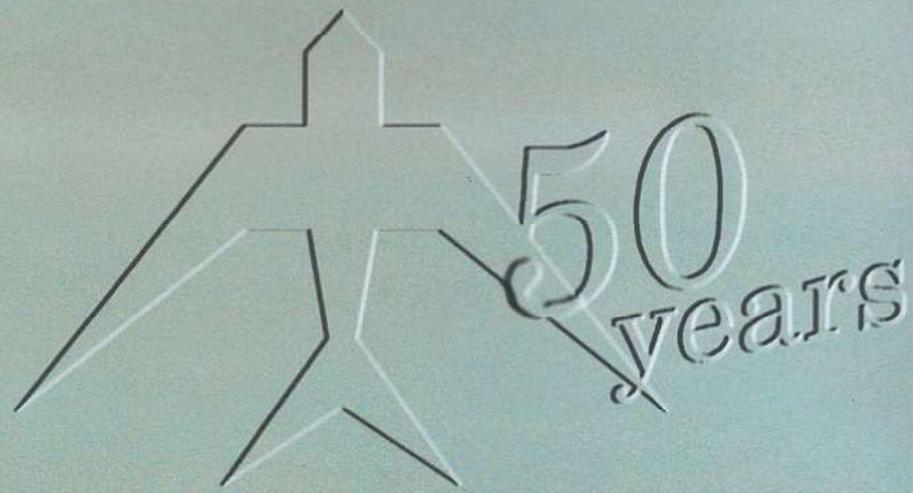




AERONAVALI

LIA

Leonardo Innovation Archives

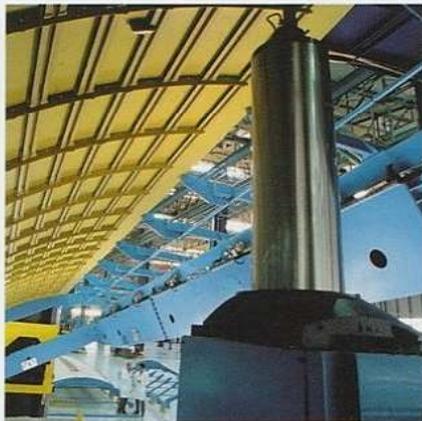


AERONAVALI



LIA

Leonardo Innovation Archives



Alenia Aerospazio is the Italian leader in aeronautics and space. Alenia Aerospazio is a Company of Finmeccanica, Italy's world class high-tech engineering group which is among the leading players in the global aerospace, defense systems, energy, transportation, automation markets.

In the aeronautical field, the activities are managed by the Aeronautics Division, and include the design and production of commercial and military transport aircraft, defense aircraft, mission system and aerostructures.

The aircraft modification and overhaul activities are performed by its coordinated company, Aeronavali Venezia.

Among the most important aeronautical programs are the Eurofighter Typhon air superiority aircraft; the AMX-ATA

advanced trainer and attack aircraft; the Tornado multirole aircraft; the C-27J tactical transport aircraft, the ATR family of commuter aircraft; the A400M, large transport aircraft; the overhaul and conversion of large commercial aircraft such, the DC8, DC10 and MD11, the participation in major international programs for commercial aircraft, such as 717, 767, 777, A330, A340, A321, Falcon 400 and 2000.

The plants



Aeronavali Venice



Aeronavali Naples



The Activities

Passenger to freighter modifications

Large and small aircraft maintenance

Large and small aircraft structural modifications

Large and small interior modifications

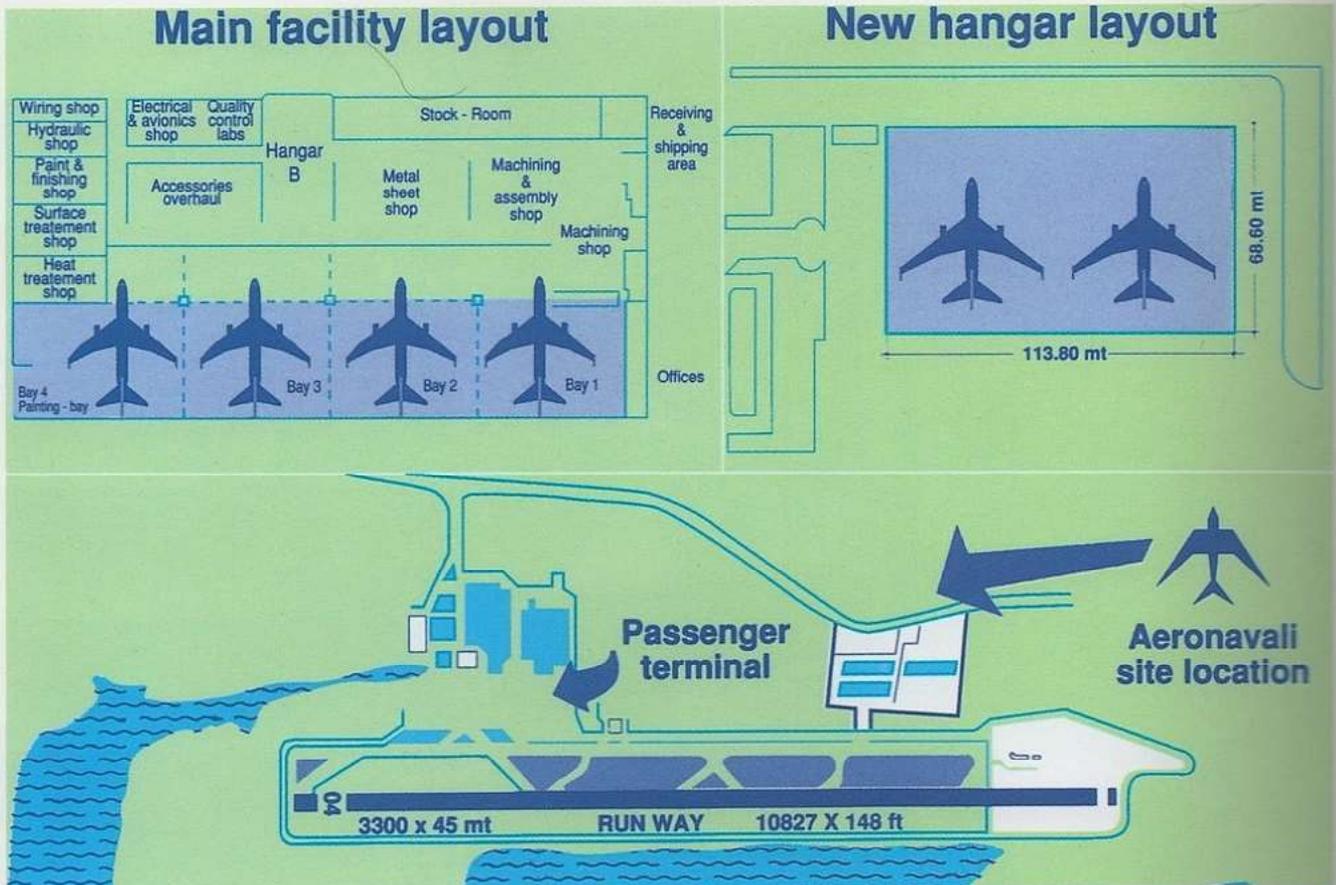
Design of customized avionics packages

Re-engining programs

Product support / technical services



Facilities and capability

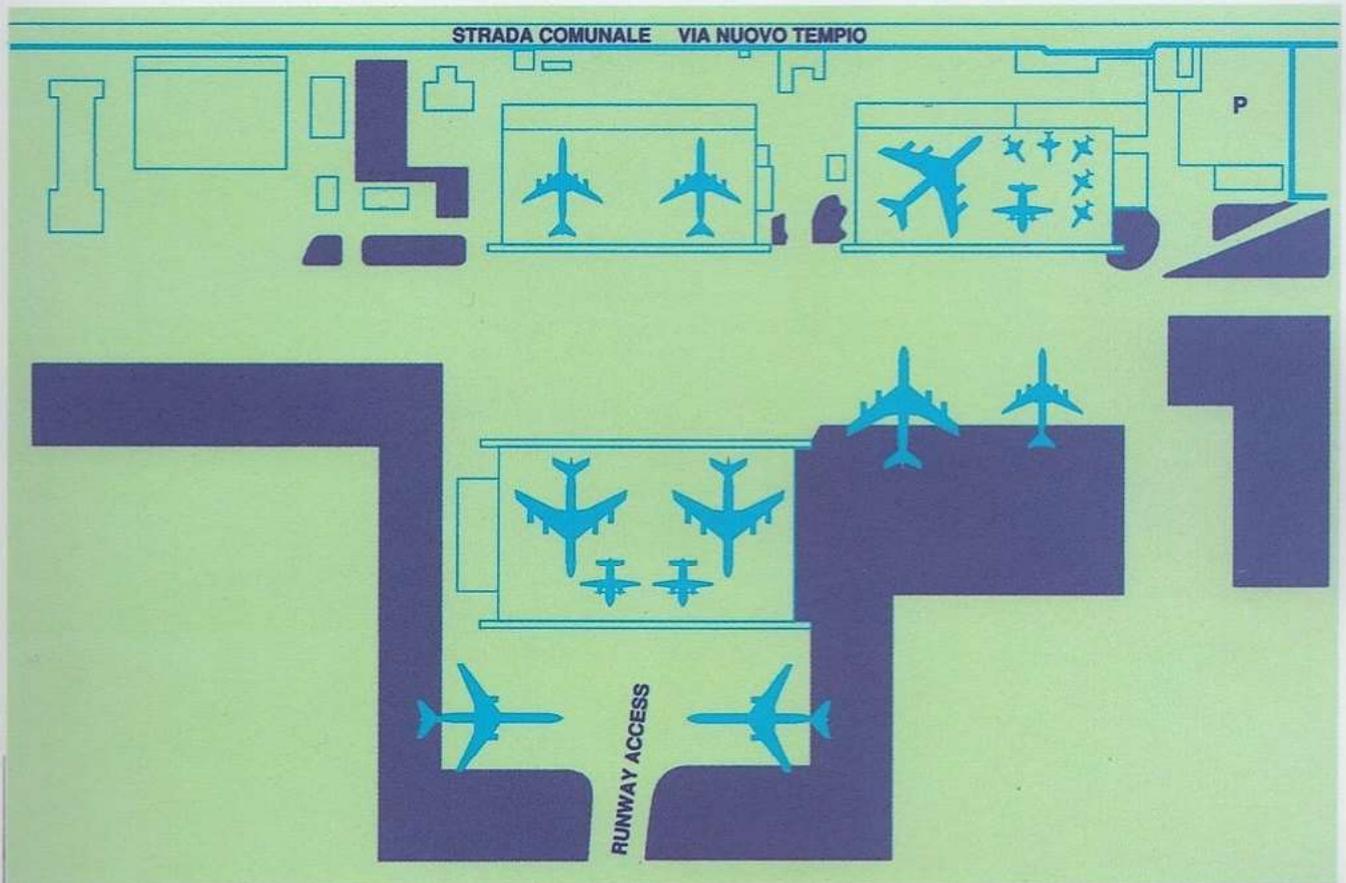


Venice layout

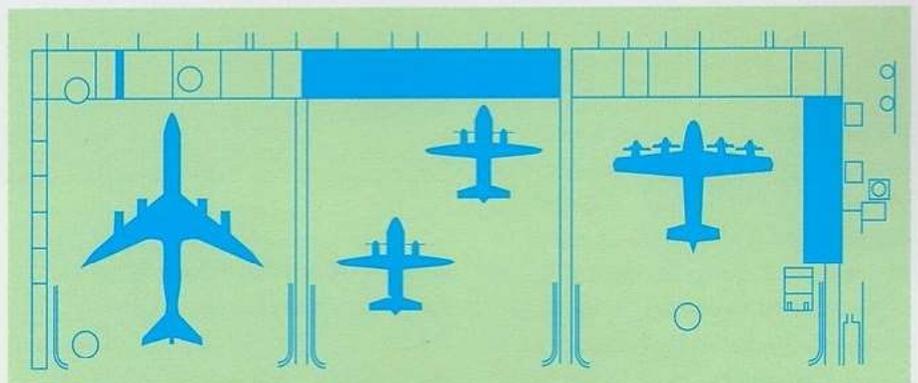
Aeronavali operates in three industrial sites strategically located in Venice, Naples and Brindisi. Today the Company relies on around 855,000 sq. ft. of hangars and workshops and a total of 1,650 highly skilled workforce which average over 15 years experience working on aircraft structures, systems and support services. The facilities, that include four high bay hangars (two in Venice, one in Naples and one in Brindisi), can accommodate up to 8 wide-body and 10 narrow-body aircraft simultaneously.

Aeronavali provides the entire spectrum of aeronautical activities to face all the Customer requirements in terms of aircraft Modification, Maintenance and Upgrading and Parts Manufacturing: Dedicated Painting Bay, to accommodate up to MD-11 platforms, back-shops and treatment capabilities to fabricate the parts needed to sustain all the Modification and Maintenance tasks, skilled Engineering, Planning, Quality Assurance and Technical Services to support and resolve any technical issue with constant direct interface

with OEMs, Contracts, Purchasing and Administrative Staff to coordinate, manage and assist any Customer's need.



Capodichino (Naples) layout



Brindisi layout

LIA

Aircraft maintenance and overhaul



Maintenance in the Naples hangar

Aeronavali has extensive experience over the entire spectrum of airframe maintenance and overhaul.

Aeronavali provides services on narrow and wide body aircraft which include light and heavy checks, corrosion treatment and control, cabin configuration conversions, fuel tank resealing and complete aircraft stripping and painting.

In the Maintenance and Overhaul business, Aeronavali is taking advantage of the long experience matured, since the years of the World War II, in the field of aircraft maintenance and structural repair.

Today Aeronavali has developed great experience in the heavy maintenance services, especially on Boeing products such as DC-8, DC-10 and MD80 aircraft.

Aeronavali experience on DC-10 checks is worth of Heavy Maintenance Visits according to different Maintenance Standards (KSSU, OAMP, ATLAS) including also the latest version MSG3.

The services of Aeronavali are completed by the maintenance



Wide bodies servicing in Aeronavali Venice

support offered to ATR 42/72 operators in the European and African regions.

More than 50 ATR aircraft are returned into service every year for operations from A-Check through 8Yr-Check up to 24,000 Flight Cycles.

Heavy Maintenance is also performed by Aeronavali on Military Aircraft. Namely, Italian Airforce G222, C130H, Breguet Atlantic BR-1150 and B707 Tanker/Transport fleet are also

supported by Aeronavali for all the Heavy Maintenance requirements: engineering, logistics and spare parts supply are among those activities provided in the frame of annual comprehensive contracts.

In particular the four B707 T/T aircraft are supported at their main base of Pratica di Mare (Rome) by Aeronavali personnel. Aeronavali has license and capabilities to perform up to depot level maintenance on the Italian Air Force



E-3A Awacs maintenance



C130 Maintenance at Brindisi plant

C130H aircraft. More than 150 aircraft have been serviced at Aeronavali in Brindisi for major customers like I.A.F and U.S.A.F. Aeronavali also provides the I.A.F C130H fleet at Pisa Air Base with Technical, Spare and Logistic Supports.

As a NATO Source of Repair, Aeronavali has been tasked with the responsibility of carrying out the DLM (Depot Level Maintenance) of NATO's E-3A AWACS and B707 TCA

(Trainer Cargo Aircraft).

The Company is also providing field service in the emergency maintenance support, on an "around-the-clock" basis.

Aeronavali has been designated by the major aircraft manufacturing companies as an important center for maintenance and modification of aging aircraft.

In order to assure total aircraft support, Aeronavali offers a variety of ancillary services.

Facilities are available for the inspection, disassembly and rebuild of power-plants and propellers. Field teams can be organized for special assignments such as salvage and recovery of crash damaged aircraft.

Aeronavali field teams have been performing on-site and shipboard emergency repairs to aircraft and helicopters assigned to the US Navy since 1977

Engineering - Quality - Certification



Aeronavali's Quality Assurance program conforms to the manufacturer specifications and to the standards of the airworthiness authorities.

Stringent controls ensure the highest possible quality for the products and services being performed.

Non-destructive testing of the structures, components and engines is performed by using the most advanced techniques available in the market.

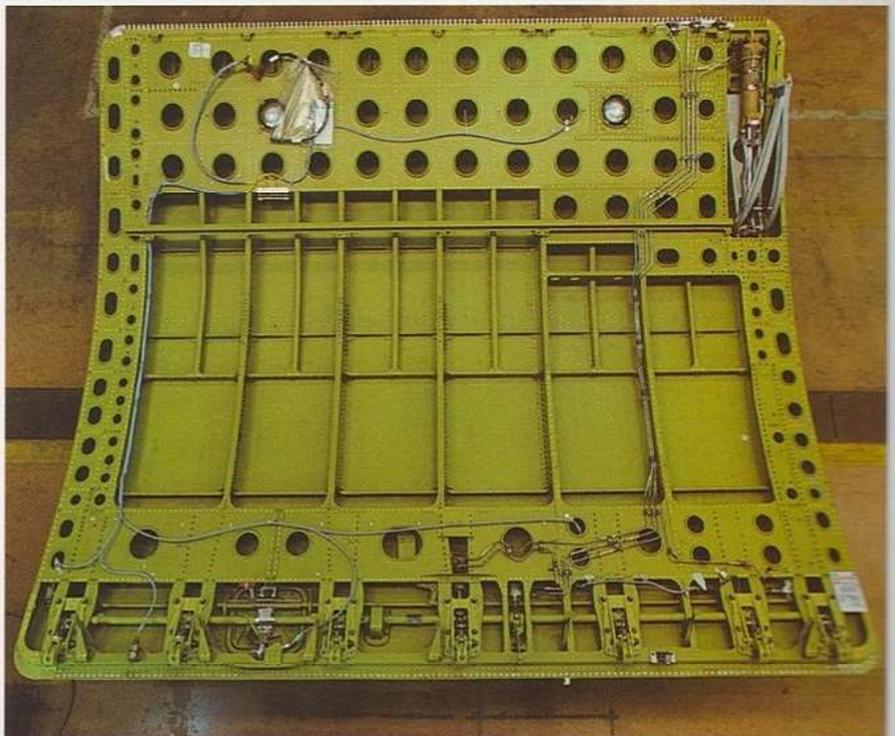
Aeronavali is an FAA certified repair station since 1963 for the Venice plant (FAA certificate no. C01Y067K) and for the Naples plant (FAA certificate no. C012067K) and is also certified by the Italian Ministry of Defense (certificate no. 446). Since 1986, Aeronavali is also qualified by NATO Airborne Early Warning Force Command as an E-3A Source of Repair.

In 1994 Aeronavali has been certified by JAA as a JAR145 Approved Maintenance Organization (certificate no. RAI-142).

In 1998 Aeronavali has been also certified by RAI/JAA as an Approved Production Organization, in accordance with JAR 21 Subpart G (certificate no. RAI.G.003). Newly incorporated Brindisi Plant



G222/C27J



DC-10 cargo door manufacturing

has already obtained the Italian Ministry of Defense certificate of acknowledgment renewal for its quality control system, pursuant to the AER-Q-110 regulation. All the necessary actions are in process in

order to obtain for the Brindisi Plant all the certifications already held by the other Aeronavali plants, (FAA and JAR 145) in order to expand Aeronavali capabilities both in military and commercial programs.



DC-10-40 after the conversion to freighter



Italian Air Force B707 Tanker



Italian Air Force BR-1150 Atlantic





AERONAVALI

Passenger to Freighter and Aircraft Modifications Programs



MD11 after cargo modification

The technical resources of Aeronavali have been used to accomplish activities on aircraft ranging from simple kit installation, Airworthiness Directives and Service Bulletins embodiment to the total rebuilding of entire fuselage sections.

The Aeronavali's Passenger to Freighter Programs started in 1985 with the first DC-8 converted into full freighter configuration. The DC-8 program, with a total of 47 aircraft converted, was so successful that McDonnell Douglas (today Boeing) and Alenia signed an Exclusive License for the Freighter Conversion of DC-10 aircraft. This means that the customers that buy a DC-10 converted at Aeronavali are acquiring not only a first-class product, but also the devotion of an entire organization that will grant each conversion with the recognition of the Original Aircraft Manufacturer that will acknowledge the airplane to the new full freighter role for its entire remaining life. In the last years Aeronavali made a massive effort to the development of a Passenger to Freighter Conversion Program for the MD-11 and DC-10 series aircraft, and today is offering a



Aircraft modification at Naples

very extensive industrial support with qualified personnel, granting a deep and outstanding knowledge in such a work.

This project is supported by a dedicated organization, an oriented management and a flexible industrial system perfectly tuned with the best quality and efficiency.

The reached level of experience, in the specific field of the cargo conversion market, has grown through a lot of betterment in the different milestones that make up the final product.

With the number of DC-10-10, DC-10-30, DC-10-40 and MD-11 aircraft already redelivered to various customers, Aeronavali is the undisputed worldwide leader for Boeing Tri-Jets Cargo Conversions. Another significant activity of Aeronavali is the avionics and mission system installation and upgrades for both commercial and military aircraft, as well as extensive modifications for special mission applications.

Cockpit standardization programs have been conducted on DC-8 and

B727 airplanes, together with ESM installation of the ATL1 fleet of the Italian Air Force and the C130H Avionics Modifications.

Based on such large experience in avionics and systems upgrading, Aeronavali has been contracted by Alitalia/Atitech for the MD-80 retrofit program named "AREANAV".

This modification consists of the enhancement of the existing aircraft cockpit through the installation of a new generation navigation equipment.

Aeronavali is also responsible for the preparation of the wire harnesses needed to supply power to the new systems.

Another major modification program, converting B707 into "Tanker/Combi" version was conducted at the Naples facility. The final product is a "tanker" with the capability of refueling 3 aircraft simultaneously.

Moreover, Aeronavali performs the conversion of the newly acquired German Air Force B707-307 to NATO Training Cargo Aircraft standards.



Aeronavali is also involved in the ATR42 MP Surveyor Modification. The ATR 42 MP Surveyor, an Alenia Aerospazio programme, is derived from ATR 42 Regional Aircraft, and has been designed to accomplish different roles.

In order to perform the different missions several structural modifications have been implemented by Aeronavali door operable in flight, FLIR turret installation, bubble windows, search light pod, gun pod, search radar/radome installation. The ATR MP Surveyor has been already selected by Italian Customers, Guardia di Finanza (Customs Service) and Capitaneria di Porto (Coast Guard).

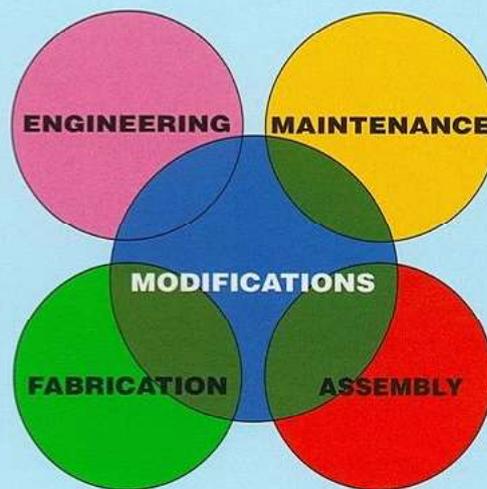
A further significant activity of Aeronavali is the aircraft re-engining. Today Aeronavali, after pursuing the research and developmental phase using the BAC 1-11 and the B727 aircraft at the former sister company The Dee Howard Co. at San Antonio, TX, has gained the required experience to complete the re-engining program of any aircraft.

Several B727-100 aircraft, operated by United Parcel Service, were re-engined with Rolls Royce TAY 650 power plants at Aeronavali-Naples facility. Aeronavali manufacturing department is unique in its ability to respond to a broad spectrum of requirements. Originally developed to produce parts and assemblies to be used in the different Aeronavali's projects, the large manufacturing department's reputation for quality and on-time performance has led to additional work committed by

airframe manufacturers and modification centers.

In addition to the on-going parts manufacturing projects, Aeronavali is supporting Boeing with its MD-11 and MD-10 Passenger to Freighter Conversion Program. Given the undisputed leadership in the Conversion Kits manufacturing, Aeronavali is also providing Boeing with most of the parts necessary for the aircraft modifications accomplished in the U.S.

Technology Matrix



DC-10 and MD-11 at Venice plant



AERONAVALI

Aeronavali: 50 years of success

Over fifty years has elapsed since the technicians of the newly born Aeronavali moved their first steps in the aircraft conversion and maintenance markets.

During these years the company has completed changes in its standards and aligned them to the evolution of aviation technologies.

The ability to adapt to the requirements of a market which is always looking for new challenges, has contributed to create the spirit of Aeronavali.

Every employee at Aeronavali is today proud to preserve this attitude, seeking the achievement of an ever increasing success.

The first airlines in Italy were created during the post WWI years, among these, Transadriatica was founded in Venice.

In 1931 Transadriatica merged into Società Aerea Mediterranea.

In 1934, all the Italian airlines were concentrated into Ala Littoria, based in Rome-Ostia, with Venice as second operating airport.

The Ala Littoria workshop at the Lido had been constantly increasing their equipment and their staff had gained a remarkable experience in metallic aircraft.

When Italy got involved in the World War II in 1940, the Lido workshop had 550 employees, who rose up to 1,200 during the conflict.

In 1947 the Italian government decided to dismiss certain organizations, such as Ala Italiana - descendent of Ala Littoria - that owned the Lido workshop.

Meanwhile, some of the workers had founded a cooperative and contacted Commander Umberto Klinger, trying to convince him to open an aviation facility at the Lido of Venice.

Umberto Klinger was born in 1900 and had volunteered in World War I when he was only 17. A close friend of Italo Balbo, he had founded SAM in



the period between the two world conflicts and had been appointed President of the Ala Littoria. Accepting the invitation, Klinger founded the company called "Officine già dell'Ala Italiana - Venezia Spa" with a registered capital of 5 million Lire and 191 employees.

The date was September 16, 1947. The first activities performed by the company were most diverse: repair and reconstruction of war surplus aircraft, of motorboats, gas cylinders, vehicles and trucks.

The reconstruction of the Lido plant was completed in 1949.

The newly incorporated Aeronavali had in that year 278 employees.

The beginning was not easy, however: in 1951 there were only 46 employees and a trusteeship was ordered, subsequently withdrawn in 1952. By that year, employees were 123.

During those years, Aeronavali's core business was the recovery of old C-46 military aircraft in Egypt.

Under an agreement between the Egyptian government and Varig these aircraft were transferred to the Lido and rendered operative.

The years from 1955 and 1960 may be regarded as a period of consolidation for Officine Aeronavali. Commander Umberto Klinger, aided by his brother Luigi, a General well acquainted in the civil and military aviation entourage, proposed new opportunities for the company.

In particular he kept contacts with LAI and Alitalia, two airlines that by the end of the 1950's merged into Alitalia, an entirely state-owned corporation. The aircraft overhauled, converted or equipped with new engines in Venice were C-45, C-47, T-6 military aircraft and the entire range of Douglas airliners.

With the advent of modern jet-planes the facilities at the Lido "Nicelli" airport ceased to be employed.

On April 1, 1961, the new Venice "Marco Polo" International Airport located at Tessera was inaugurated.

In the summer of 1965 Officine Aeronavali moved to the new hangars located near the new runways.

During 1960's a general change occurred: in fact, aircraft overhaul and conversion activities were flanked by the construction and assembly of



aircraft components and of Martin Baker ejectable seats.

On June 27, 1963 Aeronavali reached an important goal: the Federal Aviation Administration's certification as Repair station, a certificate which has been always renewed uninterruptedly since then.

The 1970's were a tougher period for Aeronavali, which was purchased by GEPI in 1972.



During the following decade the company struggled mostly its survival, without renewing its equipment and without being able to make valid and farsighted plans. On September 15, 1981 Officine Aeronavali was acquired by Aeritalia (presently Alenia Aerospazio), a Finmeccanica company with a leading position in the Italian aerospace industry.

Aeritalia policies envisaged the re-launching of the Venetian company

and its re-qualification in three basic fields: traditional maintenance and overhauling activities; introduction of the overhaul and conversion programs of AWACS and TCA aircraft, within the broader framework of international cooperation; a careful market analysis suggested to avoid the field of civil aircraft overhaul and to dedicate all efforts to the field of modification, availing themselves of the experience acquired.

In 1985, began a strategic alliance which has lasted to present days: the agreement with McDonnell Douglas of Long Beach, CA.

Aeritalia/Aeronavali and the Californian aircraft manufacturer enter into an exclusive license agreement for the conversion of DC-8s from passenger to freighter aircraft. The first order came from Air Canada, from which the modification of 2 DC-8-63 aircraft was contracted.

Then United Parcel Service, a giant among air forwarders, ordered the conversion of 16 DC-8-73 aircraft to be carried out in Venice.

GPA, a leasing company, converted its entire United Airlines DC-8-71 fleet (29 aircraft in total) into cargo aircraft.

The merger of maintenance activities into Aeritalia continued when the overhaul of the Atlantic antisubmarine aircraft, commissioned by the Italian Air Force, was moved to Venice.

The aircraft components manufacturing was further re-launched with the production of parts for the Tornado program and of segments for the G222 program.

The kit needed to convert the DC-8s yesterday and the DC-10s today is also manufactured and assembled by Aeronavali. The cargo doors for the new MD-11F aircraft are also built in Venice.

The rest is recent history. Strengthened by the experience gained with DC-8s, in 1990

Alenia/Aeronavali signed an exclusive license agreement with McDonnell Douglas, today Boeing, for the Passenger to Freighter Conversion of DC-10 aircraft.

In 1990 a new hangar with two wide-body positions was built. It was inaugurated by the first 2 DC-10-10s, to be modified for Federal Express, the world leading forwarder.

In 1994 Aeronavali doubled their industrial capabilities by purchasing from Alenia Aerospazio the Naples plant, located by the Capodichino International Airport.

The industrial growth allowed the company to expand its market share and to propose itself as a maintenance station for wide-body, narrow-body and commuter aircraft.

The largest ATR operators in the Mediterranean have chosen Aeronavali as maintenance center for their fleets. Alitalia/Atitech chose to have the modification called "AREANAV"- upgrading of the avionics of its MD-80 fleet - performed by Aeronavali in Naples.

Again, another relevant conversion program is being carried out at Capodichino: the Passenger to Tanker Conversion of B707 aircraft for the Italian Air force.

The DC-10 conversion is by now the Aeronavali's most distinctive activity.

The new millennium started for Aeronavali with the acquisition of the former Agusta plant in Brindisi. The Brindisi facility is an historical site as well; since 1953 it developed great experience on maintenance of military aircraft such as G59, S2-F, HU-16A, P3, C130H, G222.

This new facility will allow Aeronavali to increase its military and commercial business with a consequent additional industrial capacity to face the requests of

more and more demanding markets.



AERONAVALI

Officine Aeronavali Venezia S.p.A.

HEADQUARTERS

Via Triestina,214
30030 Tessera - Venezia (Italy)
Telephone: +39 041 269-3898
Facsimile: +39 041 541-6051
World Wide Web: <http://www.aeronavali.com>
E-mail: mkt@aeronavali.com

VENICE PLANT

Via Triestina,214
30030 Tessera - Venezia (Italy)
Telephone: +39 041 269-3898
Facsimile: +39 041 541-6051

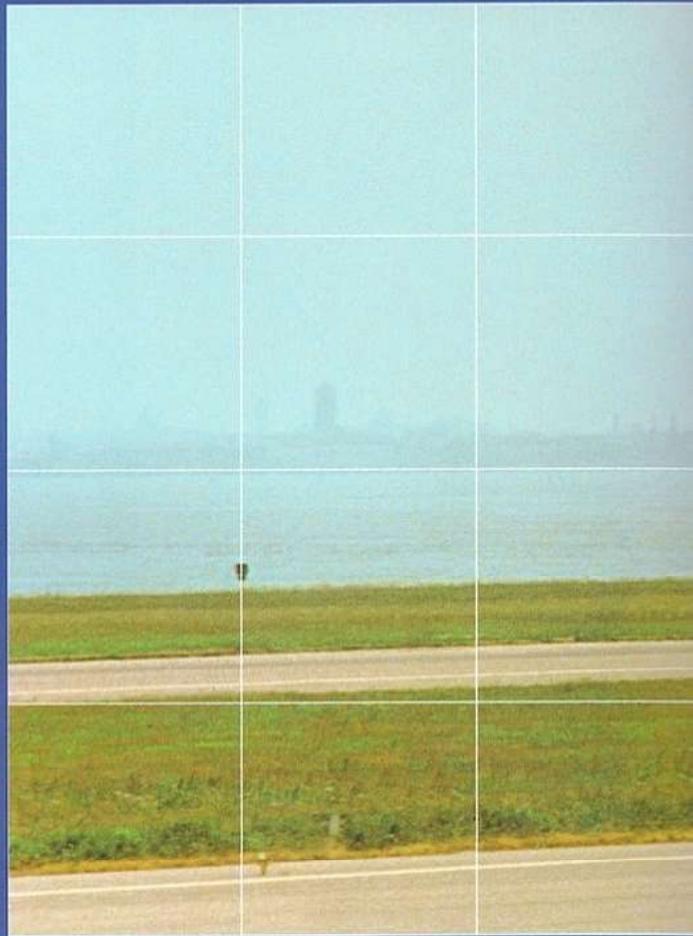
NAPLES PLANT

Via Nuovo Tempio, 20
80144 S. Pietro a Patierno - Napoli (Italy)
Telephone: +39 081 234-4863
Facsimile: +39 081 234-4957

BRINDISI PLANT

c/o Aeroporto Militare
Piazza Generale G. Del Vento
70011 Brindisi - Casale (Italy)
Telephone: +39 0831 531-521
Facsimile: +39 0831 531-522

Edited by Alenia Aerospazio - Marketing Communication / Centro Grafico / Roma 6 / 2000



LIA

Leonardo Innovation Archives