



AIRPORTS AND AVIATION





Structured space

for Barajas Madrid International Air

Soaring into the sky above busy runways and terminal buildings, a new control tower stands sentinel over the safety and speed of rapidly increasing international air traffic.

Spacious connections

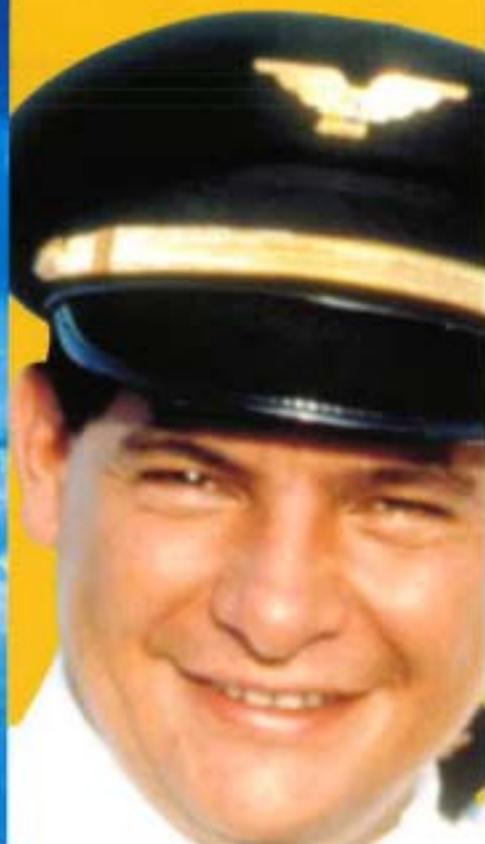
Already a regional landmark, the new control tower at Barajas Madrid Airport went into operation only 39 weeks after construction began. Towering 70 meters into the sky, it is symbolic of ARCADIS' far-sighted approach to airport construction projects. In a recent joint venture, the highly experienced aerospace team at Eptisa, the Spanish ARCADIS company in Madrid, brought their specialized skills to their management of the Barajas expansion project. The pre-constructed, reinforced concrete column bears a spacious control room, built for the future. At the base of the column, pleasantly terraced buildings below ground level contain the offices and maintenance

areas, while the column itself houses much of the sophisticated technical equipment needed to run this most modern control tower. Supervision of a construction of this kind calls for a market leader who understands the requirements of quality and safety, comfort and security, and adherence to local regulations. The ARCADIS network of engineering consultants and advisors stands out above the rest. Because we combine these skills with an expert vision of the future.

Room to maneuver

The control tower at Barajas Madrid Airport is situated between the existing terminal with its aprons, taxiways and runways and a brand new runway that was part of the recent expansion project. The huge, four kilometers long runway with its parallel taxiway is the longest in Europe. It too was completed in record time; it went into use only 1 1/2 years after construction began. At Barajas Madrid, preparatory ground leveling and stream diversion work has been done and the platform created for the new terminal, planned for the year

"Delays are a thing of the past for international flights from Barajas Madrid Airport. The new taxiway and runway provide comfortable Fast Exit Lanes for departures."



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port

2004. Keeping track of all the logistics while ensuring that everything is ready on time – and within budget – is where ARCADIS excels. Put it down to experience. Because we know what's important in airport construction.

Accessible expertise

Maintenance buildings and baggage-handling tunnels contribute to efficient processing, and approach and runway lighting installations make safe landing and take-off procedures easier for air traffic, even in Madrid's difficult climate at high elevation. With temperatures ranging from below zero in winter to over 40 Celsius in mid-summer, air conditioning is not the only concern. Barajas Madrid has added a special de-icing area near the new runway, with room for 4 or more airplanes at one time.

The wide-spread impact of airport construction and expansion affects urban development, making it important to be able to call on specialists in tunneling, waterway construction, road



and rail access and noise abatement, as well as terminal building, runway construction, and technologically sophisticated control towers. That's why ARCADIS combines the knowledge of all relevant disciplines in local teams with the skills of international experts throughout the world. So that wherever you are, and whatever your construction project entails, our total expertise is always accessible to you.

Reinforced experience

Aviation and airports are an important investment in regional and national prestige, creating direct, indirect and induced employment opportunities, and ensuring economic progress well into the future. Global investments are expected to see a 10% growth in this sector in the coming years. In fact, the constant growth of demands for new airport infrastructure actually exceeds overall global growth in trade and economy. In the past, ARCADIS has handled a number of projects for airports throughout the world. Evaluation of requirements, continuous analysis, planning, material checks and overall quality control: these are just a few of the skills provided by the ARCADIS teams of experts in architecture, logistics, environment, logistics and finance.

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PART OF A BIGGER PICTURE

Planning for perfection

ARCADIS creates the masterplans that cover every detail of a project: From preliminary studies to building supervision, including details of local legislation, regulatory requirements and the overall social impact. We provide traffic forecasts and land-use assessments, analysis of flight approaches and noise contours, air and land logistics, accessibility and construction planning to optimize the urban environment. In The Netherlands, for instance, ARCADIS has provided studies for a North Sea site extension to Amsterdam Schiphol airport, including all the road and underground rail access possibilities. Our in-house and associate experts on transport and economy also assess the capital investment and maintenance costs. Because ARCADIS doesn't stop at enhancing the present situation. We're committed to building for the future.

Continuous renewal

The environmental impact of airports and aviation has far-reaching effects, subject to national laws. ARCADIS has carried out Environment Impact Assessments for many airport extensions, among others for Berlin in Germany and the Maastricht/Aachen airport in The Netherlands, and is a leader in this field. In noise abatement projects, too, ARCADIS has invaluable experience. In Madrid, 5,000 houses have been insulated against noise from the expanding Barajas airport, and more than thirty insulation projects have been completed in the Netherlands alone. From kerosene spill recovery to landscaping, ARCADIS finds innovative solutions for the continual renewal of soil conservation and safety. Winnerway® green infrastructural energy is one such innovation. Often, the wear-and-tear of runways, taxiways and large parking areas is accelerated by deformations caused by severe weather conditions. Winnerway® reduces deterioration



by utilizing the energy gained through the large asphalt surfaces for temperature control. The resulting benefit is greatly reduced maintenance costs.

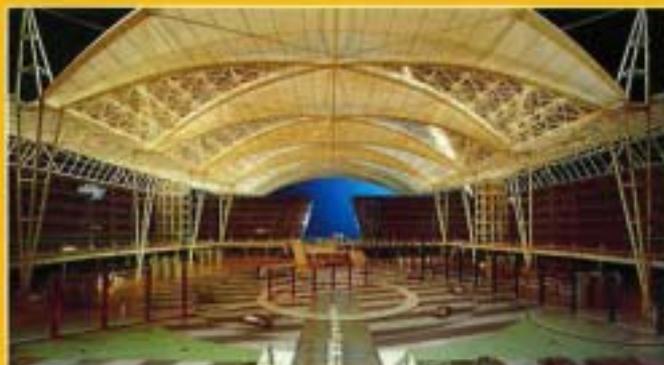
ARCADIS designs and supervises constructions worth billions of dollars annually. Complex aerospace projects can include terminals, runways, taxiways, aprons, and the surrounding infrastructural network needed to access the airport. Entire terminal designs where ARCADIS has been actively involved can be seen all over the world, from the Munich Airport Center to the International Airport of Santiago de Chile. Many projects are viable private financing enterprises. Here too, ARCADIS has specialist services to offer. Financial viability analyses can be carried out by in-house and associated institutes or banks, and financial consortiums established to fund the project. With our experience, we're accustomed to taking the lead.

Committed to the future

With over 7,000 employees and around 200 subsidiaries and business partners in more than 100 countries, ARCADIS is a world-class consulting and engineering organization. Our philosophy is to contribute to the quality of the environment by providing multi-disciplinary, integrated solutions for constructions and infrastructure projects. ARCADIS answers the challenge of combining construction with respect for the environment through understanding of the social and ecological impact. We're aware of our responsibilities, because we're committed to each other, to our customers, and to the future. ARCADIS is simply part of a bigger picture.



Our recent projects



Munich Airport Centre, Germany

High-quality offices and traffic areas were a necessary addition to Munich Airport to accommodate increasing numbers of passengers. The construction creates a spatial connection between the existing and planned terminal. ARCADIS handled structural design and project construction supervision.



Amsterdam Airport Schiphol, The Netherlands

The Netherlands' national airport is continually expanding to accommodate increasing traffic. ARCADIS has accomplished considerable projects at Schiphol covering improvement of road and rail access, heating methods for snow and ice control, infrastructure studies, extensive insulation of dwellings and other buildings for noise abatement, project management of the complex execution of construction work, heating installations, and energy-saving lighting, to name but a few.



Princess Juliana Airport, St. Maarten, Netherlands Antilles

The number of passenger movements exceeded 1 million in 1991, with over 63,800 aircraft movements, some with a take-off weight of 170,000 lbs or more. The runway pavement suffered rutting and deformation. ARCADIS handled evaluation, design, testing, resurfacing, construction and management of runways.



Study North Sea Airport

With Amsterdam Airport Schiphol reaching the limits of its capacity, plans for an additional off-shore location are a matter of urgency. Reconnaissance studies include shuttle connections with the existing airport, TGV rail access and other transport systems, assessment of the environmental impact, signaling and telecommunications facilities. ARCADIS activities: Reconnaissance studies, planning, infrastructure investigation, and financial analysis.

ARCADIS

Our fields of operation

- Rail infrastructure
- Road infrastructure
- Ports
- Regional development
- Commercial/public buildings
- Industrial construction
- Consultancy
- Project management
- Construction site management
- Telecommunications

Our services

- Throughput forecasts
- Regional planning
- Master planning
- Site selection
- Sanitation and waste management
- Impact assessments
- Noise abatement
- Soil conservation
- Landscaping
- Terminal buildings
- Runways, taxiways and aprons
- Road and rail access
- Utilities and systems
- Energy management
- Viability studies
- Financial engineering
- Re-structuring and privatisation
- Public-Private Partnership

Additional projects

- Hahn Airport, Germany
- International Airport Santiago, Chile
- International Airport Badak Jakarta, Indonesia
- Airforce base Mersam, Egypt
- Kigali Airport, Rwanda
- International Airport Berlin, Germany
- Cobb County Airport, United States
- I.Yrasquin Airport, Saba
- E.D. Roosevelt Airport, St. Eustatius
- Camp Davis Marine Corps Air Station, United States
- Tan Son Nhat International Airport, Vietnam
- Airport Frankfurt/Main, Germany
- Greenville-Spartanburg Airport, United States