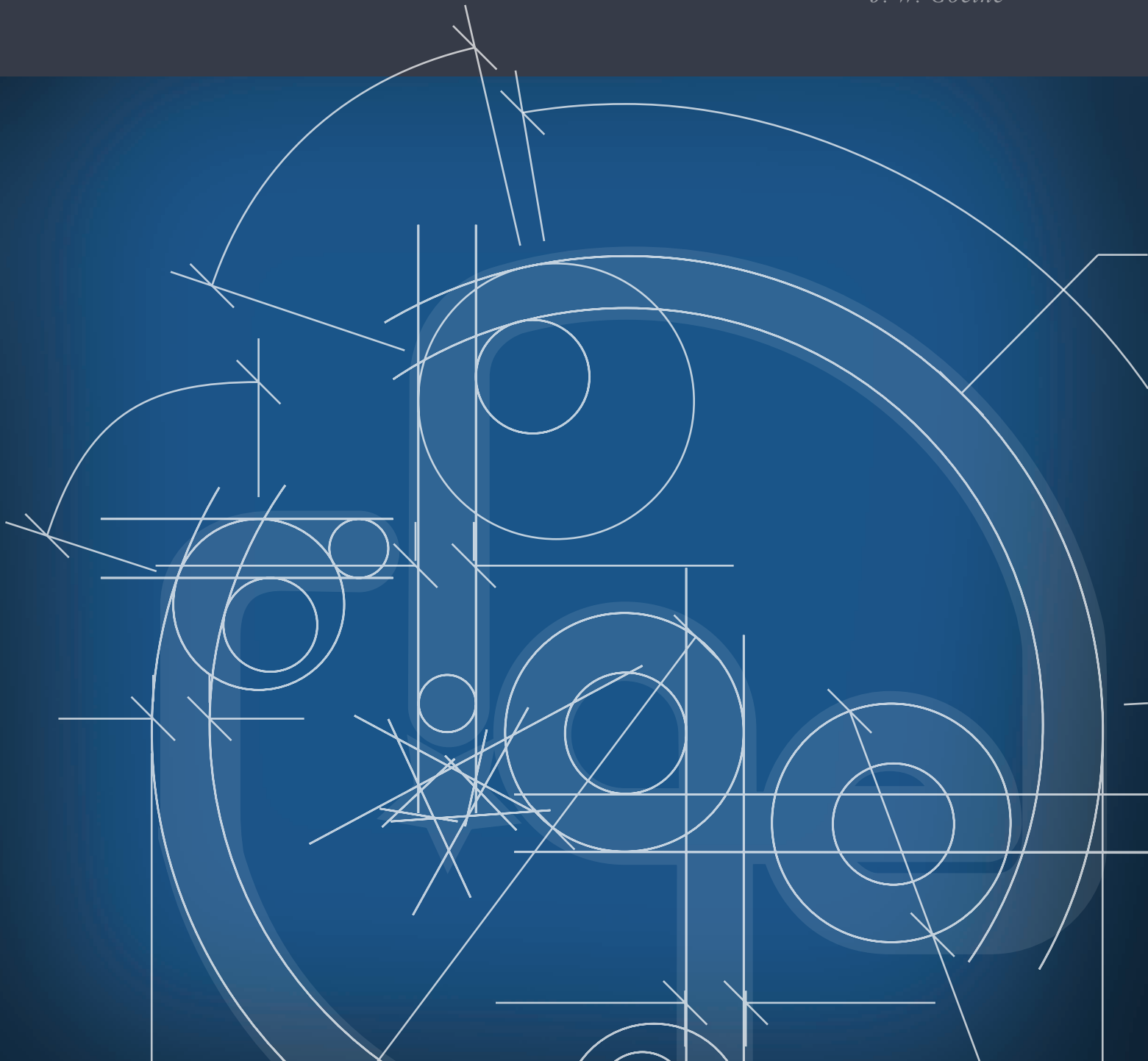




RIGEL

“Genius is application”

J. W. Goethe



“The Future is not of who begins, but of who persists.”

Innovating, Reinforcing and Implementing the future assets.

This is the route undertaken by **Rigel srl** over 35 years ago, mother company of a small private group including **Intec srl**, company specialized in the logistical support, import/export of products, advanced technology equipments destined to the Ministry of Defense and satellite industries, and **Teknomec srl** which represents international groups and companies by promoting and selling their products within the Italian territory.

The Rigel's journey has started in **1974** to promote the industrial cooperation between Italy and Great Britain, widening in few years his core business from the naval field, mercantile and military, to the industrial, aeronautical and airspace in both the civil and military fields.

Today **leading interlocutor in the offer of Strategic Consultancy and advanced technology products and systems**, the company works as **exclusive agent for Italy**, addressing his activities towards market niches generally lacking in national competition, and activating, wherever possible, **important compensation agreements and industrial partnerships** with other Italian companies in all the competitive scenarios.

The future of Rigel is a challenge to be faced day by day, analysing the market and any potential scenario, studying and offering customized solutions, developing the best technologies, giving competitive responses and making use of his remarkable skills and expertise, matured in the engineering and high technology fields by supporting Army, Navy, Airforce, Aerospace Industry, Forensic Science and the whole universe of the Italian Defense.

A journey which for Rigel means future.





“Our destiny is to go beyond.”

The real progress takes place when the experience becomes incentive to look ahead.

This is the philosophy undertaken by the Rigel Group, which identifies itself since its foundation in the commitment of his founder members – Ing. Luigi Orlandi, Amm. S.M. R.O. Sergio Corsini and Ing. Ottorino Beltrami- .

Every single product and service offered by Rigel derives from a deep knowledge that goes beyond the technicality, becoming the expression of a passion shared by who have decided to offer his genius in service of the Defence and the Public Institutions.

Innovation means looking ahead with optimism and with spirit of implementation, discovering the most advanced and successful solutions of the market.

But above all Innovation means **supporting each customer and partner** through a focused bureaucratic and administrative consultancy by the identification of the best marketing strategies and the development of the most technologically performing responses in order to **transform engineering innovations into real and concrete competitive advantage.**

*“Devotion and passion
supporting innovation.”*

Every great challenge begins looking at the world with new eyes.

Company originated by the enthusiasm and the multiyear experience of people that have operated for years in the Armed Forces, **Rigel srl carries out its activities mainly for the Ministry of Defense.**

The Rigel Team is composed by about **30 professionals among who 10 highly qualified engineers**, specialized in the collaboration with the Public authorities and provided of strong management skills.

These are the distinguishing qualities enabling Rigel to pursue any kind of project and to fully express the commitment, professionalism and passion of who made it leader in his peculiar field.

- The Group is led by **Ing. Luigi Orlandi**, co-founder member, CEO and only shareholder, who was in charge of qualified assignments in the Italian Navy. Naval Academy 1958 – 1961. Cadet Chief of the course in the Italian Navy. Graduated with full marks and Honours at the faculty of Naval and Mechanical Engineering at the University of Genova. Major General of the Naval Genius until the 1972 when he left the Italian Navy
- Co-Founder Member and **Honorary President is Sergio Corsini**, Admiral S.M. R.O., ex high officer of the Italian Navy. Class 1921 – Naval Academy 1939 – 1942. Deputy Officer of an atlantic submarine in 1943 (Route Singapore – Bordeaux – circumnavigation of the Cape of Good Hope). Prisoner of the Japanese in 1943 in Singapore and liberated by the allied forces in september 1945. On his return he covered several assignments firstly in the Italian Navy and then for Olivetti Group before joining Rigel via MIB. In the United Kingdom has been invested and honoured with the “Order of the British Empire”
- Co-Founder member is **Ing. Ottorino Beltrami** who covered many prestigious assignments in IRI, Olivetti Spa, SIP, Assolombarda and Fondazione Cariplo.





Technologies for maximum defence.

Electronic warfare systems and solutions, self-protection, Search and Rescue and Tuas

Electronic Warfare countermeasures

Rigel s.r.l is responsible for testing, validation and delivery of **Electronic Warfare countermeasures for AMI, MMI and EI.**

In Italy Rigel carries out **activities of coordination and representation** of **Chemring Countermeasures Pain Wessex Ltd**, a global leader in passive and expendable countermeasures, offering and overseeing, testing activities in support of AMI, EI an MMI campaigns and optimizing all the Chaffs and Flares currently in service for all platforms.

Activities:

- **Operation and optimization of advanced decoy dispensing**

Example:

Spectral Decoy

Forward Firing Decoy

Tetrahedral Decoy

- **Logistical coordination activities**
- **Self-protection optimization for civil platforms**

Ew end to end testing

The Group is also engaged in representing and coordinating, for Italy, **AAI Corporation - ESL Defence Ltd**, world's leading manufacturer of tools and equipment for EW stimulation and measurement.

Programs:

- **Mallina - long range stimulator** for AMI and EI
- **Baringa** - EW functional pre-flight verification tool
- **Rf Stimulator 527** - for EW technical support
- Laboratory equipments for EW support

Ew simulation

CounterSim is an innovative product developed and provided with the support of Rigel to **predict self-protection performances in the most complex situations.**

Applications:

- **Estimated safe separation**
- **Optimization of validation tests**
- **Pilots and staff training**
- **Operational support and subsystems**



Operational support systems

- Embedded on board trainers
- **PDCUE** gunfire detection systems
- **TDCUE** automatic target scoring system

Search and Rescue

Rigel srl represents in Italy RFD Beaufort Ltd global manufacturer of safety and survival systems and equipments for aerospace and marine industries, offering to AMI and MMI **support, consultancy and supply of air-drops rafts** and maintenance training.

Semi-finished structural products

The company offers its consultancy operating in the **development and supply of light alloys, titanium and advanced composites.**

AAI Corp TUAS Shadow 200

Rigel also carries out exclusive **representation** activities in Italy **for AAI Corporation part of TEXTRON Systems Group**, an American company specialized in **advanced technology products** for the **U.S. Defence** and worldwide leader in the production of **UAV and TUAV systems** developed and updated with the U.S. ARMY, and used in the most important international missions (Iraq and Afghanistan).

Particularly significant is the **production and supply of Shadow 200**, the sole completely interoperable system available in the world designed and validated to meet the specific **tactical** requirements including those of EI.

Currently the U.S. Government is planning the purchase of at least 120 systems.

- Responsible of the Area
Eng. Roberto Sabattini

Graduate in Mechanical engineering (110/110) in Rome with successive specialization in aerospace.

Engineer, project manager of solid propellant rocket motors, Chief Program Manager of the Aspide air-to-air missile rocket motor, then Director of the space program "I.R.I.S." (Italian Research Interim Stage) at Snia Viscosa Defence and Space. With Rigel S.r.l. from 1981 and current Director of the Aerospace and New Technologies Division.

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On the wings of innovation.

Devices and systems for flight training and research

Among its specific high technology activities, Rigel Srl has been operating since 1990 in devices and systems for aero-physiological training of pilots, representing leading companies in the world.

In particular, since 1997 Rigel has taken the exclusive representation and coordination for Italy of AMST - Systemtechnik GmbH (AUSTRIA Ranshofen), global leader in the **manufacturing of equipments dedicated to the pilots aero-physiological training**:

- **Hyperbaric chambers**
- **Spatial disorientation**
- **Antilaser trainers**
- **Night Vision trainers**
- **Human centrifuges**

A new generation human centrifuge is a complex systems that includes an aero-tactical flight simulator along with an high performance multi-axial human centrifuge. The latter develops a load factor at which the pilot is really submitted during combat manoeuvres, faithfully reproduced by the flight simulator. The dynamic response, both virtual and physical, corresponds to a real flying experience.

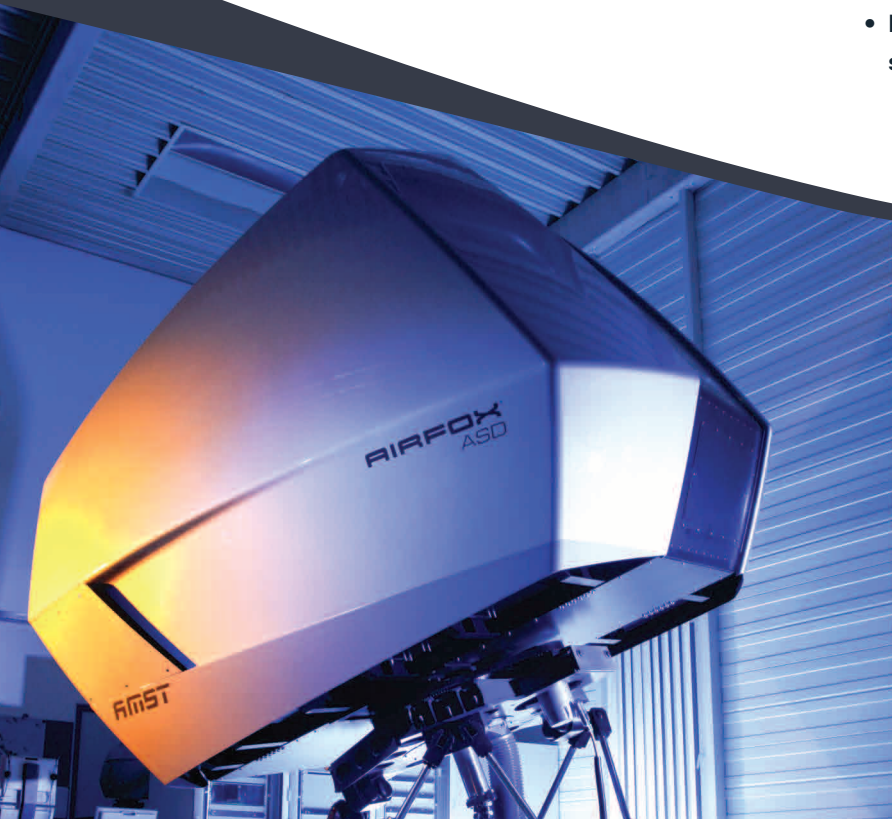
The state of art of the system ensures a faithful reproduction of all the simulated elements:

- **Physical** – visual, auditory, haptic
- **Functional** – handling characteristics, cockpit, load factor
- **Cognitive** – skills, procedures, decision making

The load factor in a modern human centrifuge is perfectly synchronized with the input from the pilot on the flight control system and the visual “out-of-the-window” system is capable of generating and faithfully representing an operational environment.

These are the operational capabilities of such a system:

- **Air to air training**
- **Air to ground attack**
- **Clinical aero-medical evaluation**
- **Aero-physiological and operative training**
- **Clinical and structural research**
- **Spatial disorientation and situation awareness training**
- **Flight crash analysis, human factor investigation and research**
- **Astronaut training**
- **Basic and periodical training on high and sustained load factor countermeasure**



The potentiality of an High-G training developed through an High Performance Human Centrifuge (HTC) with Dynamic Flight Simulator (DFS) has become a strategic element for pilots training in the field of aircraft from the 4th Generation and beyond. This type of training is essential to protect pilots and crew against the harmful effects of high G-force values and rapid angular movements of the aircraft.

The preparation, familiarization and training of pilots to address these challenges requires a system that reproduce at least the same performances and features of the aircraft they will fly with.

Some of the most important AMST supplies within Next Generation Human Centrifuges:

- **Human Centrifuge provided to the Institute of Aerospace Research in Zhukovsky, Russia**
- **Human Centrifuge provided to the Institute of Aviation Medicine in Königsbrück, Germany**
- **Human Centrifuge provided to the Institute of Aviation Medicine in Beijing, China**
- **Human centrifuge provided to the Institute of Aerospace Medicine in Bangalore, India**
- **Human Centrifuge provided to the Aerospace Medical Centre in Singapore**

AMST major installations in Italy were coordinated and addressed to the Department of Aerospace Medicine of Flight Test Centre (CSV) at the "Mario de Bernardi" Military Airport in Pratica di Mare where they are currently used by AMI staff and include:

- **Spatial disorientation trainer**
- **Hypobaric / hyperbaric chambers**
- **Anti-laser training System**
- **Night Vision trainer**

The work of Rigel, in addition to the commercial activities related to the acquisition and management of the contract, is also developed in the coordination of maintenance, logistics and of training courses for end users.

- Responsible for AMST activities
Mr Eng. Cesar Voltarelli

Graduated in electronic engineering at the University of Rome.

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Aerospace Solutions

Support, consultancy and planning are the activities that Rigel carries on in the **aerospace field** of operation.

By partnering with **Alpoco**, a global leader in atomization of spherical aluminium powder, Rigel is responsible for:

Development and supply for aerospace propulsion of atomized, energetic elements for solid propellant propulsors

Solid propellant rocket motors for aerospace propulsion require the development of energetic specific elements. These, appropriately refined and powdered, are embedded in the propellant grain and must enable to achieve the precise desired burn rate and its reliable keep for the entire combustion phase of the rocket.

Atomization, to reduce the energetic element fused into a fine powder, takes place in an inert gas because the grains have spherical shape.

Through a **close collaboration between Rigel and Alpoco** for the first time in Europe has been introduced **the process of atomization of spherical aluminium powder for aerospace use**, complying with the stringent requirements of the Ariane 5 boosters manufactured by Avio SpA.

Powders for Ariane 5 have been developed, tuned and then qualified through a long and complex testing and certification plan that Rigel has followed, supported and coordinated with Alpoco to Avio, Europropulsion, ESA, CNES.

The experience gained has allowed us to successfully support other major Italian and European programs.

Programs:

• European Launcher Ariane 5 booster

Launcher developed and built, for the positioning of satellites in geostationary orbit, under the auspices of the European Space Agency (ESA) and of EADS SPACE Transportation as a main contractor. The **solid propellant** rocket boosters of the Ariane 5 are the largest solid-fuel rocket ever built in Europe.

• European Launcher Vega Booster

Carrier not yet operative, jointly developed by the Italian Space Agency and the European Space Agency. Avio SpA is responsible among other things of the development of the first stage, the P80, a revised version of the Ariane 5 rocket booster, using the same type of **solid propellant** where aluminium powder is an essential constituent.



- **Aspide Missile Propulsion**

Medium-range missile air-to-air or surface-to-air, semi-active radar-guided, Italian-built of which Avio Spa produces also the updated version of the **solid propellant** rocket motor.

- **Aster Missile Propulsion**

Family of anti-aircraft missiles surface-to-air built by Eurosam, European consortium made up of MBDA Italy, MBDA France, and Thales.

The Aster 30 is considered one of the more powerful and technologically advanced **solid propellant** motors in the world and one of the few qualified anti-missile systems currently existing.

Management of specialized activities in respect of the main interlocutors of the international aerospace industry, aiming to the research and exploitation of metal matrix composites

Rigel has matured over thirty years of experience in the designing, development and supply of semi-finished alloy components for aerospace.

Today, in collaboration with Alpoco, looks to the future and the potential benefits achievable by the development of new metal originated composites.

- Responsible of the Area **Eng. Roberto Sabattini**

Graduate in Mechanical engineering (110/110) in Rome with successive specialization in aerospace.

Engineer, project manager of solid propellant rocket motors, Chief Program Manager of the Aspide air-to-air missile rocket motor, then Director of the space program "I.R.I.S." (Italian Research Interim Stage) at Snia Viscosa Defence and Space. With Rigel since 1981 and current Director of the Aerospace and New Technologies Division.

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A journey through experience and success.



Solutions and services for the naval military sector

Founded by the venture of ex-Italian Navy Officers, the Rigel group has developed over the years around the naval division, improving his assets with the entrance of military extraction naval/mechanical engineers (Naval Genius Corps). Although Rigel has diversified his activities at 360° within the Defence field, the naval remains a crucial market for the group.

Infrastructures for airvehicles boarded

The activity is fulfilled through the tight **collaboration between Rigel and MacTaggart Scott & C Ltd**, british company leader in the **manufacturing, designing and distribution of electro-hydraulic equipments for the handling of aircrafts onboard naval units**, with which Rigel has followed and still carries forward the below listed projects, among which some already realized:

- **Aircraft Carrier Cavour: Aircraft Elevators**

Treating about the supply of a complex turnkey system, Rigel has carried out an **overall technical/commercial/operative consultancy** along all the phases of the contract, following the system designing, taking part of the sub-suppliers selection and coordinating the technical assistance during the testing and warranty phases.

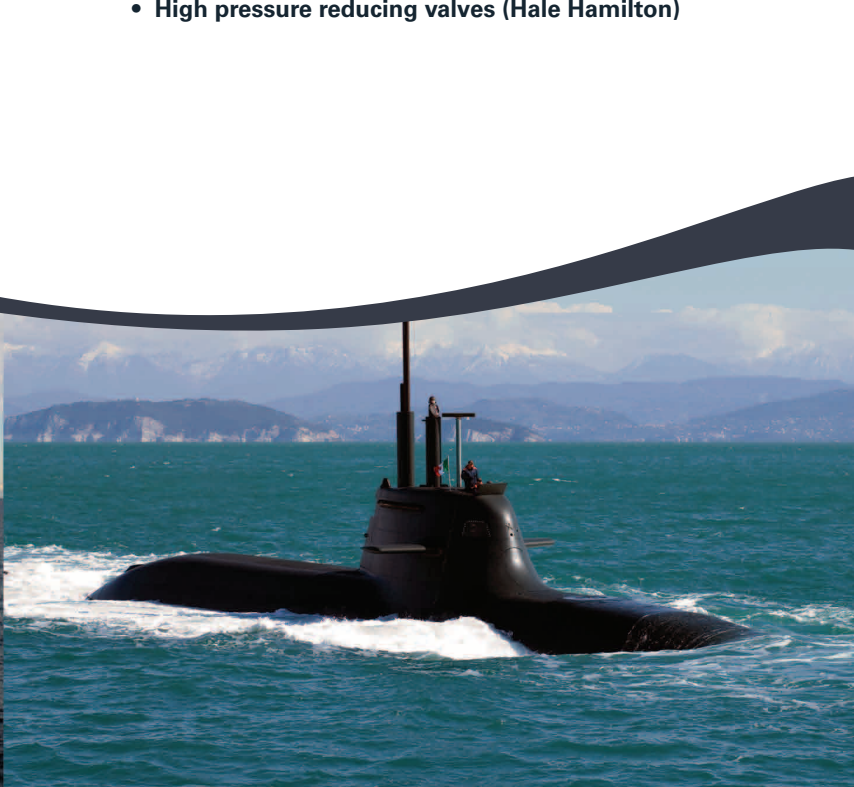
- **Helicopter handling system for Naval Units**

Rigel carries out a fundamental **activity of technical/commercial** assistance finalized to promote **the installation of “Trigon” handling systems** onboard Naval Units built up in Italy or ordered by national shipowners, coordinating also the activities related to the presentation of the system towards either public authorities or private customers in charge of the final selection.

Systems and machinery for the “Ship Platform”

The following systems have been supplied and installed onboard almost all the Italian fleet Units starting from the Lupo Class, Maestrone, Mimbelli, Garibaldi, Anteo, Lerici Minehunter, Todaro Class submarines, Aircraft carrier Cavour, Doria Class and until the recent Frémont Frigates.

- **Designing and supply of main reducers for propulsion (GEC Alstom Gears)**
- **Combustive air filtering systems for gas turbines (Altair – General Electric)**
- **Thermostatic valves for water and oil pipeworks of the main engines and hull systems (Walton Engineering)**
- **High pressure reducing valves (Hale Hamilton)**



- **Antifouling and Anticorrosive systems for sea-water pipeworks (Cathelco Ltd)**
- **Impressed current cathodic protection for metallic hulled ships (Cathelco Ltd)**
- **Propeller shaft seals (Blohm + Voss Industries – ThyssenKrupp Marine System)**
- **Bilge oily water separator (Blohm + Voss Industries – ThyssenKrupp Marine System)**

Underwater training systems: Sippican Ematt MK39 Advanced (Lockheed Martin Corporation)

Ematt MK39 ASW (expandable Mobile training target) can be either launched by aircrafts or surface ships to improve the fleet readiness in anti-submarine war scenario.

Lockheed Martin Sippican manufactures EMATT for the US Navy and for many other foreign Navies among which also the Italian Navy directly served by RIGEL.

■ Naval Division Director is **Eng. Roberto Colombo**

Graduated in Naval & Mechanical Engineering in Trieste, he left the Italian Navy as Capitano di Corvetta (GN) after have covered board (Chief of the GN department onboard the Vittorio Veneto ship and Chief engineer of Fasan ship) and ashore assignments at Navalcostarmi. Successively he was designer and responsible of the Technical Office at the Cantiere Navale Italiano. He joined Rigel in 1983.

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Security Integrated Technology.

Forensic Science & Crime Investigations

Rigel srl is exclusive agent for Italy of **Foster & Freeman**, a british company leader in the designing, manufacturing and commercialization of advanced technology equipments in the Forensic Science and Crime Investigations field.

Since many years Rigel does supply Crime Investigations equipments to all the main national interlocutors within both the public and private sectors.

The activity of Rigel in this market, in constant evolution, is addressed towards the following primary users:

Polizia Scientifica, Reparto Investigazioni Scientifiche dei Carabinieri (RIS), Polizie Locali, Guardia di Finanza, private laboratories, towards which Rigel has supplied and provides analysis equipments for the herebelow listed Crime Investigation typologies:

- **Questioned documents examination / Intended writing detection**
- **Counterfeiting bank notes and documents**
- **Finger prints examination**
- **Shoe & tyre print examination**
- **Trace evidence examination**

Beyond the mere supply of the equipment Rigel supports his customers by offering a 360° consultancy to determine the most suitable system and solution for every specific scenario, it coordinates the training activities (base/ advanced) required for the final user's certification following them until the testing and post-sales phase.

- Director of the Foster & Freeman activities is **Eng. Cesare Voltarelli**

Graduated in Electronic Engineering at the University of Rome

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