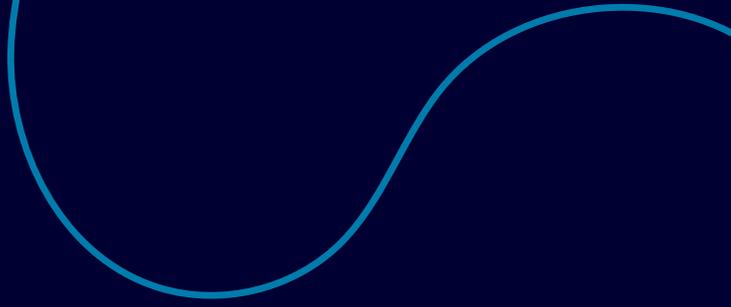
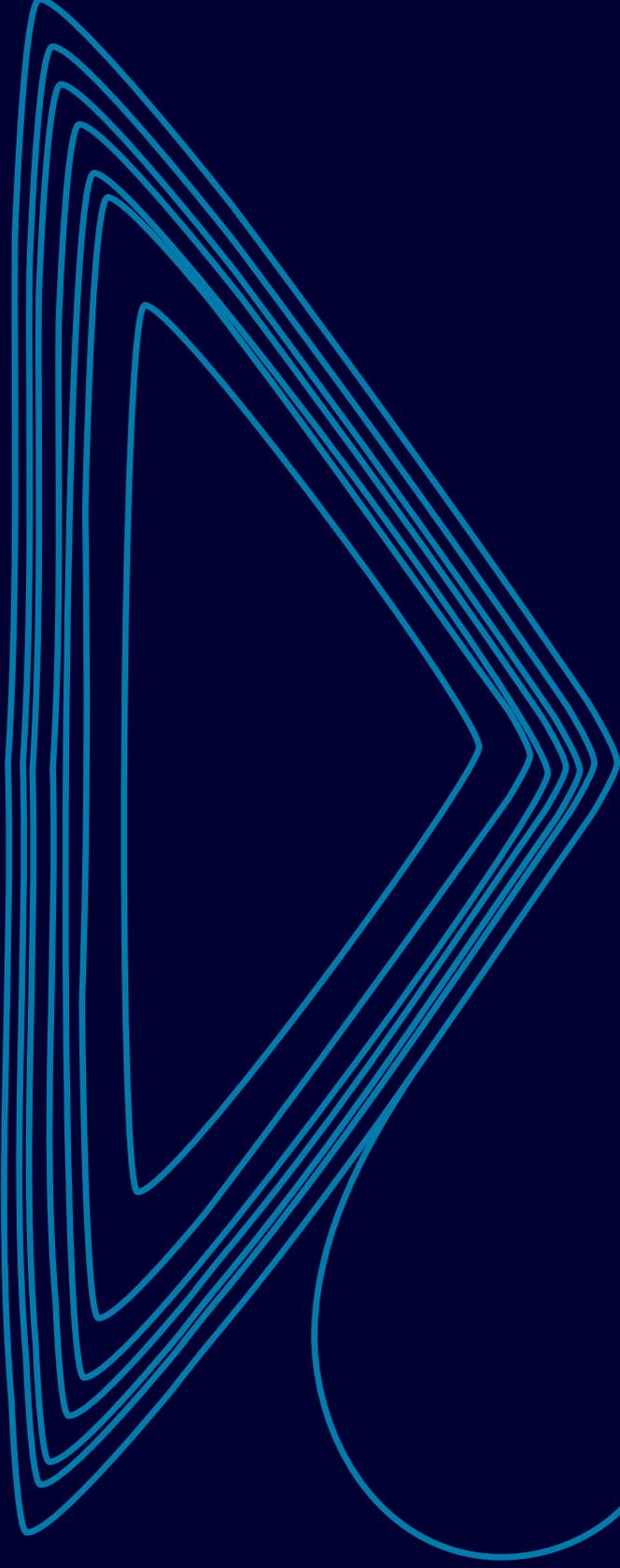


Annual Report 2017



ANNUAL REPORT

Contents

2	CHAIRMAN & CEO REPORT
4	FINANCE
5	GOVERNANCE
6	PEOPLE
7	CSR
8	R&D
9	HIGHLIGHTS & ACHIEVEMENTS
10	ENERGY
12	ENERGY PROJECTS
18	MARINE
20	MARINE PROJECTS
22	TRANSPORT & INFRASTRUCTURE
24	TRANSPORT & INFRASTRUCTURE PROJECTS
28	CERTIFICATION
30	CERTIFICATION PROJECTS
36	INDUSTRY
38	INDUSTRY PROJECTS
44	OPERATIONAL HIGHLIGHTS
46	FINANCIAL HIGHLIGHTS

Board of Directors	Ugo Marco Sergio Nazareno Emanuele Alberto Paolo	SALERNO CERRINA FERONI RAVAGLI CERNI GRIMALDI MAESTRINI PIERANTONI	CEO & Chairman Vice - Chairman Vice - Chairman Director Director Director Director
Audit Board	Francesco Giovanni Antonio	ILLUZZI GRAZZINI GUASTONI	Chairman Auditor Auditor
Independent Auditor	PRICEWATERHOUSECOOPERS		
Direction & Co-ordination Committee	Francesca Roberto Roberto Claudia Michele Barbara Ugo Paolo Stefano Fortunato Giosuè	BOGNIN CARPANETO CAVANNA FILIPPONE MORSELETTO POLI SALERNO SALZA SOCCI SULFARO VEZZUTO	Member Member Member Member Member Member Member Member Member Member Member
Risk Management & Audit Committee	Nazareno Roberto Roberto Giovanni Antonio Francesco Roberto Ugo Fortunato Paolo	CERNI CAVANNA CAZZULO GRAZZINI GUASTONI ILLUZZI CARPANETO SALERNO SULFARO SALZA	Chairman Permanent Member Permanent Member Permanent Member Permanent Member Permanent Member Ex-officio Member Ex-officio Member Ex-officio Member Co-ordinator
Supervisory Board	Roberto Alberto Claudio Paolo Ugo	CAZZULO ALBERTI CONSIGLIERE GAGLIARDI LECIS	Chairman Member Member Member Member
Corporate Compliance Board	Michele Roberto Claudio Paolo Fortunato	MORSELETTO CARPANETO CONSIGLIERE SALZA SULFARO	Chairman Member Member Member Member

ANNUAL REPORT

Chairman & CEO Report

2017 was a year of consolidation following RINA's biggest ever acquisition in 2016. Results were line with the previous year, with revenues at €437 million and EBITDA at €51.7 million.

The Marine sector was our strongest performer in 2017 and we secured superior results even if, in general terms, the market remained sluggish. Our keen focus on the cruise and Ro-Pax ferry markets paid dividends as these sectors were not subject to the crisis felt in other areas such as cargo. We are the world leading classification body in Ro-Pax ferries and in the top three of the market for cruise ships; being third in classification activities but leading in new builds. In these areas we continue to have an advantageous position, good returns and good future prospects.

Our strength in the marine sector comes from a long history of investment in research, training and working on international regulations, which enables us to give ship builders the best support for applying latest technologies and owners the best possible solutions for their assets. This commitment and investment has earned us trust from our clients and it's what lead us to the launch of our new digital platform, RINACube, at the end of 2017. Starting from the marine, it will be deployed across all the business units. Together with an increased focus on sustainability, digital services are the drivers that will permeate all of RINA's future activities.

Highlights in the marine sector include the order from the Carnival Group for the first LNG powered vessels with the largest passenger intake ever conceived. Projects such as this show how sophisticated the cruise market is becoming, with increasing requests from architects for features that will astonish and amaze passengers. RINA works to help facilitate remarkable designs which are balanced against safety requirements.

Turning to certification, this business grew by around 4% in line with the global market. We have seen increasing returns from our investment in Northern Europe but still wish to grow our activities outside of Italy. To support this effort, we are investing in people in China, where we gained accreditation from the government to allow RINA to become a certification body.

Our Transport and Infrastructure business was restrained because of the size of the projects. When large, single contracts come to an end, they



cannot be quickly replaced by numerous small contracts. This affects volume and return for T&I. We have, however, recovered from the end of the major Turkmenistan project. In the transport sector the size of contracts can be smaller, and RINA is strong, especially in metro projects.

Our Industry business is split into two main segments: Space & Defence and Materials. In 2017, Defence was a reasonably good market for us in Italy. Space and defence forms a significant global market in which RINA has strongholds in Italy and the UK. Overall the market is positive, but the focus has changed, and this is something RINA is adapting to.

Following our acquisition of the Centro Sviluppo Materiali business a few years ago, the return on this business is positive and income stable. It took some time to improve our capability in managing forecasts and assignments. We now need to work to increase our volume and are still looking at the right business model for a company of this type to secure greater returns.

Looking at geographical regions, Asia performed well because its main revenue stream comes from Marine. Outside of the UK, Europe also performed well.

The USA was affected by the oil market conditions.

industry. The price appears to have stabilised and this is increasing confidence in the market. There are many wells that are reducing production as they reach the end of their life and operators are beginning to change their investment planning to compensate for this. In addition, the energy sector is becoming increasingly aware of the importance of our environment. Looking ahead, the star for our Energy business unit will undoubtedly become renewables. However, RINA will continue to support Oil & Gas projects with an innovative and sustainable approach. With work we have done in the UK, we have opportunities to be highly successful in this area and compete in worldwide markets. In the IJGlobal - Infrastructure Journal and Project Finance Report, in the first six months of 2017, RINA was ranked number one Technical Advisor for the number of deals. We will improve and build on this in 2018.

The new organisational structure will help increase focus within the Certification business and open new opportunities for greater efficiency and growth. We expect T&I to remain constant. In Industry, we hope for recovery in Space and Defence sectors. In Materials, we are forecasting a growth of more than 10%.

For our long-term growth, we have working groups in two areas: digitalisation and securing our position in the changing energy market. Renewable energy



We are living in a fast-changing world. Our business is linked to the way we live our lives and will be completely changed through advances in technology. It is challenging, but if we can develop to lead the changes, the world will be open to us."

Renewable projects did well. The Middle East too is strongly linked to the oil price and has seen reduced investment and slow down compared with 2014/2015.

For me the top contracts for the year are the ones which open new markets and opportunities for us, rather than those that are simply the largest. This includes the Terraform contract for the technical due diligence of a global solar portfolio of 1.4GW and a contract with Tokyo Steel, which expanded our work on materials overseas. The oil industry rewarded us with success in a downstream framework agreement from Eni for the asset integrity management of their refineries – a first for RINA and a win against established competitors in this market.

During the final quarter of 2017, we made the decision to change our organisational structure to increase our focus on vertical markets. The change has been very well received within the organisation and there is real energy and motivation behind it. Looking ahead to the next 12 months, I am reasonably optimistic for some recovery in the oil

is becoming easier to produce at lower costs and its practicality is increasing due to advances in energy storage systems. We are looking at smaller companies around sustainability with the right competencies and geographical footprint that may help us.

RINA already has competencies and experience in digitalisation. As well as increasing our own efficiency, we will be able to offer our clients services that leverage digitalisation providing solutions that they would not have even imagined possible. We are in the right place to build a platform as the value from AI is realised through the interrogation of the large volume of data. In marine, for example, ship owners already trust us with their data. If this data is pooled anonymously, owners will gain advantage through greater performance data of different vessel types on which to base strategic decisions. I believe digitalisation, and technology such as drones, will change the way companies like the RINA work and we want to be on the forward edge of this change.

A handwritten signature in black ink, appearing to read 'Giuseppe S. Lorusso'.

ANNUAL REPORT

Finance



€ 437M
TURNOVER



€ 51.7M
EBITDA



65
COUNTRIES

2017 was another challenging year but, through hard work and focussing in the right business areas, RINA maintained its market position. There were two main events during 2017 that made market conditions particularly tough. The first was the ongoing issue with the low oil price and the subsequent significant reduction in CAPEX projects. We have been historically strong in CAPEX projects, which have provided good contracts with profits. With low investments, however, we had to turn our attentions to acquiring more OPEX projects. Of course, the shift in the dynamics of the Oil & Gas sector has generally meant that other contractors turned their focus to OPEX, making this a crowded and highly competitive market space.

The second event to impact our business was a reduction in investment in defence and, to a lesser extent, power projects within the UK. The reasons for this are not completely clear but the ambiguity surrounding the UK's position within Europe is almost certainly a factor. Overall, compared with 2016, RINA lost in revenues but has maintained its margins, so I see this as a very positive overall result.

One of the main strategies that protected our profitability was a focus on efficiency during 2017. The efforts to increase efficiency and reduce costs helped us maintain margins with fewer projects and in a very price competitive market. Helped by the company restructuring at the beginning of 2018, we will continue working even more deeply on process efficiency and developing a lean company structure – a policy which will provide us with long term benefits and strength.

Our results in the Marine sector were very pleasing. Our success was primarily because of a strategical focus on niche markets which remained buoyant, such as cruise ships and ferries. We also saw improvements to our commercial fleet, which met

its target of 39M GT by June, exceeding 40M GT by the end of the year.

Certification activities remained steady with margins, reflecting a further strengthening of RINA's leadership within the main certification schemes, in the number of sites certified, in the traditional sectors and in the agri-food market. The stable growth in this area is good for our business.

During 2017 we committed major investment in a new Enterprise Resource Planning (ERP) system as part of our drive for greater efficiency. The new system will help further increase our operating efficiency in both IT and administration and reduce the number of software tools we need. We expect return on this investment within a three to six-year period.

Investing in the new ERP system enabled us to de-centralise support and administration services to local geographies for greater efficiency. The system provides clearer and faster accounting information that will be important to improve RINA's cash conversion which is our major goal for the incoming year.

Looking forward, 2018 will see the wider roll out of the new ERP system, further efficiency optimisation, and better control of working capital. Although we have set a cautious budget for the coming year, we expect to see the fruits of our work and investments from 2016 and 2017 coming to bear. Further mergers and acquisitions are a possibility and, with the experience we have gained from the EDIF integration, we have enhanced our capability to more rapidly benefit from any new acquisitions.

ANNUAL REPORT

Governance

RINA consists of the parent company RINA S.p.A., the holding which controls the main sub-holdings RINA Services S.p.A. and RINA Consulting S.p.A.

The Group through the sub-holdings and their controlled companies delivers a complete set of services, ranging from consulting engineering to certification, in five business areas: Energy, Marine, Certification, Transport & Infrastructures and Industry.

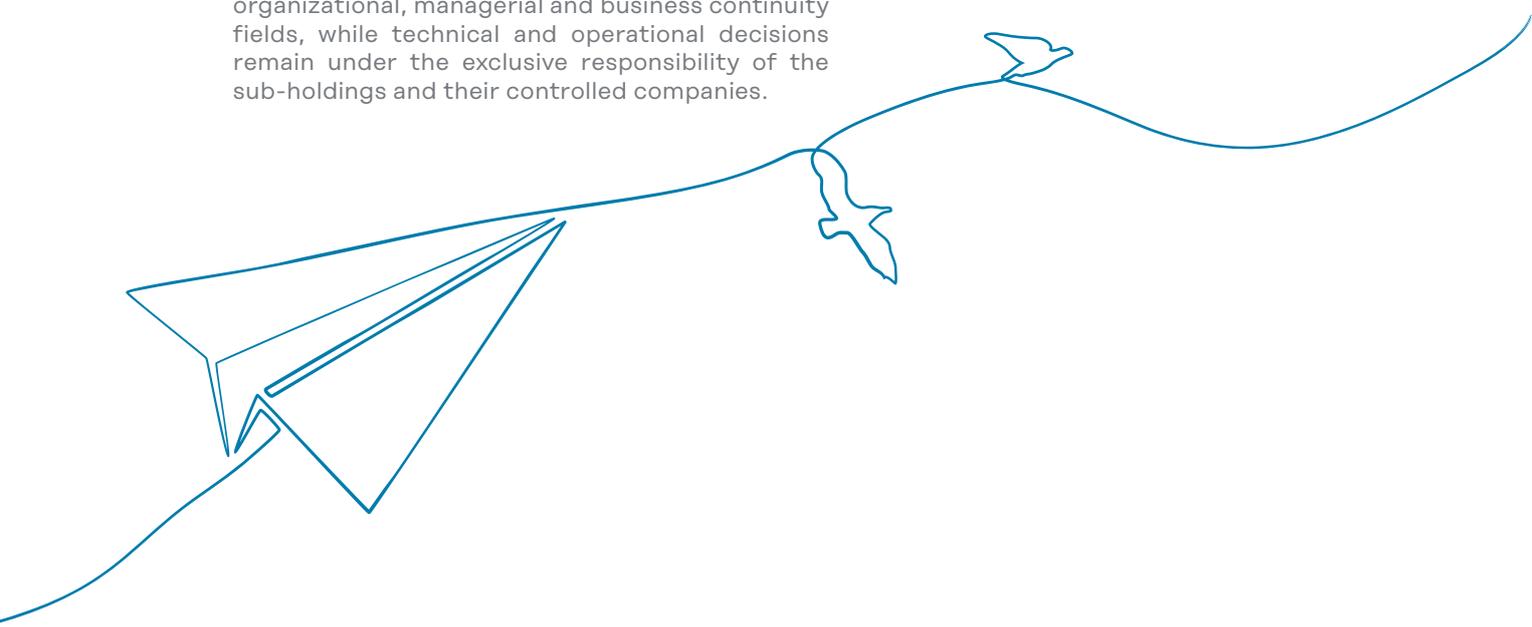
In order to ensure compliance with the applicable recognition, authorization, notification and accreditation rules, including those relevant to the management of impartiality, RINA has adopted a governance and organizational model.

According to this model, the sub-holdings are subject to direction and co-ordination by the holding in the finance, administration, strategic, organizational, managerial and business continuity fields, while technical and operational decisions remain under the exclusive responsibility of the sub-holdings and their controlled companies.

Direction and co-ordination is carried out through the delivery of corporate staff services, to pursue uniformity, economies of scale and an effective control, through the functional relationship between the governing bodies of the holding and of the sub-holdings and through the definition of policies, information flows.

The strict separation of duties in the governing bodies and the impartiality risk assessment, which identifies and manages the impartiality threats coming from the company relations, ensure compliance with the applicable impartiality rules.

The Chief Risk & Compliance Officer, the Corporate Compliance Board and the Safeguard Impartiality Board play a central role in ensuring an effective management of impartiality threats.



ANNUAL REPORT

People



3,700+
EMPLOYEES OF
90 NATIONALITIES



222.000
HRS PERSONNEL
TRAINING



170
OFFICES

As a multinational Company, RINA needs to develop a world-wide multicultural managerial talent: this is one of the main reasons why during 2017 we have expanded our network of HR managers across the world. Additionally, integrated teams of business and HR managers lead to better and faster HR services to our colleagues, and increase the knowledge of local labour markets. Presently we have regional HR managers in various European countries, in China, in India, in the USA, and in Brazil.

Training remains a top priority for RINA with significant investments and regular on-the-job training for technical activities. Specific training initiatives during the year included a program which identified high-potential, middle-level managers and provided them with customised coaching to help them attain their potential. Line managers were functional to the project, not only for identifying areas for possible improvement, but especially as mentors in the post-coaching phase.

During 2017 we prepared for the launch, in 2018, of a flexible working initiative. Flexibility gives a sense of personal control and ownership, care and responsibility, which turns into motivation. We believe that the result will be higher productivity, creativity, performance, and commitment. Empowerment will make our colleagues more confident and able to make their decisions by themselves, which further will result in improved efficiency and effectiveness. The program, named WorkLifeBalance@RINA, is presently underway with pilot projects that started in April 2018 and plans to roll out to the wider RINA in the future.

Inclusion and belonging are key values for RINA people. We do realize that these values go hand-in-hand with diversity. While diversity was already part of our 2017 Corporate Social Responsibility project, we are now launching a Diversity & Inclusion global project aimed at embedding core

principles of inclusiveness in all our processes and across our entire organization.

A 2017 special HR focus has been the integration of our new colleagues within RINA, following the acquisition of EDIF in 2016: we managed to rationalise our organisation while avoiding redundancies.

Every day, more than 5,000 people of 90 different nationalities work in RINA of which about 3,700 are employed full time.



ANNUAL REPORT

CSR



**100%
RENEWABLE
ENERGY CONSUMED
IN ITALY**



**46
SITES HSE
MANAGEMENT
SYSTEM CERTIFIED**



**CONTRIBUTION
TO THE CARLO
FELICE NATIONAL
THEATRE**

RINA believes in the importance of protecting life and the environment in a rapidly changing world. As part of this vision, the company is committed to further strengthen its Corporate Social Responsibility (CSR) policy, issued in 2016.

During 2017, to better fit the needs of multiple functions within the company, RINA developed several initiatives relating to the environment, security of people and assets, sustainability and health & safety of personnel and updated the internal CSR tool, used to monitor non-financial matters.

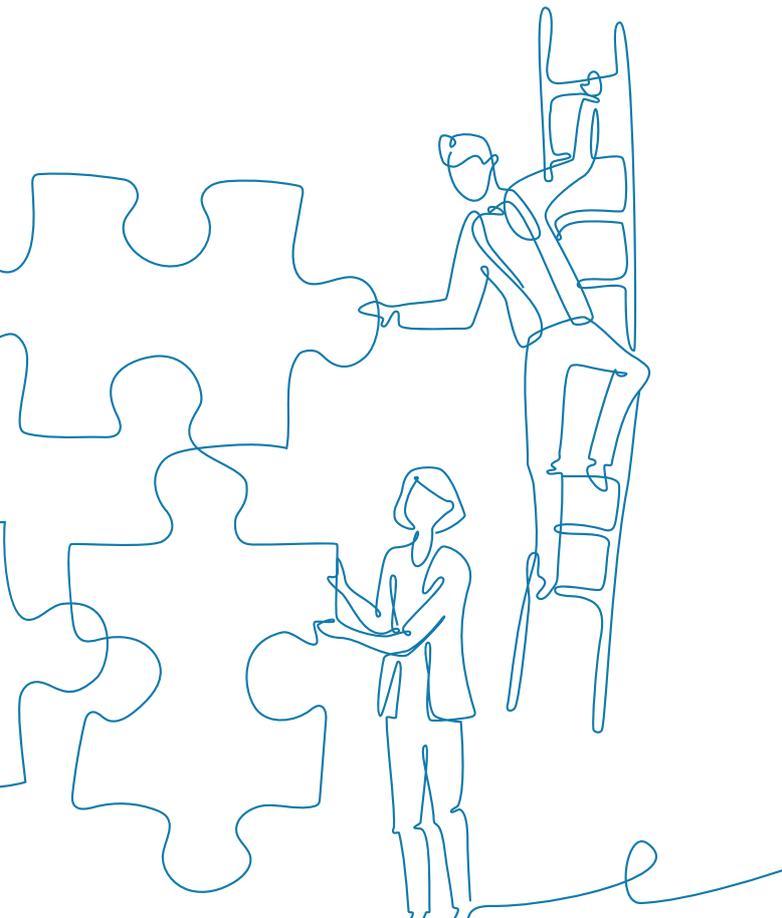
RINA health, safety and environmental (HSE) management system has been certified by DEKRA. The entire energy consumption of RINA structures in Italy in 2017 has been drawn exclusively from renewable sources.

In addition, RINA developed a Human Rights Policy and Modern Slavery Statement to comply with UK legislation, adopted voluntary anti-corruption initiatives and ran its second RINA Safety Day to raise health and safety awareness among employees.

In 2017 RINA started a 'Smart working' project, whose implementation will start in the first half of 2018.

Other areas of activity included a new platform and a procedure to manage whistleblowing and continuation of collaboration with Helpcode's "Set an extra place at the table" project to benefit the school in Acquisanta.

RINA has continued to support UN Global Compact Ten Principles and issued its first Communication on Progress (COP), which also includes the activities the Company is putting into practice to support the 2030 Agenda for Sustainable Development. Furthermore, RINA has joined the Transparency International – Business Integrity Forum and Sodalitas Foundation, the Italian Partner of CSR Europe.



ANNUAL REPORT

R&D



**348 R&D&I FUNDED
PROJECTS IN THE
LAST 5 YEARS**



**18 NEW R&D
PROJECTS
STARTED**

RINA is actively participating to the current research and Innovation programme funded by the European Commission, Horizon 2020 (H2020), in particular in the areas of Industrial leadership and Societal Challenges. Our approach is based on Open Innovation, that is a more distributed and participatory approach to innovation, and we work in partnership with academic partners, technology providers, end users, including public authorities and clients, in order to accelerate the time to market and create new revenues streams for RINA.

The participation in collaborative R&D Projects is the way to stay ahead of market trends, keep RINA relevant, and develop strategic relationships with key players and stakeholders in the areas of higher interest for the company.

2017 was one of the most successful years for RINA in terms of the number of new European R&D projects granted thanks to a significant effort in proposal preparations: more than 190 proposals submitted in 2017. Out of the successful proposals in over 70 % RINA is coordinator. In addition to the new projects starting at the end of the year or in 2018 with an average duration of 3-4 years, a number of new projects have been launched in 2017. This includes areas of strategic importance for RINA, including resilience of critical infrastructures, smart grids, energy efficient in buildings and in manufacturing, sustainable transportation, sustainable process industries.

Other running projects have reached important milestones towards market uptake. Among others, ANYWHERE, to safeguard critical infrastructure from the negative effects of climate change; EVERYWH2ERE, targeting the adoption of fuel cell and hydrogen technologies for transportable FC gensets; ENDURCRETE, for a new cost-effective sustainable concrete for long-lasting applications; SMILE, smart grid technologies on islands, and PUMP-HEAT to address the energy efficiency of buildings and industrial plants.



**17 R&D PROJECTS
COMPLETED**



**190 PROPOSALS
SUBMITTED**



**50 SUCCESSFUL
PROPOSALS**



**116 PROJECTS
ONGOING**

ANNUAL REPORT

Highlights & Achievements

CORPORATE

- RINACube, the new platform for the strategic application of data

ENERGY

- Coral South FLNG unit
- Eni Framework Agreement for asset integrity services
- Electric Vehicles - Western Power Distribution
- Technical due diligence of 1.4gw TerraForm solar portfolios
- SMILE project, "SMart IsLand Energy systems"

MARINE

- Inventory of hazardous material on Saipem fleet
- Floatability and Vulnerability Assessments on cruise ships
- MSC Seaside delivery
- Construction and classification of a new Prysmian Group cable laying vessel

T&I

- Worldwide procurement and vendor inspections for Turkmenbashi seaport
- Railway construction in Tanzania
- Strategic development of Kuwait ports
- Railway Interoperability Certification in China for CARS
- UNaLab. Smart, inclusive, resilient and sustainable local societies through nature based innovation

CERTIFICATION

- ISO 37001 Anti-bribery management system
- ANSI TIA-942 standard data centre compliance assessment for major telecommunications company
- Contractual standards audits MAN Truck & Bus AG and a Volkswagen
- Biomotive, bio-based automotive components

INDUSTRY

- Tokyo Steel project
- Determining aneurysm growth
- Shaping business operations of London Metropolitan Police
- High Speed 2 (HS2) training and simulation review
- Manutelligence, product service design and manufacturing intelligence engineering platform

ANNUAL REPORT

Energy



40%
OPERATING
REVENUES

During 2017 the RINA energy business underwent a year of integration and knowledge sharing to prepare for all services relating to this sector to be aggregated within a single business unit at the beginning of 2018. The new Energy Business Unit encompasses environmental and social sustainability services, conventional and renewable power generation, power grid transmission and distribution, Oil & Gas and other supporting services. This transformation makes us stronger, enables us to deepen the services we offer and gives us greater efficiency. Combined with our investment in continued innovation, research and strong geographical presence, the outlook for the Energy business is good.

Power Generation, Transmission & Distribution

The power sector is experiencing a shift in paradigm, with the growing integration of renewable resources and changes in how we consume energy. Future infrastructure is moving away from heavy grids connected to large power plants, towards smart grids and light grids. Indeed, power is becoming less about the sale of a commodity and increasingly about management issues, with more small, renewable power resources improving efficiency, and lower power consumption, all reducing the overall cost of energy.

The demand for new transmission and grid management solutions will continue to grow and strategies to strengthen our position in this area, which started in 2017, form part of a four to five-year strategic plan. Highlights of 2017 show how truly global our business is; they include a contract for engineering services including calculations for civic structures, modelling of frames, mechanical and electrical piping, and detailed design for construction of a conventional power plant for a major Israeli EPC contractor. Also, a contract from G.E. for the engineering, calculations, modelling and design of another conventional power plant in Argentina.

We were active in technical due diligence services for an interconnector between France and Italy and involved in the start of feasibility studies for an

interconnector to feed a large Danieli steel plant. Working alongside the RINA Research business, we have also been engaged with the SMILE (Smart IsLand Energy) project, testing the use of smart grid technologies on three pilot islands: The Orkneys (UK), Madeira (Portugal) and Samsø (Denmark).

With its rich, natural resources and growing GDP, expansion in Africa continues and will remain an area of focus for us moving forward. The region has relatively little existing infrastructure and plenty of room and need for new installations and so, unlike crowded developed countries, is free to develop new grid infrastructures. In 2017 we continued our collaboration with International Financial Institutions (IFIs) on the development of a number of projects where we delivered both technical and environmental and social services.

Digitalisation is another exciting and growing area of the RINA business. 2017 projects saw us assisting operators with design requirements to upgrade existing grids to smart grids. When it comes to substation design to accommodate this change, no new components are required but, to adapt to the new grid behaviour and to manage grid harmonics, a new way of operating is required. Also within the digitalisation transformation, the company has been working with Enel to create a 3D models of an existing power plant as part of work to retrofit and upgrade part of the plant to increase operator, maintenance and management efficiency.

Renewable Resources & Power Storage

Our client and geographical expertise in renewables and sustainability has grown to reach a critical mass in terms of resources, giving us a strong and prominent position in this global market space. We have also been working in the energy storage market, a research area that will be a very important component in the growing use of renewable power resources.

Power storage accumulation and restoration times are critical to making renewable supplies reliable and stable enough to replace traditional large-scale energy production and RINA is supporting research

280+ SOLAR
PV PLANTS
WORLDWIDE
CONSULTING

1M+ HOURS OF
ENGINEERING

41 LNG
PROJECTS

8+ GW INSTALLED
CAPACITY PLANT
CONSULTING
ENGINEERING

in this area. With power storage representing up to 30% of total costs of medium to large size renewable power projects, the Company is providing consultancy services to help its clients select the best technical solution and business strategy.

In 2018 we will reinforce our focus on the offshore wind market for which we have won good contracts in 2017, such as inspection activities and windfarm grid connections. These projects will provide good references for us to further penetrate these markets going forward.

Oil & Gas

Projects prior to the fall in oil price were finalised in 2016, and 2017 saw little new CAPEX expenditure. Indeed, CAPEX investment in the Oil & Gas industry fell by half, from \$600Bn to \$300Bn, in the space of just two years. To adapt to these market conditions, RINA expanded and deepened the services it offers with a shift in focus from its traditional upstream CAPEX stronghold to secure more OPEX contracts. This included specific focus on LNG projects. Alongside integrating the EDIF business, preparing for restructuring and despite acquiring new skills for OPEX projects, we performed relatively well in Oil & Gas.

Highlights in our OPEX activities during 2017 include the execution of more than 50 asset integrity management studies for Eni across its downstream refinery and petrochemical sites in Italy.

We saw success in many LNG projects. We have a lot of experience in LNG from early stage feasibility studies to supervision services. We worked on more than 40 global projects in 2017, including 22 new ones. These included a contract over 3 years awarded by Swan LNG in India for project management support and supervision services. Other contracts came from countries including India, Italy, Bangladesh, Thailand, Pakistan, Colombia and USA.

Single source projects are an increasing trend in the oil business as these offer the potential of greater efficiency both in terms of activities and in contract management. Our successful integration with EDIF

has helped in this area, increasing our geographical and client network. Successes based on having EDIF resources included an important contract with Exxon for an FPSO in Guyana and broadening the services we can offer in China where we saw, in 2017, tremendous 250% increase on the previous year.

Highlights during the year included our work in Mozambique with Eni, where RINA was appointed for permitting services and third-party certification for subsea and technology qualification for a floating LNG project. We further provided engineering and supervision services for an FPSO based in Ghana and, through our global presence, were able to follow the project to China, Singapore and Vietnam during the construction of the hull and FPSO modules. The project peaked in 2017 and the FPSO moved to Ghana for commissioning and start-up; a point when RINA had more than 70 people working on the project. In Mozambique our environmental and sustainable team is also continuing to work as independent environmental and social consultant on behalf of the Lenders' group financing the Anadarko LNG project.

Other global successes include a degassing OPEX project for a Computerised Maintenance Management System (CMMS) in Iraq. This region presents logistical difficulties, especially as personnel were required to move between sites, but is something in which we have experience and capability. We were also successful in being selected as the single-source provider for pipeline inspection services on a continuing project for the Transmountain Oil Pipeline in Canada.

Although still low compared with historical levels, the oil price appears now to be steady. These stable market conditions give financial institutions more confidence and mean new projects are beginning to open, making the outlook for 2018 more optimistic. After all, existing wells cannot produce forever and there comes a point when new investment is needed. It should also be noted that, despite the falling cost of renewable energy, investment in Oil & Gas will not disappear as demand continues from the chemical industry for these products. There will simply be a shift from energy to meeting demands for chemical production.

ANNUAL REPORT

Energy projects

RINA TAKES THE MEASURE OF 1.4GW TERRAFORM SOLAR PORTFOLIOS



RINA provided technical advisory services to evaluate global solar portfolios totalling 1.4GW. The work, delivered on behalf of Brookfield Asset Management, has informed one of the largest deals by capacity in the renewable energy sector to date, with the asset manager taking a 51% controlling stake in Terraform Power and acquiring fellow SunEdison yieldco Terraform Global. By engaging RINA, Brookfield was able to capitalize on the technical advisor's international expertise supporting major acquisitions in the renewable energy sector. With project teams based out of North and South America, Europe, Africa, India and Australasia, RINA has substantially grown its global portfolio, supporting large-scale multimillion dollar transactions and financing deals at innovative projects worldwide.

ENI FRAMEWORK AGREEMENT FOR ASSET INTEGRITY SERVICES



RINA provides services to the downstream sector of the Oil & Gas market particularly in the area of specialist asset integrity management activities. The expertise, resources and technologies involved for Eni are, among others, corrosion, process and asset integrity engineering and plant Inspections capabilities, very similar to those applied in upstream sectors. The scope of the project was very wide and also included laboratory testing.

CORAL SOUTH LNG



RINA has been chosen by Eni East Africa to act as Certification Authority for the design and fabrication of subsea structures and equipment and to provide technological validation services for the company's Floating Liquefied Natural Gas (FLNG) unit intended for the Coral South Development Project. The Unit will be the first of its kind in Africa and will be installed in the South Part of Area 4 offshore Mozambique in the deep waters of Rovuma basin. The Coral South LNG project, for its size, quality of resources and geographical position is expected to boost Mozambique's economy.

ELECTRIC VEHICLES



Due to advances in technology, and a result of governmental initiatives, electric and hybrid electric vehicles (EVs) are going to become more commonplace in the years ahead, and this largescale use of EVs will provide challenges for grid operators; a result of loading and harmonic disturbances imposed on the supply during charging. This project involved the measurement of harmonics produced by 23 anonymized cars at a testing ground. The results were used to determine the quality of EV that could be connected to the grid, while obeying the relevant standards of supply. RINA installed specialist measurement instruments with the results loaded via the internet into our servers for review. We utilized a specialist harmonic software to plot the results and record within the overall report. As a direct result of our work, the electricity utility can develop its planning criteria to consider harmonics and develop a system that is robust and resilient.

NEARSHORE SURVEYS AND LABORATORY TESTING ON WIND FARMS AND POWER CABLES



RINA set-up a new service, providing nearshore surveys and laboratory testing for wind farms and power cables targeting wind farms and cable developers, operators, installation and survey companies. We will apply our extensive experience in similar activities on Oil & Gas projects, providing a complete range of services, including geophysical, geotechnical, laboratory testing, engineering and reporting capabilities.

FEED DESIGN FOR A FSRU



RINA cooperated with Fluor in delivering a Front-end Engineering Design (FEED) for a Floating Storage Regasification Unit (FSRU) in Thailand for EGAT (Electricity Generating Authority of Thailand).

PERLA-PREZIOSO PIPELINE INSPECTION WITH "CLEAN SEA" TECHNOLOGY



This fascinating new project uses some of the latest subsea technology. An Autonomous Underwater Vehicle (AUV) called "Clean Sea" was used for both environmental monitoring and underwater asset integrity inspections by Eni in the water of South Italy (Sicily). RINA's geophysical high skill resources were used to manage equipment mounted on Clean Sea. RINA was chosen by Eni, as a survey/engineering company capable of managing the system integration, encompassing survey operations, in order to be supported in data acquisition, data processing and engineering and reporting.

RESTRUCTURING OF 5 SUBSTATION CONTRACTS



The aim of the project was to bring more power to the Republic of Rwanda and the Democratic Republic of the Congo by building an interconnector between the two countries and substations to distribute the power to consumers. In 2017, the Engineering, Procurement and Construction (EPC) contractor filed for bankruptcy and RINA was engaged to provide professional services, to initially review site and check on progress made and that all plants procured were available and in a serviceable condition. RINA assisted KfW in the closure of the project and prepared contract documentation for new projects' tendering to complete the construction and to procure any outstanding equipment. This project was felt by RINA to have a strong purpose for the ongoing development of countries in Africa, providing clear benefit to the people.

PROBABILISTIC ASSESSMENT OF SEISMIC INDUCED SOIL LIQUEFACTION



RINA introduced the innovative probabilistic assessment of seismic induced soil liquefaction service to help reduce foundations cost for onshore and offshore Oil & Gas assets installed in seismic regions. The service involves seismic and geotechnical engineering skills from RINA's geosciences team and has been developed taking advantage of the company's advanced results in probabilistic seismic hazard assessments (PSHA). Thanks to RINA's expertise, the reliability of test results is increased and unnecessary conservatisms are reduced.

CONSTRUCTION, COMMISSIONING AND START-UP OF A FPSO



Constructing any Floating Production Storage and Offloading (FPSO) vessel is a huge project. RINA was chosen to support Eni in the first FPSOs in Ghana and in a very important Oil & Gas development for the country. Work initially began in Singapore where the FPSO was mainly built and then moved on-site to Ghana. RINA followed all the phases of construction, commissioning and start-up of the FPSO, providing the required expertise in different project locations. The FPSO first oil allowed Eni to start production quickly, just two and a half years after the development plan approval.

ENEL POWER GENERATION PLANT



Multidisciplinary model and laser scanning for project design. Proposal for a plant virtualization which can become a new paradigm for operations and maintenance, and training. It's a first example of the digitalization of a traditional service. It opens a new sub-market for big managers of energy production plants.

ANNUAL REPORT

Energy projects

ENI EST SANNAZZARO REHABILITATION PROJECT



RINA is supporting Eni in the rehabilitation of the Sannazzaro refinery in Italy, damaged by a fire in 2016. The nature of the damage required a high level of technical expertise in field engineering for several disciplines, safety and technical support, inspections, project coordination, contract administration, planning and commissioning support.

RINA'S GEOGRAPHICAL EXPANSION



During 2017 RINA expanded the number of offices and increased staff headcount worldwide. Reflecting growth opportunities in Australia, particularly in the renewable solar sector permanent staff was hired. In India offices have been set up in various locations bringing the RINA team closer to vendor locations and project sites, particularly in central and north-east India. In Malaysia, RINA is now in the position to comply with the Petronas SWPC codes and other Oil & Gas players in the region as well. RINA has also entered a joint venture with a company in Brunei.

STRATEGIC PARTNERSHIPS



Many new clients joined RINA in 2017 from countries all over the world. Outotec, in Europe, will allow RINA to expand the work in the minerals and metals, waste water management and renewable energy production fields. VBMS, in the Netherlands, KPO in Kazakhstan and ADNOC Refining in the Middle East. RINA has become the recognised inspection body in India for clients including L&T, SK-HCG, Bombardier, IOCI, NBCC, PWD. RINA has strengthened its partnership with Chevron by providing pipe mill services for Chevron in Nigeria.

COMPLETE OUTSOURCING SOLUTION FOR INSPECTION & EXPEDITING



RINA builds complete outsourcing models for its clients, providing the flexibility that challenging markets need. RINA applies these competencies in the Renewables sector and SURF (Subsea Umbilicals, Risers & Flowlines) market through highly skilled inspection personnel and centres of excellence for SURF and Power Cable Inspections.

AIRCRAFT INSPECTIONS



Launched in 2017, RINA developed the expertise and services to inspect aircraft used for transport of personnel and equipment to offshore fields, and has done so on behalf of Petrobras. RINA's team was built with some of the best resources in the market. With skilled pilots, mechanics and inspectors that are trained by national and international specialists, RINA's clients can ensure the ongoing safety of their employees.

TECHNICAL DUE DILIGENCE FOR A BATTERY ENERGY STORAGE SYSTEM



RINA provided due diligence services, prior to the financial close, for a grid scale Battery Energy Storage System (BESS). The project will connect a 33 kV feed to the editor solar farm network at the solar farm substation to facilitate the movement of energy from a BESS. A long-term contract for commercial services has been signed with EnergyAustralia who will operate the battery in conjunction with its offtake from the Gannawarra Solar Farm. Upon completion the Gannawarra Energy Storage System and the Gannawarra Solar Farm will be among the largest integrated solar and storage facilities in the world (and the largest in Australia) and provide a range of direct and indirect benefits to Victorian and Australian consumers.

IBRI & SOHAR CLOSED-CYCLE GAS TURBINE PROJECTS



RINA has enjoyed a strong relationship with Ansaldo for many years and is actively involved in the Ibri & Sohar contracts which will provide 8 heat recovery steam generators (HRSG), 8 gas turbines, 4 steam turbines and 12 generators for a total of more than 3700 MW for two Power Plants located in Oman. RINA is providing quality control supervision and pre-shipment services. The HRSGs QC supervision has been provided in China, India and Korea with resident inspectors, and worldwide for spot inspections on the other components. The RINA team comprises mechanical, welding, NDT, electrical and I&C inspectors and expeditors.

WHP4 DESIGN APPRAISAL SERVICE



This project is particularly important as it is the first time RINA's new rules for fixed platforms were applied. "Rules for the Classification of Steel Fixed Offshore Platforms" were developed in order to ensure that fixed offshore platforms meet the required standards in order to reduce, to the lowest possible level, any risk to human life or the environment. By complying with the new rules, the platform owner can insure the platform.

RINA SUCCEEDS IN WIND ENERGY



A number of contracts have been won in UK and Denmark. Three key projects in UK include, Galloper Offshore Wind Farm, East Anglia One offshore wind farm and the Aberdeen Offshore Wind Farm. The latter project comprises a 92.4 MW 11 turbine facility using V164-8.4MW turbines paired with suction bucket foundations. RINA provided specialist inspectors with extensive cable manufacturing and testing knowledge. Such inspections will reduce the risk of procured equipment failure.

TRANSMOUNTAIN PIPELINE PROJECT



The TransMountain Pipeline Project, based in Western Canada, required a number of RINA's specialist skills. The principal services provided were pipemill inspection and mechanical inspection although office data entry and general project management were important factors in the success of this reference project. RINA had the added complication of managing the political and environmental concerns that the client was dealing with at that time. This led to the development of a trusting business relationship which created a positive environment for the management of future projects.

TURBINES FOR GENERAL ELECTRIC IN ALGERIA



This key project for General Electric, located in Ain Yagout, Algeria, is a good example of the wide range of integrated services we can deliver. RINA was hired for Owner's Engineering and PMC Services on GE's turbines and generators assembly for an industrial facility. RINA provided all project management, multidisciplinary engineering design review services, site activities, field engineers and site manager, planning/cost controlling services, QA/QC site services and inspections.

QA/QC INSPECTION CONTRACT IN VIETNAM



RINA was awarded by Rosneft Vietnam B.V. a three-year contract for Worldwide Quality Assurance & Quality Control (QA/QC) Inspection Services as part of the Rosneft PLD Development Project, offshore Vietnam.

ANNUAL REPORT

Energy projects

POWER PLANT PROJECT IN ARGENTINA



EI-Bracho Add-on (EBA) was the project to complete the YPF Energia Electrica & GE Energy's investment for the new 470-MW combined-cycle plant in Tucuman, Argentina. RINA provided both lead engineering coordination from GE Switzerland office and support to local construction permits as per Argentinian rules. The client required a special focus on the Building Information Modelling (BIM) approach, using E3D, in order to improve the digital exchange of data providing a paper-less detail design project. EBA Add-on project is the completion of the first power plant project financing in nearly 20 years in Argentina and it has a very challenging schedule for its execution. The YPF & GE Energy investment was voted winner of the Structured Finance Deal of 2017 in Latin America.

SMILE - SMART ISLAND ENERGY SYSTEMS



Smart Grid is an area of rapid expansion and one in which RINA is seen as one of the leading players. The kick-off of the EU funded SMILE project "SMart IsLand Energy systems", coordinated by RINA, was held on May 2017. The project will demonstrate different innovative technological and non-technological solutions in large-scale smart grid demonstration projects in the Orkneys, Samsø and Madeira islands, paving the way for their introduction in the market in the near future. The technological solutions vary from: integration of battery technology, power to heat, power to fuel, pumped hydro, electric vehicles, electricity stored on board of boats, an aggregator approach to demand side management (DSM) and predictive algorithms. RINA coordinates the activities for the effective implementation of new controlling algorithms and predictive measures to avoid grid unbalancing, overcharging and frequency mismatching. Furthermore, RINA is developing cyber-security tools supporting the assessment of threat impacts on smart grids, including cyber-attacks, to better design reactive security measures in these infrastructures.

INTERCONNECTOR ITALY FRANCE-LENDERS' ENGINEERING CONSULTANCY



The project, a high-tension underground HVDC power line between Italy and France, totalling 190 km in length with a capacity of 600 MW, will be the longest direct current underground power line in the world. It is the first European power interconnector project to be privately financed in an innovative deal that brought together EIB cover and bank debt. Many of the world's top technology providers worked on the HVDC power transmission, including TERNA, RTE, Prysmian, GE Alstom.

RINA's role was to act as Independent Engineers, with the task of performing a Technical Due Diligence in the interest of the lenders: EIB, CDP, Natixis, Intesa Sanpaolo, UniCredit, UBI Banca. Involvement in this project brings RINA to the forefront of innovation and European grid integration. The project won the PFI Awards as Power Deal of the Year

KAFIREAS WIND FARM INSPECTION AND EXPEDITING SERVICES WORLDWIDE



Enel Green Power's Kafireas Wind Farm in Greece is an onshore wind project. RINA's qualified electrical and mechanical inspectors worked on its submarine power lines which required specialist expertise within the renewables sector.

LOW CARBON



Low Carbon is a UK renewable energy company that invests and operates in renewable energy projects. Projects are owned by VLC Energy, a joint venture between Low Carbon and VPI Immingham. RINA was commissioned as Technical Advisor to assist VLC Energy with a wide range of technical and commercial roles, which resulted in the successful qualification for National Grid's EFR tender.

RINA was involved in the implementation phase and contributed to winning EFR projects, delivering tender evaluations, technical due diligence reports and EPC Technical Schedules, such as drafting the Commissioning and Testing Schedules and Employers' Requirements for EPC and O&M contracts, drafting and negotiation of operational performance mechanisms, energy throughput, system consumption, system energy capacity and owner revenue protection mechanisms. Now RINA is undertaking the acceptance / take-over work for these projects. This includes site construction inspections and verifying that the functional and service delivery commissioning and testing has been sufficiently achieved.

BENBAN SOLAR PV PLANT PROJECT

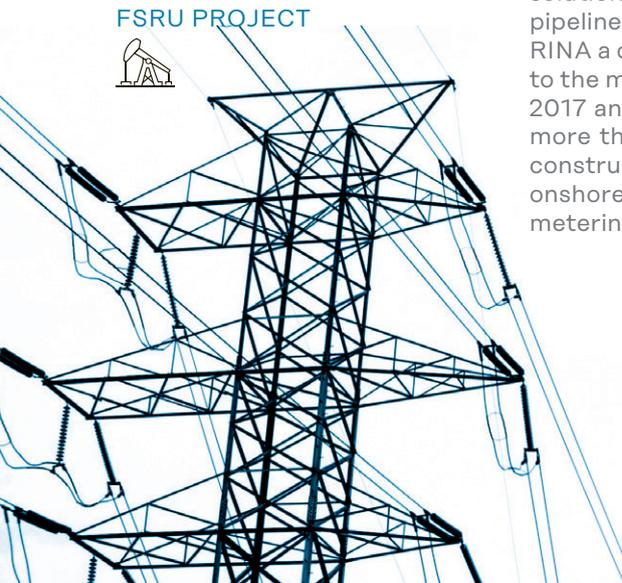


The Benban project will include the construction and operation of up to 40 individual Solar Photovoltaic (PV) Power Plants projects with a total generating capacity of 1,800 MW on a 37.2 km² site located West of Benban village in the Aswan Governorate of Upper Egypt. The project is sponsored by the Egyptian New and Renewable Energy Agency (NREA) and financed by the International Finance Corporation (IFC) and the EBRD. RINA Consulting has been appointed by the Facility Management Company (FMC) in charge of coordinating the entire project, as the international environmental and social advisor to support the FMC in achieving compliance with IFC Performance Standards and EBRD Performance requirements. Within our scope of work we are also tasked to provide assistance to the different Developers/Contractors for the preparation of their own environmental and social management documentation, plans, procedures and work instructions according to Lenders' standards.

PROJECT MANAGEMENT CONSULTING FOR SWAN FSRU PROJECT



SWAN LNG Private Limited is developing India's first FSRU based LNG import terminal at Jafrabad in Gujarat, for an output of 10 MMTPA. The innovative solution includes a permanently moored FSRU with a FSU connected via a jetty/ pipeline to the national grid through an onshore metering station. SWAN awarded RINA a contract for the Project Management Consultancy (PMC) services related to the marine, onshore and topside development. The PMC works began in March 2017 and they are expected to be completed in October 2020. RINA will deploy more than 50 people to provide PMC services for several activities such as the construction of a 2.2 km breakwater and 2 Jetties, dredging of the port basin, onshore facilities development, topside facilities such as pipelines, loading arms, metering station and control systems.



ANNUAL REPORT

Marine

During 2017 RINA's business performed better than the general market and consolidated its position as a viable partner with diverse services. It sustained growth because of RINA's strong position in niche markets, specifically cruise, navies, ferries and yachts. Our previous efforts in developing value-added services such as energy efficiency, support services through various project stages, and digital software, have delivered rewards this year with growth in these services of over 20%. At the close of the year RINA was first best society in the world for ships entering into class and, whereas the global fleet grew by only 3%, RINA's fleet grew by around 7%.

Activity in cargo ships, tankers and containers remained slow. The passenger, ferries and Ro-Ro businesses, however, remained good. New builds in Ro-Ro and ferries are being driven by environmental legislation, where owners are considering new builds more financially viable than re-fits of older vessels. Low cost flights have also impacted the Ro-Ro industry, moving it away from a focus on passenger activities towards adding capacity for trucks and cars.

Offshore there were some signs of recovery but activity was still low, although work relating to gas, such as LNG fuelled ships, were stronger. The cruise sector performed exceptionally well with the need for more ships to satisfy demand in this buoyant market. Overall, activities in cruise and Ro-Ro more than balanced the loss of activity in other markets. Naval activity was also strong during 2017 with important projects for the Italian and Qatari navies, and so was yachting that performed beyond our expectations.

In Europe the classed fleet increased by more than 150 ships and the year started well as contracts were signed by important shipowners in Greece, Cyprus and Northern Europe like Thenamaris, Cyprus Sea Lines, Hellenic Tankers, Vroon, Tschudi Ship Management, Finnlines and Hansa Shipping. In addition to ships in service, we have been selected for the construction supervision of an innovative cable layer, to be built in Northern Europe.

Italy continues to be a stronghold for the business. Highlights in the year included a large contract for Grimaldi in Naples for 12 hybrid Ro-Ro cargos built in China. The biggest cruise ship built by Fincantieri for the Mediterranean Shipping Company (MSC) was also delivered. This was the first of four new ships and the first time MSC had selected to build a ship of this type in Italy.

There was significant investment in Greece during 2017 with resource added to strengthen RINA's position and create a centre of technical excellence in the country. By investing and delivering solutions, we have gained a position of trust with clients resulting in highlights such as the ships that were signed from Thenamaris. Despite lower market pricing, the EMEA region performed better compared to 2016 through a combination of new projects and investment in competence.

With a new office opening in Malaysia at the start of 2017, we have also had good success in South East Asia both in Malaysia and Indonesia. Considering that we started with no class fleet in Malaysia, a year of constant growth has resulted in fleet size of 100 ships at the end of the year, which was an excellent result. Our Indonesian business also grew with improvement in ship sizes and types.

Much of RINA's success is based upon its ability to add value with its services. This includes timely provision of services and solutions to optimise vessel or crew efficiency. Around 20 additional technical staff were added during 2017, ensuring RINA continues to be competitive based on its expertise rather than just on price.

RINA has the advantage of being able to transfer its experience with other industries to support future marine technologies. During 2017, our breadth of knowledge and experience helped us review processes and offer innovative solutions. For example, information about new materials or skills from industry relating to the assessment of drawings to avoid discrepancies or conflict in designs.



40M GT
CLASSED SHIPS

1ST IN FERRY
CLASSIFICATION

115 FLAG
AUTHORIZATIONS

27%
OPERATING
REVENUES

Work to transition core activities to geographical centres of technical excellence in Europe and Asia started in 2016 and continued through 2017. Asia will be a priority focus over the 2018, especially with the emerging cruise ship market in China.

The marine industry is just beginning to understand the benefits of digitalisation in terms of performance monitoring and analytical dashboards, which enable a complete view of main ship parameters and can help owners increase efficiency and safety across their fleet. At the end of 2017 RINACube, our digital platform for the exploitation of the full potential of data, was launched and will re-enforce our position as a value-add partner in diverse service areas. We will continue to enhance our sales and commercial network dedicated to digital solutions to support growth in this area.

Based on a successful year in 2017 with difficult market conditions, in 2018 RINA plans to continue with its winning strategies and consolidate the success it has achieved. It will continue to proactively liaise with clients, understand what services they need, and add to its competencies to give additional competitive edge.

Focus will remain on the growth of passenger ships and new regulations moving ships towards the reduction of air emissions through the use alternative fuels: the transition to new fuel sources will happen more quickly in sectors such as cruise rather than cargo because of the added value to brand reputation and because the set cruise routes enable more straightforward planning of logistics and infrastructure to support the vessels.

There are positive signs of recovery in the marketplace and we are very optimistic for the coming years. The restructuring of the business was a positive move and will strengthen our position. It takes us back to our roots while focussing on our future.



ANNUAL REPORT

Marine projects

MONITORING, REPORTING AND VERIFICATION OF CO₂



RINA was accredited by ACCREDIA for the assessment of monitoring plan and verification of emissions report in accordance with Regulation (EU) 2015/757. In June 2017, RINA won the first MRV contract aimed at verifying that the entire fleet of the d'Amico Group met the Monitoring, Reporting and Verification of CO₂ emissions Regulation requirements. The fleet comprised 36 vessels which are managed by d'Amico Società di Navigazione and 35 vessels managed by its subsidiary Ishima Pte. Ltd. During the year we verified 1.200 monitoring plans.

GUIDANCE ON BALLAST WATER TREATMENT SYSTEMS



RINA issued the "Ballast Water Convention and Ballast Water Treatment Systems Guidance on procurement, installation, operation and certification". It contains the useful normative and technical information for shipowners to comply with the IMO BWM Convention, even before it enters into force. It also gives an overview of the available treatment technology on the market, of the required certificates, plans, record books, surveys, a guidance on selection, procurement and installation of the BWM treatment system.

GUIDE FOR USE OF REMOTE INSPECTION TECHNIQUES



The RINA Guide for the use of the Remote Inspection Techniques (RIT), in accordance with the IACS relevant recommendations, provides indications to perform surveys on board using drones. The Guide is applicable whenever drones, umbilical systems, unmanned robot arms, climbers and/or any other system are used in class related activities in addition to the attending surveyor work.

NEW TRAINING CENTRES

RINA opened marine training centres in Hamburg and Fort Lauderdale.

POLAR CODE



During 2017, the International Code for Ships Operating in Polar Waters came into force. The Code was introduced as a result of melting in some areas of the North and South Poles during specific seasons. Reduced ice cover means new routes in these usually inaccessible areas are opening up, but also means the need to ensure the safety of ships operating in these harsh conditions. The pristine environments in these areas must also be protected from pollution caused by ships. RINA was deeply involved in activities related to the assessment of existing ships and was also awarded the contract for supervision of conversion of the luxury cruise ship Silver Cloud (Silversea) to an ice-class expedition ship.

GUIDES FOR THE ASSESSMENT OF MARINE AND OFFSHORE CYBER SECURITY RISK



Whereas cyber systems are becoming pervasive in maritime industry, the increased complexity and networking of such systems can have a critical impact on the ship's safety and security due to unprecedented cyber risks. RINA's Guide for the assessment of marine and offshore Cyber Security Risk offers an overview on cyber threats, on actions to put in place to maintain security of onboard cyber systems and tools for assessing the work done on cyber risk management by shipowners and operators.

SUCCESS IN ASIA



In Asia, RINA is leader in the emerging Chinese market of high-tech innovative Ro-Ros and cruise ships building and is becoming the most selected classification society for South East Asian owners, particularly in Indonesia and Malaysia.

DELIVERY OF MSC SEASIDE



MSC Seaside, the biggest cruise ship ever built in Italy at the time, is based on a revolutionary concept with more revenue-generating solutions, more cabins, more open-deck space and an increased performance. RINA contributed directly to the success of the project, working closely with the Flag Administration by facilitating the understanding of complexities linked to the Safe Return to Port and to the Alternative Design, of the main vertical zones and lifesaving appliances, and Arrangements. The MSC Seaside was given the voluntary RINA notations "Green Star Design 3", assigned to ships equipped, since the design stage, with systems and equipment for the highest level of air and sea pollution prevention, and "Comfort class", assigned to ships that provide a high comfort level in terms of noise and vibrations both for crew and passengers, while the ship sails with engines almost at full power.

INVENTORY OF HAZARDOUS MATERIAL ON SAIPEM FLEET



Saipem S.p.A. awarded RINA a contract for the verification of the Inventory of Hazardous Material (IHM) onboard the semi-sub drilling unit Scarabeo 6 and the Jack-up drilling unit Perro Negro 3. RINA carried out the activities in accordance with the available international regulations/guidelines and in particular the EU Ship Recycling Regulation and the "Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009". This contract is just one of a number of contracts assigned to RINA in relation to IHM onboard of Saipem decommissioned fleet.

CABLE LAYING VESSEL



RINA was selected for the supervision of construction and classification of a new cutting-edge cable laying vessel for Prysmian Group. The new vessel is intended to be the most capable cable layer in the market and to offer enhanced project versatility thanks to advanced features like: deep water installation capabilities for depths of more than 2,000 m.

KING SHARK MEGA YACHT



RINA won the contract for the supervision of construction and classification of a 70m mega yacht at Rossinavi. The King Shark can navigate in extreme ice conditions. King Shark's has been developed with an emphasis on yachting lifestyle, able to move from the warm waters of the Caribbean to the sub-zero conditions of Antarctica.

SPECIALISED SERVICES FOR CRUISE SHIP OWNERS AND MANAGERS



RINA supported cruise ship owners with specialised services such as "Floatability Assessment", that takes into account the impact of open Water Tight Doors on passenger ship's operations and survivability, and "Vulnerability Assessment" of the piping system (bilge, sludge, black, grey) on board vessels to have an updated picture of the on board current situation in order to establish ways to discharge polluted substances at sea. The goal of this service was to identify the differences between as built drawings and the systems on board, as well as fittings in the lines (valves, flanges, tank covers, etc.) that could be used as access to the plant and confirm its integrity.

TECHNICAL CENTRE IN PIRAEUS



RINA opened the new Technical Centre in Piraeus, as single point of contact for technical and commercial matters for Greek and Cypriot shipowners and managers.



9%
OPERATING
REVENUES

Transport & Infrastructure

2017 has been a year where we have held our position from 2016 despite a slowdown in the market and some projects stopping. The challenge with large infrastructure projects that are stopped or delayed is the time it takes for them to regain momentum. To support the business during the year, therefore, we have focussed on improving day to day activities while diversifying in both geographies and services. Through lean project activities, our T&I business increased its efficiency during the year and improvements will continue in the coming year. T&I is a high margin business and we have continued to develop and open new markets. Overall, based on current market conditions, we are quite happy with the results we have achieved and see 2017 as a successful year.

Areas within T&I where we focused and invested during the year include Kuwait, Lebanon, China, Brazil and Denmark. We have set up a new company partnership in Lebanon. The regulations for public works in this country have many similarities to those in France and Italy, so we have all the ingredients we need to succeed here. It will also provide us with a good base to support reconstruction in Syria in the future. In Brazil we have been working hard to develop activities and, in 2017, started work to obtain accreditation to work in infrastructure. The year also saw us secure two excellent projects with the Israeli government and complete a major project in Turkmenistan. We ended the year with the acquisition of a new company in Tunisia as part of our efforts to develop North African markets.

During the year, RINA has expanded its service portfolio in real estate with activities relating to environment and sustainability objectives and building asset integrity management. We have also developed our vendor inspection services in the infrastructure market, which include pre-shipment inspection, non-destructive testing, coating inspection and expediting.

Following the acquisition of EDIF in 2016, some focus was put on supporting a small railway group located in the UK. We found some success with light rail transit (LRT) projects, which, although small, are significant as they provide us with a UK railway reference and a foothold in this market.

Other areas where we have been concentrating our efforts include Africa where we have been approaching opportunities in a more systematic way. This led to success through a joint venture with Korean partners for a large railway infrastructure project in Tanzania which is still ongoing. RINA is providing construction supervision services for over 1,000 km of railway line from the southern part of the country to its northern borders.

Following success in an international tender for the reorganisation of all ports in Kuwait, a contract signed in 2016, we started activities on the project this year, working directly for the Kuwait Port Authority. We have opened an office in Kuwait to support the two-year project, which includes analysis and improvement proposals for both the buildings and the port authority organisation. This will eventually lead to a VTS system for the monitoring of sea traffic to provide both military identification and traffic management.

Other highlights for the year included getting the Tel Aviv Red Line transportation project up to full speed. There are now seven Tunnel Building Machines (TBMs) beneath the city working on this exciting project. 2017 also saw the completion of the main dam in Ethiopia. At 160m, this awe-inspiring rock-filled dam with asphalt core is the highest of its type in the world. To fill the valley where it was constructed took five years and six million trucks.

In Europe, we have secured contracts for sustainability certification of the CityLife towers in Milan, Italy. Designed by world-leading architects, this important development has produced the two

695K+ SQM
SUSTAINABLE
BUILDINGS
CERTIFIED

20+ COUNTRIES
PORT & LOGISTIC
PROJECTS

200,000+
HOURS OF
ENGINEERING

2000+ KM
CONSULTING &
SUPERVISION ON
AFRICAN RAILWAYS

highest towers in Italy with a third tower being constructed during 2018. A large contract for the site and design verification of the motorways in Genoa was a particularly pleasing win for us, being on the doorstep of our headquarters. Another interesting area is a contract for procurement inspection in the Czech Republic. This is important because our client is based in New York and the project provides us with some reference in the USA, which may open future opportunities.

Looking forward to 2018 and beyond, the recent restructuring of the company into vertically aligned business units will present us in a clearer position as T&I experts. Being able to offer a complete portfolio of services throughout all regions makes us stronger, more efficient and gives us a more prominent presence in the market. Indeed, we are already seeing the results of this change in 2018 with invitations to participate in larger tenders.

During 2018 we will target French-speaking African regions and dedicate resources to support these efforts. This will include Ethiopia, a country with which we are already familiar and where there is enormous potential with high investment levels and rising GDP. We will also continue with our efforts to grow our UK railway business and look to generally invest in and grow our construction supervision services.

With a blend of international and local competencies, we are very optimistic about the coming years and the re-organisation of the business. At the end of the day, combining our efforts in T&I under a single business unit will help us deepen our business and strengthen our operations. We have ambitious plans for growth.



ANNUAL REPORT

T&I Projects

TURKMENBASHI SEAPORT



RINA has been providing worldwide procurement and vendor inspections for the Turkmenbashi seaport, a project awarded to the Turkish EPC contractor GAP Insaat. As the appointed Third-Party Certification Body, in addition to design verification, RINA will provide site supervision which is still ongoing (duration 36 months). Several RINA offices from North Europe to Turkey, from Italy to China are involved in carrying out manufacturing inspections, factory acceptance tests to ensure compliance with relevant standards, final inspection of ready goods and pre-shipment and loading inspections. Experts from RINA's wide range of international offices have performed inspections on site at suppliers' premises.

DANISH RAILWAY NETWORK ASSESSMENT



RINA was engaged by Banedanmark, the company responsible for maintenance and traffic control of the Danish Railway Network, to assess the compliance to the EU Regulation 402/2013 of the railway line between Roskilde and Kalundborg (east of Copenhagen).

CARS



RINA carried out, for the Chinese signalling manufacturer CARS, the Railway Interoperability Certification in accordance with European Directive 2008/57/EC on the rail system within the Community. The certification applies to the interoperability constituents Lineside Electronic Unit (LEU), fixed and controlled data Eurobalises placed respectively within the Stations (or optionally along the railway lines) and between the rails. The scope of work included the test activities in accordance with Unisig/Subset-085 and the assessment of the fulfilment of the functional and safety requirements of the Control-Command and Signalling Technical Specification of Interoperability 2016/919/EU.

STRATEGIC DEVELOPMENT OF KUWAIT PORTS



The Kuwait Port Authority turned to RINA to help them plan the strategic development of the country's ports. With the constant changes in the energy market the Kuwait Port authority needed assistance in establishing a clear strategy for the development of its port operations in the future taking into account the projected future marine traffic flows. Managing this contract required the close cooperation of a number of RINA's business units to deliver a broad range of disciplines including civil engineering (structures, geotechnics and hydraulics) and economics, ports operations, logistics, IT and ports management.

RAILWAY CONSTRUCTION IN TANZANIA



RINA is working with the PMC JV, reviewing the design, supervision and management of works for the construction of a standard gauge railway (SGR) in Tanzania. Working in a multicultural context, RINA cooperates with local resources and international partners from Korea, Europe and India, Danish designers and a Turkish Construction Company. With more than 1000 km of new railway being constructed, this project is key to the country's development. RINA has a lot of experience in the rail sector and will be providing Railway Track Engineering and Permanent Way Engineering services.

LEED ASSESSMENT FOR MANTUA, ITALY



RINA delivered advisory services to Mantua's Municipality for the LEED Assessment in order to develop the Environmental Management System with LEED principles. The project concerns the urban re-development of two areas of the city.

VESSEL TRAFFIC SYSTEMS AND SEARCH AND RESCUE FOR KUWAIT PORTS



The Study and Design of the National Center for Vessel Traffic Systems (VTS) and Search and Rescue (SAR) in Kuwait is a very significant project. RINA is involved in each phase of the project, from the preliminary design and the support to the procurement of the suppliers and construction supervision (to be started in 2018). RINA experts provided Telecom Engineering, Electronic Engineering, Civil engineering disciplines (mainly structures) and economic skills. The project management and project engineering for this contract were particularly challenging.

HOLISTEEC



Among the interesting R&D work completed in 2017 was the Holisteeec project which aims to provide the European AEC/FM industry with a comprehensive design approach that takes into account the whole building life-cycle and the influence of the neighbourhoods, with the objective to make a decisive contribution to built environment energy efficiency improvement.

The project designed, developed, and demonstrated a BIM-based, on-the-cloud, collaborative building design software platform. This platform featured advanced design support for multi-criteria building optimization, taking into account external neighbourhood-level influences and by involving all the actors in the building value chain including, architects, designers, contractors, owners, component suppliers, users and related public authorities. The project involved 19 partners from 8 European countries (Italy, France, Spain, Germany, Finland, Slovakia).

UNALAB



The kick-off meeting of the EU funded R&D UNaLab project was held in 2017. The project aims at developing smarter, more inclusive, more resilient and more sustainable local societies through nature based innovation, jointly fostered with and for stakeholders and citizens. In particular, UNaLab focuses on urban ecological water management, accompanied with greening measures and innovative and inclusive urban design. The City of Genoa is among the front runner cities of the project. RINA is responsible for the replication and upscaling activities.

GENOA HIGHWAY PROJECT



RINA will play an important part in the improvement of Italy's road network. Following a request for public tenders launched by Autostrade per l'Italia, RINA was successful in securing the design verification of the new highway track, called "Gronda di Ponente", project. This project comprises a new highway system to improve traffic regulation in the city of Genoa. The project will see the connection of four highways: A7 Genoa-Serravalle, A10 Genoa-Ventimiglia, IA12 Genoa-Rome, A26 Genoa-Domodossola. This contract had the highest financial value for the company in 2017

COPENHAGEN CITYRINGEN METRO



RINA developed the Environmental Management System for the Operation and Maintenance of Copenhagen Cityringen Metro. The System included the most adopted international protocols for environmental sustainability (such as LEED).

ANNUAL REPORT

T&I Projects

ETHIOPIAN RAILWAY



Bombardier Transportation Italy S.p.A. engaged RINA for an Independent Safety Assessment for the Awash Woldia/Hara Gebeya Railway Project in Ethiopia. Furthermore, RINA delivered a highly specialized service on the trackside signalling system.

AMAZON'S NEW HEADQUARTERS IN MILAN



RINA was awarded a contract to act as LEED Commissioning Authority CxA for Amazon's new headquarters in Milan. The project comprises the renovation of 2 buildings (15,000sqm) in conformance with the international environmental sustainability protocol LEED. RINA will conduct pre-functional inspections and site visits in order to verify the proper installation and handling of systems to be commissioned, necessary to operate the building efficiently. RINA will verify and document that all systems and assemblies are planned, designed, installed, tested and maintained to meet the owner's requirements. This activity will take place during all building phases, from concept to operation, and will include energy and water efficiency, indoor environmental quality and durability.

ASSET INTEGRITY MANAGEMENT FOR ENI



Eni engaged RINA to perform asset integrity management services for its warehouses in Italy. RINA checked operation, HSE conditions and the maintenance of systems and civil constructions. Moreover, in order to define the risk analysis and the budget for the next maintenance, non-destructive tests were conducted to collect all the information and data about the whole status of Eni's assets. In addition to visual inspections and on-site surveys, RINA also performed underwater inspections.

HUDSON YARDS, NY



In 2017 RINA approached the completion of an inspections contract for the steel structure for one of the most important real estate projects in New York, the Hudson Yards investment. This was a huge project with the steel structure taking 2.5 years to complete. The specialist skills that RINA provided included coating inspectors to NACE level II and level III together with welding inspectors. This project is significant in that it positions RINA as a company that can undertake large inspections in the infrastructure market in the US. The client particularly valued the prompt actions taken to increase the number of inspectors and the flexibility in managing several fabrication shops appointed during the execution of the project.

WELDING AND COATING INSPECTIONS FOR 277 PARK AVENUE, NY



Welding inspections and coating inspections are very significant in the infrastructure market because they are a highly specialized service. RINA is working for Atlantic Engineering that has requested procurement inspections for the lobby of the building at 277 Park Avenue, New York City.

ASSET INTEGRITY OF A PIER IN TRIESTE



In 2017 RINA completed a contract with Q8 KRI S.p.A. for the Engineering & Maintenance Asset Integrity of a pier in Trieste, North East Italy. The pier was assessed using visual inspections, underwater inspections, surveys, non-destructive tests on the steel and reinforced concrete in order to assess the degree of deterioration of the structure. RINA's experience in underwater inspections was highly valuable to carry out this service on the pier, as was its reputation for managing complex inspections of this type.

LEED CERTIFICATION LIBESKIND TOWER



RINA supported Generali Group to achieve the LEED certification for Tower Libeskind located in the CityLife district in Milan. LEED services, such as LEED Administration and Commissioning, were performed during the design assessment and site supervision phases of the project.

SAVE

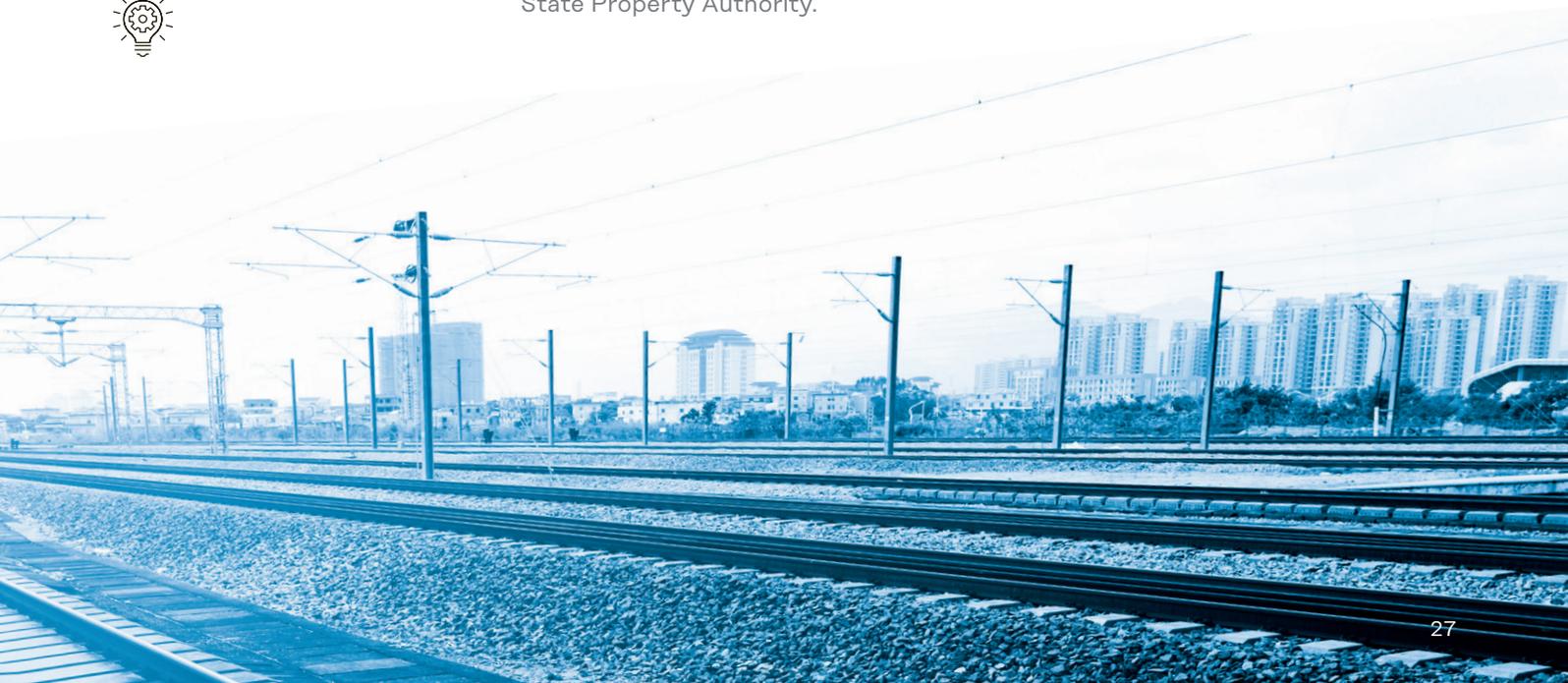


RINA succeeded in winning the SAVE project issued by the Venice Marco Polo Airport Management Company for auditing facility service suppliers. RINA's technical capabilities played an important part in what was a very competitive bidding procedure. RINA's proposal was ranked first thanks to the innovation demonstrated in Facility and Service Management, which introduced new sustainability concepts for the maintenance of strategic infrastructure and of the built environment. In order to improve the airport's global service performance, RINA was also asked to assess the current status of electrical, mechanical, firefighting systems, conditioning and plumbing systems, finger systems and current constructions.

BUILDING INFORMATION MODELLING (BIM)



RINA deployed the main design projects using BIM software for the Brennero State Road (SS12), for ANAS, Genoa New Highway System for SPEA Engineering and the retrofitting of an historical heritage building in Catanzaro, for the Italian State Property Authority.



ANNUAL REPORT

Certification



13%
OPERATING
REVENUES

Within RINA, the Certification business unit covers varied activities and markets outside of Marine and Energy. Its portfolio incorporates management systems, food and mechanical laboratory facilities, food certification, automotive services and product and personnel certification. The diversity of the business requires diverse strategies to support and develop it.

In 2017, results for this business unit performed well, with margins increased from 7 to 12%, reflecting a further strengthening of RINA's leadership within the main certification schemes, in the number of sites certified, in the traditional sectors and in the agri-food market. The diversification strategy applied by the company gave a positive outcome for the certification activities in the automotive and environmental sectors, in the ISO 37001 anti-bribery standard and in support of Industry 4.0.

With 25 offices throughout Italy, we are a strong market leader. Business here is stable but tends to be focussed on three or four of our most common certification schemes. To stimulate further growth, we will be looking to provide a wider variety of services to our clients over the next year.

Several events helped consolidate our business efforts during 2017. These included updates to many standards with clients accordingly requesting updated certification. We were also the first certification body accredited for the

ISO 37001 anti-bribery standard, which resulted in us securing business with some major clients in Italy and abroad. As the major automotive contract, secured in Italy in 2016, for the verification of car emissions' testing started in September 2017, our automotive sector is growing. We also began working with major companies such as Audi, Mercedes and Volkswagen on a more regular basis throughout the year. Although we have started from a small base, the automotive market offers us lots of opportunities and our business is growing quickly.

Towards the end of 2017, services for sustainable foods also increased. General growth in our certification business was also driven by revisions to standards, growing consumption of goods in emerging markets, and an increase in the number of product recalls. Together these presented one or two percentage points of growth.

During 2018, we plan to direct our resources and investment in a more focussed manner. To this end, we have started to work on optimising our service portfolio and increasing process efficiency. By rationalising our services, we will free up resources to improve the international portion of our business. We will consolidate our businesses in Romania and Brazil, which are both positive countries for us, with organic growth. We invested in Germany during 2017 and this will continue into 2018 along with additional investment in the UK. UK and Germany have strong ties with Asia and we see these countries as a pathway to develop our Asian

29,000+
MANAGEMENT
SYSTEMS
CERTIFICATES

1,100+ GHG
REDUCTION
PROJECTS

1,800+
FOOD
COMPANIES
CERTIFIED

36,000+
PERIODICAL
INSPECTIONS

client base. In the UK we will be looking to provide second party audits for the fashion industry as many UK fashion businesses have factories in Asia. In Germany, there will be a similar approach for industrial sectors, particularly automotive. To support this strategy, we will reinforce our team in Asia and focus on developing activities for customers in this region.

Organic and sustainable food will become a big part of our business and it is the right time to focus on this area now. We will work throughout the organic supply chain and foresee a good market in this area. Automotive certification revenue currently comes from within Italy, but we will continue to concentrate on growing this start-up business with testing services. We also see the autonomous car sector as a future market.

One final area in the near future is drone inspection services. We are ready now to offer this capability as a service to other RINA business units. The use of drones allows companies, not only to save 75% on the service requested, but to avoid exposing auditors to potentially dangerous situations involving heat, fire or toxic gasses.

Moving forward, our strategy will continue focussing on reacting quickly to changes in regulations and offering our clients the most innovative services to stay competitive in an increasing demanding market, through voluntary certifications that give the added value they need.



Certification projects

ISO 37001 ANTI-BRIBERY SYSTEM CERTIFICATION



RINA was the first certification body to be accredited for ISO 37001 anti-bribery system certification. This important new business service has increased RINA's profile on the international stage, with the company working with governments, world organizations and industrial associations in Italy, Brazil, Romania and France. A specialized industry magazine found that 56% of large companies interviewed planned to start the certification process between 2018 and 2019. Some of the companies and organizations that opted for the anti-bribery management system certification include Eni, Enel, Aeroporti di Roma, Pirelli, Autostrade per l'Italia, Robert Bosch Middle East (first certified company in the Middle East) Win Magazin SA (first in Romania), Construtora Queiroz Galvão S/A (first in Brazil) and chose RINA as the accredited third-party partner.

INDUSTRY 4.0 CERTIFICATES



Thanks to RINA's deep understanding of Industry 4.0, the company obtained accreditation to issue certificates in accordance with the "Industry 4.0 Plan". RINA experts, evaluate and certify the compliance of companies' assets with the requirements of the law in order for them to obtain tax benefits. In fact, in Italy, as in most industrialised nations, tax break incentives, called "hyper-depreciation", are offered to companies who adopt new technology. In doing so, governments encourage companies to improve efficiency and management practises. Many of the major Italian companies have decided to entrust RINA with the delicate task of certifying whether or not their businesses can meet the tax benefit requirements.

FOOD CERTIFICATION



RINA has added organic food certification to its portfolio of services. This investment has already shown good results. Voluntary Food standards recorded a growth of 27% in the number of certificates issued. An excellent result, not only in Italy, but also in Romanian, Turkish, Indian and Polish markets, working with clients leaders in their respective sector, such as ETI (bakery, confectionery, chocolate and grain snacks manufacturing), Beta Gida (tea export), Greif Packaging, Fruko (a Pepsi company), Dogadan Gida (a Coca Cola company), Kandia Dulce SA (Sweets), Milma (dairy). Furthermore, RINA has launched new certification schemes, including integrated pest management and sustainability in viticulture.

SUSTAINABLE FISHERIES



RINA's growth in the sustainable fisheries' sector continues globally, including India and China, due to the increasing demand for certifications that authenticate fish origin and its sustainable production. RINA continues to issue the two main certifications of the sector: Friend of the Sea and Marine Stewardship Council.



BIOMOTIVE, A HORIZON 2020 PROJECT



RINA is involved in the Biomotive project, which develops “bio-based” materials. These can be products from renewable raw materials, such as vegetable biomass and cellulose fibres, to be used for sustainable vehicle components. The project is coordinated by SELENA, a leading manufacturer of chemistry products for automotive applications and sees the participation of 16 partners from 8 countries. RINA has the task to identify the most appropriate standards to be able to certify products developed within the project.

ALTROCONSUMO LABEL PROJECT



The “Best Buy” and “Best of the Test” labels’ project for Altroconsumo, one of Italy’s most famous consumer associations, was based on research provided every month by Altroconsumo. RINA, through its Advanced Technologies Institute (Istituto Tecnologie Avanzate - ITA), manages different label licences for many clients who operate in different markets.

During 2017, ITA and Altroconsumo expanded the business to new services, markets and companies, which allowed RINA to complete the range of licenses currently focused on multiple consumer goods on the market.

LAB 21



The reorganization of RINA’s service portfolio and the focus on business development in terms of chemical and microbiological analyses have already brought the first positive signs of growth and productivity in 2017. With over 35,000 laboratory tests performed.

AUTOMOTIVE SAFETY



RINA continues to increase its presence in the Automotive industry by constantly developing services for this important market, particularly OEMs, and for the broader supply chain. RINA has developed new training courses to increase the skills of professionals in sales and service, it has carried out audits for the check of contractual standards and has conducted numerous technical inspections on new and used vehicles. In short, RINA has supported car manufacturers in the field of Functional Safety of electronic control units during the vehicle design phase, with the aim of certifying their safety, and has attended type approval tests for the qualification of vehicle components and systems for both original equipment and after-market.

MAN TRUCK & BUS AND VW GROUP



RINA carried out audits on the contractual standards of the entire national sales and service network, together with the training of field personnel, for the Italian branch of MAN Truck & Bus AG, a Volkswagen Group company, operating in the long-haul industrial vehicles’ sector. Furthermore, Volkswagen engaged RINA to audit the contractual standards of dealers who joined the “Das Welt Auto” network, a quality guarantee of used vehicles that respond to rigorous reconditioning procedures established by Volkswagen Group.

ANNUAL REPORT

Certification projects

CNH INDUSTRIAL



RINA carried out Functional Safety evaluations on some breaking and steering products of CNHI. The assessments were conducted in accordance with the ISO 25119 standard, "Tractors and machinery for agriculture and forestry – Safety-related parts of control systems", and the ISO 13849 standard "Safety of machinery – Safety-related parts of control systems".

JSS AUTOMOTIVE SAFETY SYSTEMS



Joyson Safety Systems (JSS), formerly known as Key Safety Systems (KSS), is a global leader company that develops and manufactures automotive safety systems.

For JSS, we attended fire-extinguishing tests and validated the technical documentation files for approval, according to the UNECE 107 standard, relating to a prototype of fire suppression system to be installed on board buses. The activity is preliminary to the type-approval of the engineered product.

AEROSPACE & DEFENCE



We were one of the first certification bodies in the world and the first in Italy to complete the transition process for all three schemes EN 9100/9110/9120: 2016. During 2017, we recorded an increase in certified sites in the aerospace and defence sector of about 20%. We worked with important companies, such as Avio S.p.A., leader in the space launcher and spacecraft propulsion sector, Bisiach & Carrù S.p.A., leader in drilling and riveting automation systems in aerospace and railway industry, Flame Spray S.p.A., the first Italian job shop to actively promote Thermal Spray coatings and activities.

INNOVATION, DIGITALIZATION AND CYBERSECURITY



In 2017, RINA designed and developed a range of new services in the fields of digitalization, cybersecurity and data protection, building on the experience gained over the years for other certifications in the ICT sector. RINA won an important tender to assess data centre compliance according to the ANSI TIA-942 standard for a major telecommunications company. The standard indicates the requirements for the resilience of a data centre, i.e. its ability to guarantee the continuity of the services provided in case of maintenance or failure. Using our ICT expertise, the company has developed an entirely new digital certification process focussed on security, to counter the threats that are prevalent across industry. This kind of certification, has been adopted by many companies, especially in the UK, to demonstrate the level of protection that is available from possible cyber-attacks.

GDPR SERVICES



The new GDPR (General Data Protection Regulation) policy was announced in 2016 and due to enter into force on 25 May 2018 for European Union organizations. In 2017, we laid the foundations for the development of the gap analysis service, designed training courses and prepared regulations for the certification of the Data Protection Officer, while the issuance of the reference standard and the certification regulations by the bodies charge is pending.

REGULATED ARCHIVES - AGID



In Italy, a three-year plan called the Digital Agenda, has been set-up. Administered by AgID, the plan promotes the use of information and communication technologies to encourage innovation and economic growth.

The Digital Administration Code states that Public Administrations are required to keep all the documents formed in the context of their administrative action. The Public Administrations, who subcontract the processing of such documents are required to contact the Accredited Archiving Bodies present in the Register of Agid Archiving Bodies. The subcontractors must demonstrate that they meet the legal requirements, presenting the appropriate documentation that must include the certificate of compliance with the organizational technical requirements established by AgID and issued by an accredited body.

RINA was the first body to be accredited by Accredia to provide this service. Thanks to our experience in the field of ICT management systems, we have already granted certification to several important customers.

INTERNATIONAL FOCUS



RINA's activity in the certification of core schemes (ISO 9001, ISO 14001, OHSAS 18001, ISO 27001, ISO 50001, EMAS, ISO 13485 and ISO 14064) was further strengthened, particularly in Romania, Turkey and Germany.

ISTANBUL REDUCES ENERGY CONSUMPTION



Istanbul Metropolitan Municipality has launched a project, among all of its affiliates, aimed at reducing energy consumption per unit of service without causing a decrease in energy efficiency, living standards in buildings and service quality. RINA carried out the verification of the corporate carbon footprint of two of the biggest subsidiaries of the Turkish Government, Istanbul Bilisim ve Akilli Kent Teknolojileri A.S. (ISBAK IT) and Istanbul Asphalt Fabrikalari San. ve Tic. A.S.

EU ETS FOR POWER STATION



Sngn Romgaz SA - Spee Iernut is the largest natural gas producer and the main supplier in Romania. In 2013, Romgaz took over the Iernut Thermoelectric power station, becoming also an electric power supplier. RINA awarded Iernut Thermoelectric power station the EU ETS (European Union Emissions Trading System) certificate.

MATRICA BIOFUELS



Biofuels represent an increasingly popular renewable energy source, replacing fossil fuels. The use of biofuels has been encouraged by international and European policies to achieve security and independence of energy supply, while mitigating climate change. RINA is continuing to be an important partner for certifying the sustainability of biofuels and bioliquids.

Matrica is a 50:50 JV between Versalis (part of Eni) and Novamont, a company at the forefront of the bio-plastics industry. The joint venture was formed to convert the petrochemical facility in Porto Torres into an integrated green chemistry complex, to develop products sourced from vegetable raw materials.

RINA supported Matrica in the evaluation – approved by the Ministry of the Environment – of the classification of the residues left by some of the production processes and helped the company obtain the ISCC EU (International Sustainability and Carbon Certification) certification.

Certification projects

MONTELLO BIOMETHANE



RINA issued the sustainability certification for biomethane produced by Montello S.p.A., obtained from the anaerobic digestion of the Organic Fraction of Urban Solid Waste (OFURW). The certification was the first carried out in accordance with the national certification system for the sustainability of biofuels and bioliquids defined by the Italian Ministerial Decree of 23 January 2012.

Biomethane is a biogas that has undergone a refining process to achieve a minimum 95% methane concentration as required by current legislation and can be used as a biofuel for motor vehicles to replace natural gas (or fossil methane). It is estimated that the emissions are comparable to those of an electric vehicle powered by a renewable source. Thanks to this certification, the biomethane is compliant with the Directive 2009/28 on the promotion of the use of energy from renewable sources. By 2020, the EU aims to have 10% of the transport fuel of every EU country come from renewable sources such as biofuels.

GREEN SHIP RECYCLING CERTIFICATION



In line with the growing interest in green ship recycling, in 2010 RINA started awarding the ISO 30000 certification, the HKC Statement of Compliance (SoC) and the EU SRR Statement of Compliance (SoC).

RINA has awarded several green ship recycling certifications and is currently one of the market leaders in this segment. Several shipyards were also certified to ISO 9001, ISO 14001 and OHSAS 18001. Many yard owners opt for third party certification and SoCs, as ship owners consider these certifications as prerequisites for selling their end-of-life ships for recycling.

CERTIFICATION OF BIOMASS SUPPLY CHAINS



During 2017, we signed a contract with Enel Produzione S.p.A. - Fuel Logistics and Ashes, for the certification of biomass supply chains (wood chips).

Inspectors with a forest / agronomist background carry out the project. The project involves the documentation verification and evaluation of the wood companies and production sites involved in the supply of biomass for the production of electricity in the Enel power plants, and the subsequent audit on site of verified plants/sites, in order to issue the necessary certification to authorize the supplies. The geographical areas concerned are Calabria, Campania, Basilicata, Puglia, Tuscany and the Mediterranean coast of Spain.

CERTIFICATION OF THE FIRST SHIP RECYCLING YARD IN BANGLADESH



RINA certified the PHP ship recycling yard in Bangladesh in accordance with ISO 30000:2009 and issued a statement of compliance to the Hong Kong convention requirements. This was the first such ship-recycling yard in Bangladesh to receive these certificates and represented an important milestone. The Yard also has ISO 9001, ISO 14001 and OHSAS 18001 Certificates.

CREDITS ISSUED FOR THE FIRST FORESTRY PROJECT IN LAO PDR



RINA validated and verified the greenhouse gas emission reductions reported by Lao Thai Hua Rubber Co. Ltd for the Mitigation of Greenhouse gas (GHG) Emissions project. The project involves a rubber based agro-forestry system, aimed at developing a pioneering forestry clean development mechanism (CDM) in Lao PDR by establishing 969.20 Ha of rubber plantation.

TRAINING



Training activity is a vital part of our success; we provide a wide range of training courses for management system standards and for professional industrial training.

In 2017, RINA carried out a significant number of courses in Turkey, China, UAE and Italy, with clients such as Pinar Sut Mamulleri San. A.S., Bereket Enerji Uretim A.S., Duran Dogan Basim ve Ambalaj A.S., Coca-Cola Icecek A.S. and Erdemir Group, as well as DP World Yarimca, Pirelly Tyres Slatina, Alro Slatina, Hidroelectrica, Maschio Gaspardo and Prysmian Group. RINA has also collaborated with NACE (National Association of Corrosion Engineers), an international foundation.

PRODUCT AND PERSONNEL COMPETENCE CERTIFICATION



Over 36,000 inspections were carried out on lifts, electrical systems, lifting and pressure and working equipment. During 2017, the partnership with Unipol, ISAB (Lukoil Refinery), Esso Italiana, Air Liquide, Gas Adige Legnago, Siram, City Life Milan and CO.BRA. Italia was strengthened.

The activities related to certify the personnel competences were expanded, optimized our service portfolio and started a review process to increase our effectiveness and efficiency in the management of related services.

CSR



CSR is an important key driver in building a positive reputation for a company, while highlighting the commitment to sustainable development and improving internal business culture and customer loyalty.

Many companies are now launching CSR projects, as demonstrated by the increase in SA8000 certifications, in the demand for ethical audits of supply chains, of the validation of sustainability reports. These allow greater transparency towards all stakeholders and, as required by laws such as the EU Directive 2014/95/EU, encompass the disclosure of non-financial information.

In this regard, RINA is the third international player for number of certificates issued in the world with an average growth over the last 3 years of over 27%.

We have issued an important report on CSR for the Hainan Airlines Group and we launched SA 8000:2014 Basic Auditor course in India.

ANNUAL REPORT

Industry



11%
OPERATING
REVENUES

Material, Technology and Innovation

Our Materials, Technology and Innovation unit (MTI) supports industries in the development of advanced products, improvements to production processes and adaptation of technology to meet specific needs. It meets the technological needs of almost all RINA markets. Steel and alloy materials are core industry businesses but, in areas such as power generation, we develop new materials for turbines and, in the oil industry, we provide and test materials to withstand some of the harshest environmental conditions on the planet.

With around 300 consultant engineers and technicians and more than 20 laboratories and pilot plants to support our clients, we cover all steps from the strategic evaluation of new technology through to maximising asset value at end of life.

In 2017 we paid attention to competitiveness based on technology. Clients as Prysmian, Avio or Tokyo Steel, to name a few in completely different industrial sectors, benefitted from the full set of competencies provided by RINA in innovation management. Competition in any business can be high but the ability to start with good technology choices and complete IP protection is critical for our clients. Highlights in 2017 include an extended contract with Acciai Speciali Terni for its production of stainless steel for use in automotive and white goods. RINA offers expertise in steel processing, production and finishing and supports Acciai Speciali Terni on around 17 projects covering their internal needs to reach targets for innovation and product quality. These include support in producing new steel grades and innovative treatments. Few companies can provide the depth of knowledge and capability RINA can provide in this area.

In the energy sector, MTI supports work towards finding cheaper materials that can perform reliably in harsh environments. In power generation, finding materials that can withstand higher temperatures enables turbines to operate at elevated temperatures to increase their efficiency. Our work in this area includes major clients. In steel production, our mill control system earned

contracts with major providers as Danieli Group, Primetals Technologies and Tenova.

Another success during 2017 came in the form of a contract from a major Oil & Gas Company to support development of a jumbo field in North Africa. In this engagement, materials are exposed to a severe environment and need to handle extreme levels of stress. We were able to offer services to manage all requirements of different stakeholders by a single supplier in this complex project.

Additional exciting areas over 2017 include our work on CO₂ segregation, which requires material expertise to manage this complex gas. We provided services including the first full scale testing of this application in a contract awarded by a leading South East Asian Oil & Gas company. This special, large-scale test was used to verify material performance in a real-world environment and covered areas such as a burst pipeline to see how the material behaved. Very few organisations in the world can provide a service such as this.

Another project covered software simulation of aneurysm. We are glad to announce that the project was awarded "Best in Class" in the Hall of Fame 2018 Competition promoted by ANSYS Inc. worldwide.

The use of advanced manufacturing techniques, such as 3D printing, is a growing need in many industries. We work with many companies to develop these capabilities, including Italian aerospace companies and start-up business dedicated to new powder production for additive manufacturing. Based on our expertise, we produced a standard approach for the adoption of additive manufacturing in 2017.

Our expertise in materials is represented by the services we supply to OEMs and plant owners, who use us to better utilise and manage their assets. We supply failure analysis, condition assessment and evaluation of equipment. Our recognition in this area earned us an invitation to support very special projects around the world.

For 2017, the portion of our business dedicated to materials made a positive contribution with a significant improvement on the results of 2016. We have paid attention to containing costs, reducing

100+ FAILURE
ASSESSMENTS FOR
MATERIALS/
COMPONENTS

200,000+ HOURS
OF STRESS-
CORROSION
TESTING

50+ NAVAL
COMBAT SYSTEM
INTEGRATION
STUDIES

50+ CYBER
SECURITY
ASSESSMENTS

them where this did not affect our capability to deliver. In 2017 we launched an internal machining workshop. By providing services across the RINA businesses, we were able to cut external costs to our clients.

Space & Defence

Space and defence forms a significant global market in which RINA has strongholds in Italy and the UK. Overall the market is positive, but the focus has changed, and this is something RINA needs to adapt to.

In the UK, the defence market has moved away from direct spending from the Ministry of Defence (MoD) to prime contractors. The MoD stopped spending after the end of March because of the political turmoil associated with government elections. This situation lasted for around five months of 2017 and, as RINA has traditionally worked directly for the MoD, this was detrimental to our business.

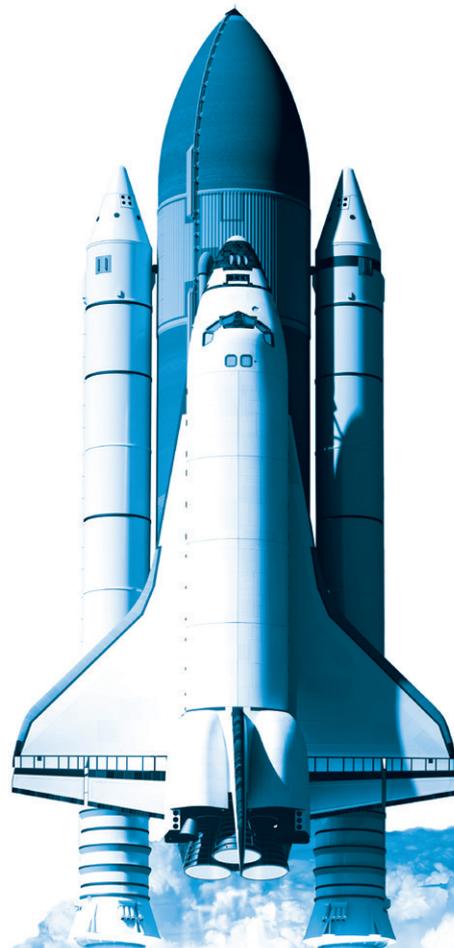
On a positive note, the change in dynamics in the UK defence industry has re-invigorated our focus on working with prime contractors, with whom our relationship has grown substantially over the year. In the Space industry, our largest client is the European Space Agency. During 2017 we have been supporting the Galileo Program with both engineering and cyber/data security services. Working on the ground station, we have had around 12 engineers working out of the Netherlands on this project through 2017.

The demand for cyber security consultancy services is growing quickly and, in an increasingly connected world, is a genuine, long-term opportunity for us to expand our business. Our current expertise is in Italy and central Europe. In 2018, we have plans to gain a foothold in the huge UK market.

In 2018 we are looking for continued growth through the transfer of technology between industries. Initiatives relating to traditional 'on earth' industries can use experience gained from the space industry, such as textiles and construction, and vice versa. In the last year, for example, we secured a contract from the European Space Agency to investigate

materials for the next generation of solar panels for space application. In all projects, data analysis plays a critical part in helping us understand how to reach and prove specific targets are met. Digitalisation is a growing area of importance to our business and the services we offer, and will be an area of focus in coming years.

Overall the Industry business unit works in exciting and diverse market areas. We provide excellence and some astonishing services. We help our clients reach their targets; whether they be in optimisation, cost reduction or process improvements. We are working to change our reliance on the UK and Italian markets to balance our exposure to any political instability and offer competencies that can be utilised throughout RINA.



ANNUAL REPORT

Industry projects

HYDROGEN STORAGE TESTING



RINA's Delta H laboratory tests materials and vessels for hydrogen storage up to 1000 bar. Built in 2017, the laboratory was created by RINA together with the University of Calabria. It is one of the few laboratories in the world that is able to conduct tests with pressures up to 1000 bar.

The laboratory carries out research and development activities for the testing, qualification and characterization of special materials and equipment for the storage and transport of hydrogen. Our customers are industries that plan to develop advanced solutions for hydrogen storage and hydrogen transport. An important application will be in the automotive sector, which is developing research on hydrogen mobility, related storage and refuelling systems.

PROJECT FOR ESA ON SOLAR CELLS



In cooperation with CNR, IIT and CESI, Italian leader in advanced photovoltaic, RINA leads the European Space Agency's (ESA) tender project and team in the undertaking of a technological development of the performances in triple junction solar cells. The project focusses on the overall improvement of performance, across a wide range of wavelengths, using surface coatings to minimize reflections and increase the amount of radiation to be converted in electricity. The project capitalizes the competences of impact assessment and identification of technological bottlenecks for the process upscale. The development of higher efficiency solar cells represents a fundamental starting point for longer range missions.

NEW RINA OFFICE FOR ALTERNATIVE ENERGY TECHNOLOGIES



RINA has set up a new operating office in the South of Italy, within the Technological District on Advanced Materials for Renewable Energy (MATELIOS). The new office will focus on the development of alternative energy technologies and host a total of 20 researchers and technicians to coordinate an extensive research network. The MATELIOS office has four key areas of specialization, that include a surface engineering unit characterized by the cold spray system, a pilot unit for the construction and qualification of innovative photovoltaic and thermal solar panels - including a computerized LED flash test device -, units for the development of innovative photovoltaic cells and the Delta H laboratory, for testing materials and vessels for hydrogen storage.

SARCO2 PROJECT, CO₂ TRANSPORTATION PIPELINE



SARCO2 deals with the requirements for a safe and reliable CO₂ transportation pipeline, to respond to the need of enabling clean power generation and a fully integrated Carbon Capture Transportation & Storage (CCTS) system. In 2017, the project results were presented to the European Commission and the project, coordinated by RINA, was identified as a success in the Research Fund for Coal and Steel (RFCS) European platform. SARCO2 ran full scale tests on pipeline sections conveying CO₂ mixture and conducted a Computational Fluid Dynamics (CFD) analysis to assess CO₂ dispersion in the external environment.

SARCO2 was sponsored by the European Union's RFCS, EPRG, an association of about 20 European pipe manufacturers and Oil & Gas transmission companies, and DNV GL, which will use SARCO2 results to update their recommendations for future design and operation of CO₂ pipelines (DNV-RP-J202).

FINCANTIERI QATAR



RINA supported Fincantieri in the management of physical and functional integration of the combat system of the Qatari Navy.

INDUSTRY 4.0 FOR STAINLESS STEEL TECHNOLOGY



Acciai Speciali Terni, specialised in stainless steel technology, has appointed RINA as the strategic partner for innovation, both for the process and the production. We are currently running a number of research and development projects focused on product development, process improvement and quality enhancement. In addition, we have developed some special training programs in cooperation with Acciai Speciali Terni: the Eurosteelmater, the Steelmater, the latter in collaboration with Arvedi as well and, the workshop called 'Inox', promoting the use of stainless steel in construction, were very successful.

TOKYO STEEL PROJECT



The long-term collaboration between Tokyo Steel, a company with a unique set of laboratory facilities, pilot plants, physical and numerical modelling and simulation tools, and RINA continues. RINA's work on the project began with testing activities, supporting Tokyo Steel's own research and development department, and has now expanded into a much larger scope of activities.

PROJECT MANAGEMENT FOR ESA



ESA renewed RINA's engagement for one year for the support in project management and coordination of activities related to the Groud Support segment of the VEGA launcher, the ESA's satellite launch vehicle designed to send small satellites into Low Earth Orbit (LEO).

FRANCHINI PROJECT



In 2017, Franchini Acciai launched a major innovation project that involves RINA's technological support for the production of components of special alloys, both with conventional technology and with additive manufacturing. Access to our additive manufacturing metallurgy expertise, forging simulation and laboratories, together with our pilot plants for the development of special alloys and additive manufacturing technologies, were important to be able to develop the project successfully.

MASTER IN ADDITIVE MANUFACTURING



RINA organised in Rome the second edition of Master in Additive Manufacturing with the cooperation of the universities Politecnico di Milano and Università di Roma Tre. This qualification is rapidly becoming a recognised mark of excellence within different manufacturing sectors. Technical papers were presented and new manufacturing techniques were discussed, outlining the use of this technology in the production of components in metal, such as alloy design, production of powders, deposition processes such as SLM, EBM and DED and thermal treatments.

ROHS DIRECTIVE FOR COCIR



RINA won an important 4 year contract with the European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry (COCIR) European Trade Association for medical imaging equipment. The project involves preparing exemption renewal requests for the Restriction of Hazardous Substances (RoHS) Directive. RINA has specialist product compliance skills and world-leading experts on the RoHS Directive as well as expertise in technical issues relating to medical devices.

DESIGN PROCESS QUALITY IMPROVEMENT



RINA supported Fincantieri Cruise Division in the definition of the improvement process of functional design and the preparation of the design support process approach for a Norwegian Cruise Line ship.

ANNUAL REPORT

Industry projects

R2CITIES RESEARCH PROJECT



R2Cities is a European funded research project with the goal to develop and demonstrate replicable strategies for designing, constructing and managing large scale district renovation projects for achieving nearly zero energy cities. Within this framework, RINA and ABB, as key industrial players of the project, have combined their expertise in the field of energy data management. The focus has been the development of a web-based energy data manager for buildings and districts, Energy Management Platforms (EMPs) for data collection, sharing and storage, predictive energy-efficient control scenarios, a District Monitoring Platform (DMP) to retrieve and aggregate data from different sites for district sustainability indicators (DSI) visualization, strategy definition and benchmarking. The final results of the project will be available starting June 2018 in correspondence of project closure. The end goal is to improve control and monitoring technologies to enable performance while lowering environmental impact for utilities and industry customers.

PLANHEAT PROJECT



Planheat is an ongoing European funded research project dealing with the development and validation of an integrated, GIS-based and open-source tool to select, simulate and compare alternative low carbon and economically sustainable scenarios for heating and cooling at city and district level. The definition of these scenarios is based on the integration of renewable energy sources (RES) and urban waste heat from both unconventional energy sources and industrial activities in existing energy systems. The software platform is modular and provides mapping, planning and simulation functionalities. RINA, as part of a consortium made of 13 partners located in Italy, Netherlands, Croatia, Greece, Belgium, Spain, Hungary and France, is in charge of the implementation of the planning and simulation module in collaboration with Artelys, an industrial player with extensive expertise in energy modelling and optimization.

FORTISSIMO PROJECT



Within "Fortissimo", a EU project, RINA contributed in developing a Cross-Solver Cloud-based Tool for Aeronautical Applications. The proposed application aims at solving a wide range of real world aeronautical aero-elastic optimizations in a reliable and cost-efficient way by means of the RBF4AERO software platform, which runs as a cloud-based tool on the high-performance computing infrastructure of Fortissimo. RINA's competence in the RBF4AERO cloud-based software platform can be applied to other sectors, by exploiting the cross-sector nature of RBF4AERO's proposed solutions for design optimization in the automotive, energy, space, medical, oil and gas sectors.

COMBAT SYSTEM PHYSICAL INTEGRATION DESIGN

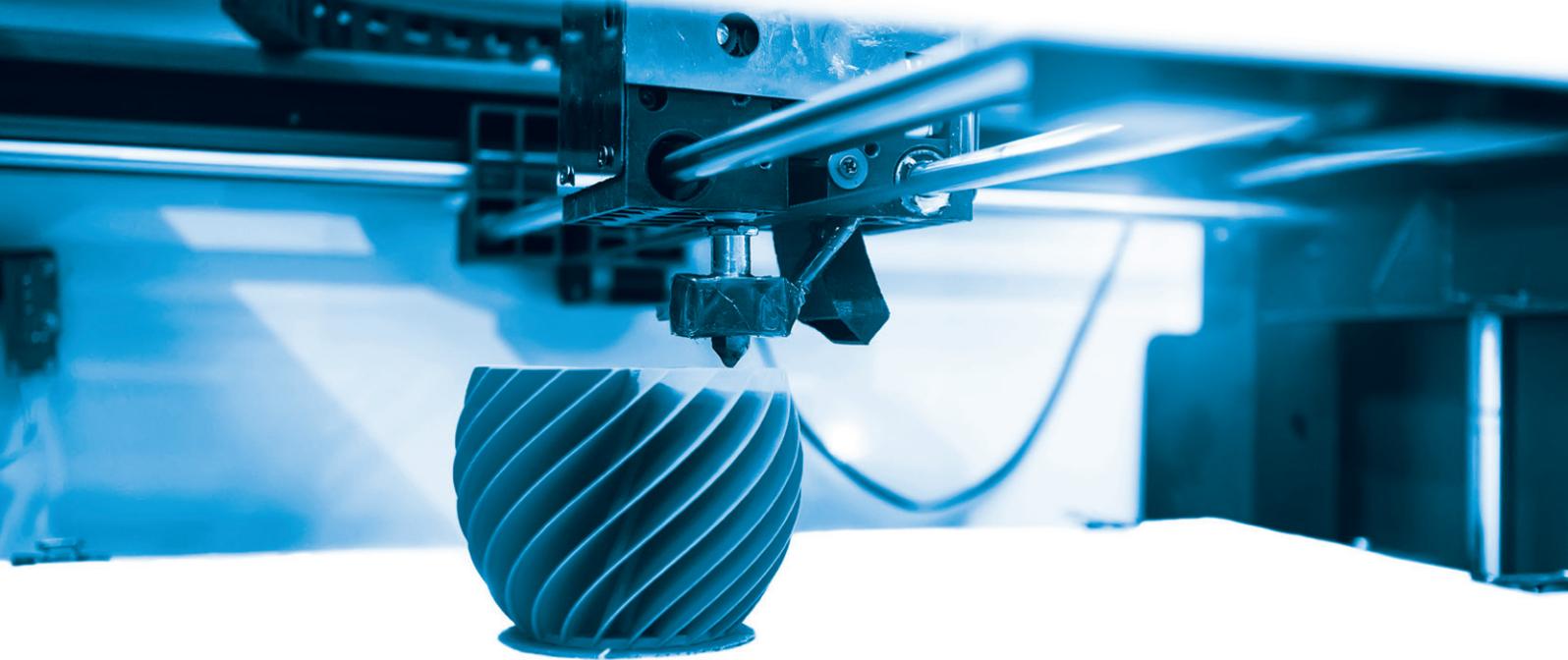
ANTI-SPOOFING

RINA designed interconnection schematics, cable list definition and ship room coordination for LSS (Logistic Support Ship) and for PPA Patrol Vessel.

Anti-spoofing algorithms design, implementation and on field test for improved accuracy of the drone navigation and positioning capabilities (Geovision GSA funded project).

ANTI-DRONE INTERCEPTION AND ANNIHILATION SYSTEM

RINA designed the smart user interface and data fusion algorithms for Elettronica S.p.A. Anti Drone Interception and annihilation command and control system.



DETERMINING ANEURYSM GROWTH



BioCardioLab FTGM Fondazione Toscana “Gabriele Monasterio” developed a virtual statistical patient to analyse alterations in blood flow and blood pressure during the transition of the aorta from a healthy to an aneurysmatic state. In particular, researchers created a video concerning a Computer-Aided Engineering (CAE) application developed in collaboration with the University of Rome “Tor Vergata” and RINA’s Industrial Design & CAE team. The approach links clinical and patient data with ANSYS software to consistently support clinicians in better understanding the blood flow within aortic aneurysms to determine aneurysm growth and bulge formation. The project was proposed for the “Best in Class” in the Hall of Fame 2018 Competition promoted by ANSYS Inc. worldwide.

GREEN LABEL PROJECT



Following the success of the Green Label developed for ACIMIT (the Italian textile machinery association) more than 45 producers of textile machinery adopted RINA’s voluntary green declaration on more than 1100 textile machines. Now RINA is developing a Green Label dedicated to ASSOMAC (Italian Association of manufacturers of footwear, leather goods and tanning technologies). RINA’s Green Label, enables companies to inform end customers of their efficiency parameters and the reduced environmental impact of their technology.

LONDON METROPOLITAN POLICE



RINA had the opportunity to help shape the future business operation of a major city’s police force. The project was awarded by London’s Metropolitan Police and aimed at transforming the operational aspects of the force, while providing savings to the relative Government department. RINA worked with P3M, Business Analytics, Cost Modelling and Risk Management, Active Risk Management (ARM), the RINA Investment Appraisal Tool, the Benefits Tracking Tool and the Optimism Bias Tool.

MIND 4.0 PROJECT



The first edition of the Master in Industry 4.0 (MIND 4.0) took place in Bergamo, Italy, a three-day intensive course during which national experts shared their knowledge through case histories from manufacturing industries. The course was an opportunity to share an overview of the industrial and socio-economic environment that has led to the evolution of Industry 4.0. The Internet of things, Additive Manufacturing, Big Data and Data Analytics, Augmented Reality, Collaborative Robotics and Digital Twins, are just some of the keywords associated with this change. RINA is very aware of the importance of knowledge sharing in this time of rapid technological change. Our technical and operational experience, together with that of universities and centres of excellence that study and assess the technological, economic, social and organizational impact of Industry 4.0, prepares companies to truly leverage the benefits of this transformational technology.

SUSTAINABLE CONCRETE



RINA won a very interesting EU research Green project called Endurcrete, aiming at developing a new cost-effective sustainable reinforced concrete for long-lasting and added value applications. The new material will be tested in working sites of tunnels, ports and offshore structures, in order to prove the enhanced durability and decreased cost of the new concrete systems in such critical applications. Among the key technologies there are nano-enabled smart corrosion inhibitors, self-sensing carbon-based nanofillers, multifunctional coatings with self-healing properties and sensorised non-metallic reinforcement systems.

ANNUAL REPORT

Industry projects

REHAP



The REHAP project aims to strengthen the European bio-economy industry by creating novel sustainable materials from agricultural and forestry waste to be used commercially in the green building sector as part of the circular environmental economy. In this framework, RINA is responsible for the evaluation of environmental, economic and social sustainability, as well as for the assessment of energy and resource efficiency.

EU RESEARCH PROJECTS IN CALABRIA (ITALY)



RINA won two European research projects, starting in 2018, for innovative anti-corrosion and anti-wear coatings and coatings for photovoltaic fields. The project for the development of innovative anti-corrosion and anti-wear coatings will use advanced and eco-friendly deposition techniques in substitution to the Cr to thickness and could become very useful when applied in automated components that are usually used for Green building. The project for the development of coating solutions for covering glass will be applied to photovoltaic fields that are already in place. The objective of the coatings is to improve the self-cleaning properties of traditional glass, to minimize maintenance operations and costs, in addition to simplifying the whole maintenance procedure.

MARITIME CYBER SECURITY



By combining the experience of the Space & Defence Cyber team with highly experienced ship operators, maintainers, designers and certification experts, RINA developed a cyber security program for commercial shipping, cruise liner operators and naval sectors. Hackers are developing sophisticated technology to exploit cyber vulnerabilities in our critical essential infrastructure. The maritime sector is no different; our capacity to safely ship goods around the globe is paramount in maintaining global supply chains and world order. The principal benefits for our clients are RINA's leading-edge Cyber Security and Maritime Classification expertise, in line with the newest IMO (International Maritime Organization) and TMSA (Tanker Management Self-Assessment) cyber security risk guidelines, the risk-based approach to identify potential maritime cyber issues – optimizing expenditure and mitigating actions and a complete understanding of cyber threats, from the latest technological issues to analysing threats from human behaviour and poor business processes.

MANUTELLIGENCE



The European research project Manutelligence aimed at implementing a modular and distributed IT architecture, by merging the current design, manufacturing and Product Lifecycle Management (PLM) systems with IoT derived systems to enable designers to have a holistic view of products' lifecycle and to search and manage data from heterogeneous data sources. RINA, as partner of the project was involved in the Lifecycle Assessment (LCA) aspects and in the definition of the business strategies.

CIRC-PACK



The EU funded CIRC-PACK project started in 2017 with the purpose of transforming plastic packaging waste into a resource. The project is playing an important part in developing more sustainable, bio-based and recyclable plastics. These plastics are in turn then used for manufacturing a wide range of products: trays, bottles, coffee capsules, jars, car parts, pallets, and new types of multi-layer and multi-material packaging. RINA plays a key role and is responsible for assessing the eligibility of different technologies towards the Environmental Technology Verification (ETV) certification.

PRECEPT HELP DECISION MAKING



PREcept™ was developed by RINA in-house, through close collaboration between our Digital Solutions Team and our Learning and Development practitioners. Successfully launched in May 2017, its mainly used in the defence industry as a multi-technique decision support toolset. The product supports the planning process and is ideally suited to complement conceptual training through engaging visualization capabilities. It comprises the combination of 3D simulation in VBS3 of geo-specific terrains, real-life modelling and 2D mapping to help support planning scenarios, exercises and experimentation activities. The product originally targeted the UK Ministry of Defence, having won a contract with Niteworks to deliver this service, however, RINA has received interest from Critical National Infrastructure organisations, and some who specialise in Incident Management Training.

TEKNOAX 2.0



TEKNOAX 2.0 is an industrial driven EU funded research project, with RINA appointed as a key partner. "Precision Farming" with intelligent equipment is a rapidly developing trend in the agricultural business. The TEKNOAX 2.0 project aims to provide solutions to agricultures' increasing demand for intelligent components in the market of axles for farming trailers, going beyond the state of the art and filling the existent gap with precision farming needs. To date, axles are components with limited intelligence and with no interconnection possibilities. This makes every maintenance activity very onerous, with a lack of traceability and real-time assessment of working conditions. It can be managed by installing very complex systems, but these are unfit to the harsh environment conditions which characterize agriculture activities. RINA is responsible for the implementation of intelligence onto axles, enabling unique traceability and condition based maintenance through a collaborative platform as well as for the definition of an innovative business model.

PROJECT ECOLAUNCHER



RINA and Creocan are supporting the European Space Agency (ESA) in the definition of a methodology to perform Functional Ecology in deep ocean conditions, evaluating the environmental impacts of the first stage of a launcher (mainly Ariane 5 and Vega launchers) when sunk into ocean seabed. RINA is utilising instruments to evaluate the overall performances of the launcher and its effects on the environment to access its specific deep sea environmental impact. RINA is providing Lifecycle Assessment (LCA) expertise for impact assessment and environmental modelling of the deep ocean. The capacity to extend the scope of the sustainability assessment outside of the limits of the troposphere, already gained with previous ESA engagement, have been fundamental to further the knowledge of impacts on extreme environments. This work will help ESA evaluate overall impacts for missions in space.

HS2: TRAINING AND SIMULATION REVIEW

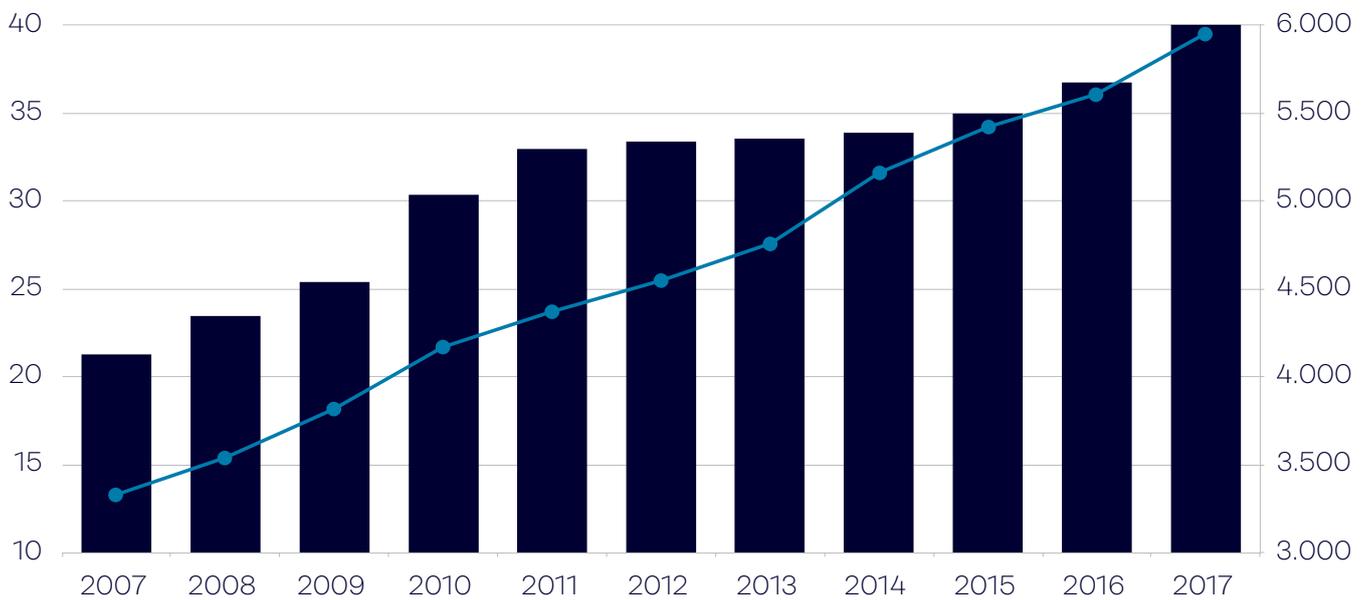


RINA was hired to provide, through training and simulation review, HS2 (High Speed Two) Train Operations' team with a clear understanding of current and future training and simulation methods and media options, their benefits, potential disadvantages, associated risks and likely costs. Any decision made by HS2 Ltd on the education and training of operational staff is critical to the success of HS2. That decision should be informed by a clear understanding of the organisational outcomes that are required from a future training model: a safe, effective and cost-efficient rail operation.

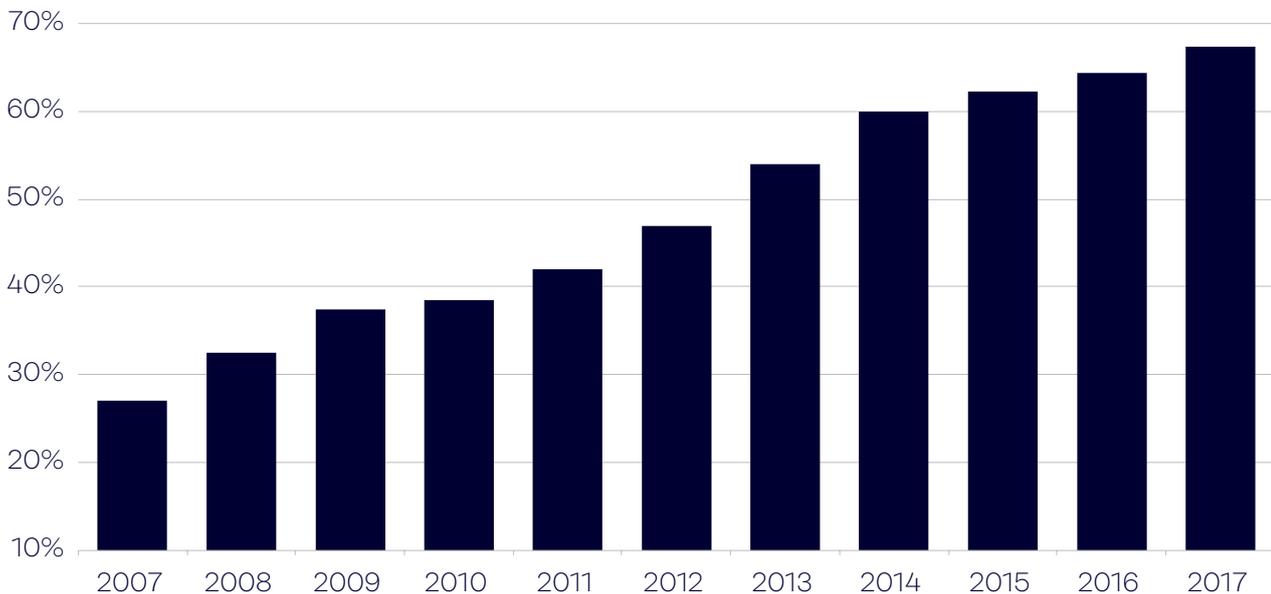
ANNUAL REPORT

Operational Highlights

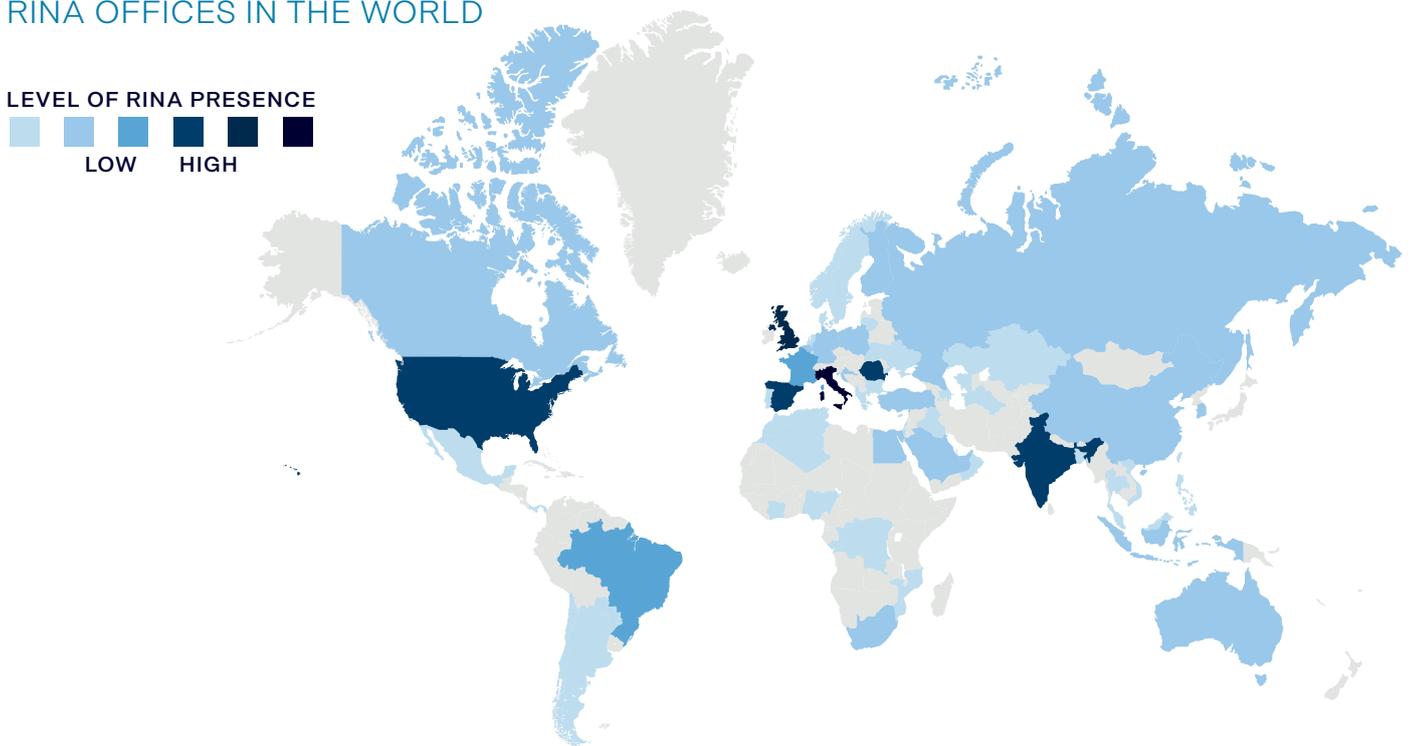
CLASSED FLEET (MILLIONS OF GT AND NUMBER OF SHIPS)



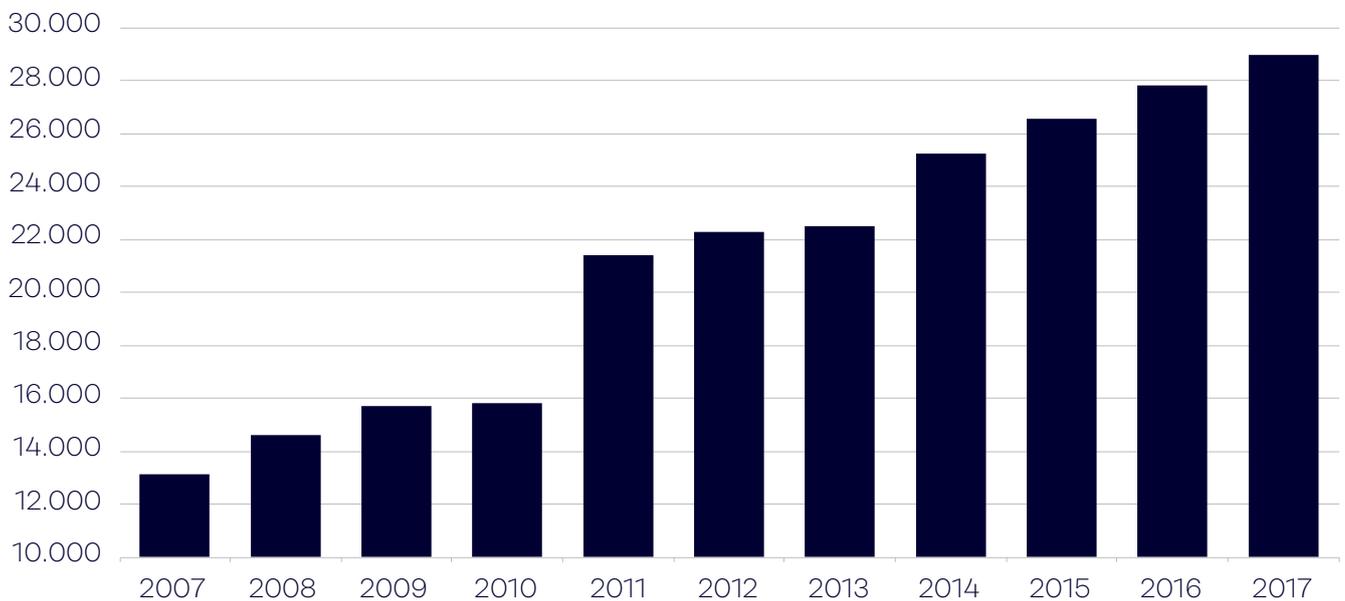
ENGINEERING OPERATIONS ABROAD (% OF PRODUCTION)



RINA OFFICES IN THE WORLD



CERTIFIED COMPANIES



ANNUAL REPORT

Financial Highlights

INCOME STATEMENT (thousands of €)

	31/12/2017	31/12/2016
Turnover	437,534	398,883
EBITDA*	51,779	47,779
EBITDA pro-forma **	N/A	54,562
Group net result for the year	566	4,639

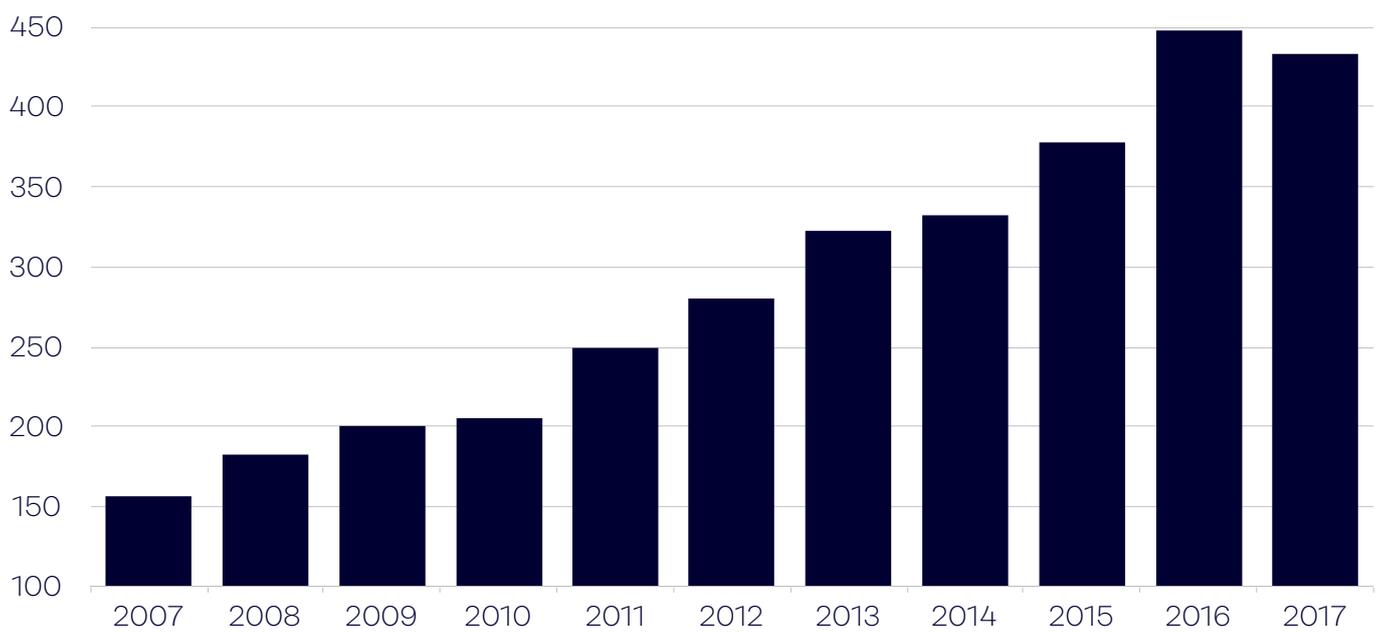
BALANCE SHEET (thousands of €)

Total non-current assets	275,243	279,475
Total current assets	264,055	254,785
Assets held for sale	3,543	2,964
TOTAL ASSETS	542,841	537,224
Total shareholders' equity	204,440	210,940
Non-current liabilities	155,470	178,428
Current liabilities	176,897	141,372
Liabilities held for sale	6,034	6,482
TOTAL EQUITY AND LIABILITIES	542,841	537,224

* EBITDA adjusted for non recurring items

** EBITDA adjusted and pro-forma consolidated figures considering Edif Group numbers for the entire year 2016 (as if the acquisition took place on January 1st)

TURNOVER* (millions of €)



*Turnover figures for 2016 consider Edif Group numbers for the entire year 2016 (as if the acquisition took place on January 1st)

Consolidated statement of financial position

Amounts in thousands of €

	31/12/2017	31/12/2016
ASSETS		
Non-current assets		
Property, plant and equipment	43,402	47,017
Goodwill	154,201	155,629
Other intangible assets	59,943	59,648
Investments valued at equity method	1,371	1,461
Financial assets	1,528	1,593
Deferred tax assets	11,434	10,208
Other receivables and other non-current assets	3,365	3,919
Total non-current assets	275,243	279,475
Current assets		
Trade receivables	166,209	170,850
Financial assets	2,327	1,310
Other receivables and other current assets	32,684	27,016
Cash and cash equivalents	62,835	55,609
Total current assets	264,055	254,785
Assets held for sale	3,543	2,963
TOTAL ASSETS	542,841	537,224

Amounts in thousands of €

	31/12/2017	31/12/2016
EQUITY AND LIABILITIES		
Shareholders' equity		
Share capital	49,518	49,518
Reserves from retained earnings	65,533	59,675
Translation reserve	(3,791)	2,208
Other reserves	89,649	92,249
Profit/(loss) for the year	566	4,639
Shareholders' equity attributable to owners of the parent	201,475	208,289
Minorities result	982	711
Third party equity	1,983	1,940
Total Shareholders' equity	204,440	210,940
Non-current liabilities		
Payables to banks and other lenders	126,506	149,686
Employee benefits	15,496	16,421
Provisions for risks and charges	9,090	7,502
Other payables and other non-current liabilities	4,378	4,819
Total non-current liabilities	155,470	178,428
Current liabilities		
Payables to banks and other lenders	63,292	32,615
Trade payables	57,277	51,137
Tax payables	4,109	4,395
Other payables and other current liabilities	52,219	53,225
Total current liabilities	176,897	141,372
Liabilities held for sale	6,034	6,482
TOTAL EQUITY AND LIABILITIES	542,841	537,224

Consolidated statement of comprehensive income

Amounts in thousands of €

	31/12/2017	31/12/2016
Revenues	427,335	385,571
Other revenues and income	10,199	13,312
Total revenues	437,534	398,883
Raw materials	(4,750)	(4,855)
Services	(156,228)	(140,428)
Personnel	(210,664)	(188,162)
Depreciation/Amortisation	(16,391)	(11,777)
Provisions and write-downs	(8,125)	(9,014)
Other costs	(27,014)	(25,014)
Total costs	(423,172)	(379,250)
Operating profit	14,362	19,634
Financial income	5,381	9,049
Financial charges	(14,359)	(12,287)
Profit/(Loss) before tax	5,384	16,396
Taxes	(3,836)	(11,046)
Net income for the year from continuing operations	1,548	5,350
Profit/(Loss) for the year	1,548	5,350
Profit/(Loss) for the year attributable to owners of the parent	566	4,639
Profit/(Loss) for the year attributable to minority interests	982	711
Other comprehensive income - items that will not be reclassified to profit or loss		
Remeasurements of post employment benefit obligations	(174)	(462)
Total items that will not be reclassified to profit or loss	(174)	(462)
Items that may be subsequently reclassified to profit or loss		
Currency translation differences	(5,858)	299
Total items that may be subsequently reclassified to profit or loss	(5,858)	299
Total comprehensive income for the year	(4,484)	5,187
- Attributable to owners of the parent company	(5,466)	4,476
- Attributable to non-controlling interests	982	711

Consolidated cash flow statement

Amounts in thousands of €

	31/12/2017	31/12/2016
Profit/(Loss) before tax as per the statement of comprehensive income	5,384	16,397
<i>Profit/(Loss) before tax (from continuing operations and discontinued operation)</i>	5,384	16,397
<i>Adjustments to reconcile profit before tax to cash flows from operating activities</i>		
Depreciation/Amortisation of property, plant and equipment/intangible assets	16,391	11,777
Provisions and write-downs	14,624	9,014
Financial (income)/charges, net	8,978	3,238
Income tax paid	(10,287)	(12,060)
Other non-cash items	1,495	(242)
<i>Cash generated from (used in) operating activities before changes in working capital</i>	36,585	28,124
Change in working capital		
- Trade and other receivables	(4,174)	24,181
- Trade and other payables	(666)	(24,189)
- Personnel-related provisions and provisions for risks and charges	(8,158)	(11,314)
<i>Cash generated from (used in) operating activities (A)</i>	23,588	16,802
<i>Cash flow from investing activities</i>		
Additions to fixed assets		
- Intangible assets	(5,634)	(2,180)
- Property, plant and equipment	(4,678)	(134)
Acquisition of Edif Group net of cash acquired	-	(150,002)
Other acquisitions	-	-
<i>Cash generated from (used in) investing activities (B)</i>	(10,312)	(152,316)
<i>Cash flow from financing activities</i>		
Share capital increase	-	60,000
Openings of new bank loans and convertible bonds	29,623	167,159
Repayment of bank loans and finance leases	(31,781)	(78,793)
Changes in financial assets	(340)	2,713
Financial expenses paid	(5,679)	(4,339)
Financial income collected	830	401
Dividends paid	(2,116)	(1,745)
<i>Cash flow related to financing activities (C)</i>	(9,463)	145,396
Net cash generated (used) in the period (A+B+C)	3,812	9,882
Cash and cash equivalents at the beginning of the period	50,234	40,308
Foreign exchange differences on cash and cash equivalents	(525)	44
Cash and cash equivalents at the end of the period, net of current account overdrafts	53,521	50,234

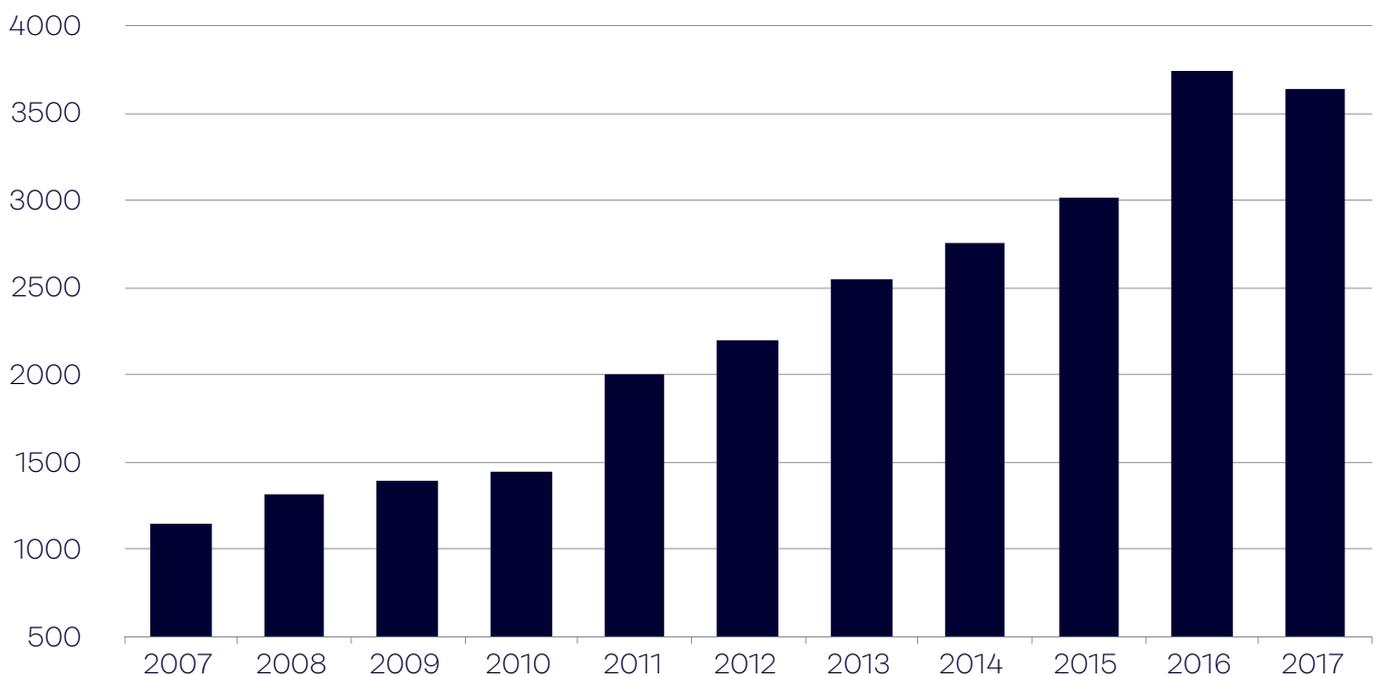
ANNUAL REPORT

Staff Employees



	31/12/2017	CHANGES	31/12/2016
Managers	129	1	128
Technical staff	2,606	-94	2,700
Staff Services	899	-11	910
Total	3,634	-104	3,738
	31/12/2017	CHANGES	31/12/2016
Italy	1,894	-102	1,996
Europe	746	17	729
Asia	561	-66	627
Americas	225	-29	254
Africa	191	67	124
Oceania	17	9	8
Total Group	3,634	-104	3,738

RINA worldwide staff



RINA

Via Corsica, 12 - 16128 Genova - Italy
T. +39 010 53851

rina.org

RINA Corporate Image©