers an ultramodern infrastructure spanning a total area of 335,000 square meters with a 12,000-square-meter duty-free area and 8,000 parking spaces. 86 check-in desks – 30 for departures and 56 for arrivals -, 29 air bridges, 40 arrival and departure gates, 29 lounges, ten luggage carousels, 149 elevators, various restaurants and cafés, and a hotel with 90 beds make the airport a high-throughput gateway to the world. Architecturally, the building consists of three wings arranged in a row, each with three floors. It is characterized by an elegant



lightweight roof with exposed steel construction and the consistently implemented concept of inviting openness and transparency. Light, natural colors, lots of glass, steel, and marble, and discreet golden accents create a high-class atmosphere with no overt showiness. Its modern interior with subtle Omani overtones succeeds in melding tradition and future.

Grid ceilings reinvented

GKD metal fabric plays a key role in its design. Various ceiling solutions (suspended or as grid constructions), wall hangings and room dividers made from *Lamelle* fabric, and three large, transparent media façades shape the feel of the space in all parts of the building. A total of 5,865 square meters of stainless steel fabric were used. A suspended ceiling above the car rental area conveys an initial impression of the extraordinarily versatile design potential of the woven texture as soon as you step into the arrivals level of Muscat International Airport. 60 panels, each around one meter wide and two meters long, form a grid ceiling whose shimmering elegance is highlighted by downlights integrated into the fabric. Aluminum frames hold the pretensioned panels, which were also riveted to a central rod in order to ensure that the tension is maintained. The client opted for the same system in the third wing, where 200 square meters of this grid ceiling mark the transitions to both the north and south piers. The immigration counters mark another optical highlight in the central wing with their projecting roofs made from stainless steel fabric. 52 panels – tensioned in frames in a tightly packed arrangement – cover the desks here over 465 square meters, creating a representative welcome area. Light strips in the joints give rhythm to the canopy and, together with diffuse reflection from the indirect lighting, make the fabric appear different from every angle.



Spectacularly canopied moving walkways and escalators

The largest and most spectacular use of fabric in the new airport awaits passengers in the three piers. Over 3,210 square meters of a custom fabric developed specially for Muscat make for a very special spatial experience here. 210 fabric elements shimmering in a soft gold tone form semitransparent modern baldachins above the moving walkways flanked by large palm trees. Connected to the formative steel construction fitted with downlights, the curved elements arch above travelers like a protective roof on their long journey through the pier. Originally the client had considered the delicate GKD bronze fabric *Mandarin* for this construction. However, as this was not suitable for this application in terms of both stability and color accuracy – bronze forms a patina under the influence of humidity – GKD developed a new *Lamelle* fabric with a similar look. Aluminum weft wires coated a bronze color in a continuous process and natural-finish stainless steel warp wires combine fine optics with low weight and the required robustness. As such, the steel construction above the panels shines through the delicate membrane and gives the fabric the feel of a leafy canopy shot through with veins. This effect is underlined by a light strip running down the middle, the branches of which distribute their mild light diffusely. In every pier, 70 of these bronze colored panels gently reflect light and movements, making the way to or from the airplane a fascinating experience. No less impressive are the canopies of the six escalators from the arrivals to the departures level and on to the hotel. Four panels made of stainless steel fabric, each almost 13 meters long and up to 1.25 meters wide, follow their course in a giant curve along the entire length. Hung freely with 240-millimeter-wide joints, they cleverly conceal the technical installations and stage the escalator journeys as a glamorous event through refined reflections.



Decorative and safe wall design

In the retail area in the third wing, GKD stainless steel fabric provides decorative highlights in the form of large-scale wall-hangings. 20 panels, each six meters high and three meters wide, were mounted vertically in front of a high glass parapet like oversized wall paintings. Their metallic shimmer lends the glass balustrade an elegant air without impairing its transparency. Their optical counterpart can be found on the opposite side in the form of a further twelve panels in front of a white wall – each of them 7.5 meters high and 3.35 meters wide. Ten panels with a total area of 160 square meters flank each side of a large mixed-media screen. Suspended between the floor and ceiling one-and-a-half meters in front of the hotel windows, they filter the hotel guests' view of the artificial gardens like a fine veil. In the oversize baggage claim area, the attractive fabric also demonstrates its functional properties in quite an impressive way: ceiling-high room dividers with integrated sliding doors form a security area with restricted access. As an elegant partition, however, they provide an unencumbered view of the goods arriving on the baggage belt at all times. Understated light reflections also transform this application into a high-quality eyecatcher.

Transparent media façades combined in new ways

The blanket use of the GKD metal fabric is crowned by three gigantic transparent media façade systems in the second and third wings. In baggage claim on the arrivals level, a 15-meter-wide and 4.10-meter-high MEDIAMESH® screen impressively displays what it can do. Produced from Tigris stainless steel fabric with integrated LED profiles, all eyes are drawn to this gigantic platform for advertising and entertainment. Its visually seamless construction consisting of five panels guarantees brilliant image quality around the clock with a total of 44,000 SMD pixels (Surface Mounted Devices). Each of these pixels consists of two square SMD LEDs. In addition



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to the high playing quality and optical lightness of the screen, it was also the transparency in particular that spoke in favor of this patented system from GKD. The giant display affords visitors in the pick-up and catering area behind it an unencumbered view of the baggage claim area – without them seeing what is playing. Another two transparent media façades await passengers at passport control, where an 8.50-meter-high and 15-meter-wide ILLUMESH[®] screen illuminates the wall between the two rear wings. What is special about this transparent media system are the rows of LEDs mounted horizontally in special holders in front of the fabric. The play of colors that they project onto the round stainless steel wires is reflected as a three-dimensional hologram effect. This creates a fascinating illumination that transforms the wall into a huge work of art with ever-changing color compositions. In front of the gateway to the retail area, the third transparent media façade unites both systems in an enormous mixed-media screen. 14.3 meters high and 27 meters wide, it is comprised of nine panels. Four of them, the two outer panels on each side, are made from ILLUMESH[®]. The five central panels combine ten meters of ILLUMESH[®] in the top section with 4.3 meters of MEDIAMESH[®] in the lower section. The effect of this first-time realization of a mixed-media screen is impressive: in a richly colored frame of ILLUMESH[®] fabric, the 15-meter-wide MEDIAMESH[®] really draws attention to the advertising and entertainment clips. Like all MEDIAMESH[®] systems, this, too, impresses through its high-grade aesthetics, delicate transparency, and concealed wiring. To ensure maximum ease of maintenance and spare-part efficiency for the media façades, GKD selected the same rows of LEDs for all three displays, regardless of the system. GKD was in charge of the planning, development of the substructure, and assembly of all three screens – a truly herculean task as the limited space and load-bearing capacities of the ceilings did not permit the use of a crane. What's more, fastening the screens to the prestressed concrete ceilings required special solutions



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everywhere, as drill holes were not an option for static reasons. For the ILLUMESH® screen, GKD therefore developed special adapter pieces to fasten it to existing anchors. For the MEDIAMESH® display, the mesh experts were able to use existing girders on an upper story to which they fixed the screen with a special attachment system.

After almost ten years of planning and construction for the airport, the result speaks for itself: in terms of design, passenger handling efficiency, and recreation quality, the new passenger terminal of Muscat International Airport is exemplary in many respects for pioneering airport architecture. The solutions made from GKD metal fabric that were used here provide virtually boundless inspiration for realizing such architecture – functional versatility at its best.

12.645 characters incl. spaces

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As a privately owned technical weaver, GKD - Gebr. Kufferath AG is the world market leader in metal, synthetic and spiral mesh solutions. Four independent business divisions bundle their expertise under one roof: Industrial Mesh (woven metal mesh and filter solutions), Process Belts (belts made of mesh and spirals), Architectural meshes (façades, safety and interior design made of metal fabrics) and Mediamesh® (Transparent media façades). With its headquarter in Germany and five other facilities in the US, South Africa, China, India and Chile – as well as its branches in France,



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Spain, Dubai and worldwide representatives, GKD is close to markets anywhere in the world.

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