

Present in France and internationally

Our knowhow acquired on the Rhone is acknowledged in France and internationally in more than 30 countries. CNR Engineering has carried out remarkable projects, for example, the design of the locks of the Panama Canal for which we received the Engineering Grand Prix in 2011, and providing technical assistance to the sustainable development of the main channel of the Mekong.

In the framework of the “Initiatives for the Future of Large Rivers”, an observatory gathering experts and representatives of the world’s largest rivers, launched by CNR in 2014, we share our knowledge and good practices with actors from other countries of the world. We are also positioned at the heart of CNR’s ambition: to become a laboratory of future energies.



CNR in brief

A joint stock company in the general interest founded in 1933, the government entrusted us with the concession to exploit and operate the Rhone in 1934 by performing 3 missions for the community: to produce hydroelectricity production, develop navigation, and provide water for irrigation and other agricultural uses.

This multipurpose concession is unique in the world of hydroelectric concessions. Acting as regional developer, we have built 19 hydropower plants and opened 330 km of navigable waterway on the Rhone. France's leading producer of 100% renewable energy, we develop an energy mix based on hydro-, wind and solar power. Strongly committed to sustainable development, we perform flagship environmental actions such as the hydraulic and ecological restoration of the natural bypassed reaches of the Rhone and the restoration of fish migration corridors.

Our ethics

CNR implements a CSR policy. All its value creation activities are performed to the benefit of development that is socially fair, economically viable, environmentally friendly and therefore sustainable. Societal responsibility is indissociable from the actions carried out, and it is present at every level of the company in the service of performance and dialogue. CNR Engineering pays particular attention to ethics. Our teams are committed at all times to upholding the integrity and independence of their professional judgement in the management of projects. They conform to best international practices in the matter, to the stipulations of the contracts signed and to the laws of the country in which they operate.

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Energy is our future, so save it!



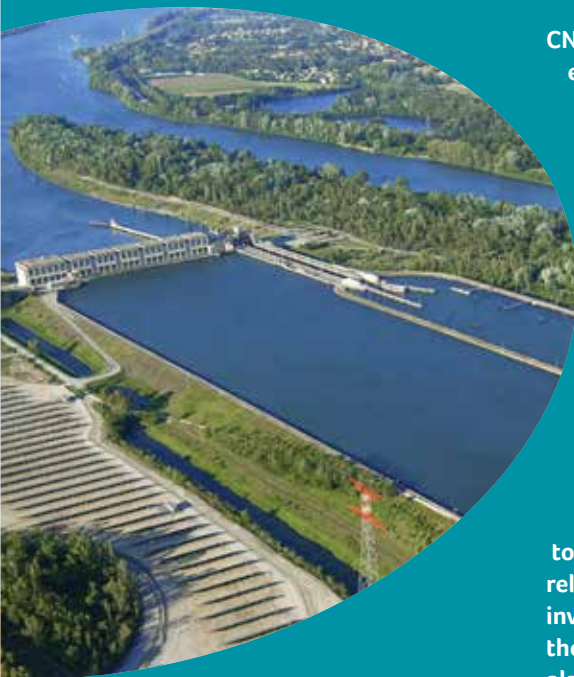


EXPERT IN HYDROELECTRIC AND RIVER ENGINEERING

A targeted approach to ensure the success of your projects

80 years of experience

acquired on the Rhone



CNR Engineering is CNR's integrated engineering-consulting office. CNR is the concessionary of the Rhone, France's no. 1 producer of 100% renewable electricity and the designer-operator of the wide gauge waterway between Lyon and the Mediterranean Sea. Specialised in hydroelectric and river engineering, our expertise is twofold: designing and operating hydraulic structures. We use our feedback from experience to take a pragmatic approach to your projects in order to meet the challenges of today: reliability, optimising return on investment, sustainable development, the environment and safety, and we also view things from the angle of innovation.

CNR PLACES ALL ITS COMPETENCES IN THE SERVICE OF YOUR PROJECTS

Our strength relies on the variety and synergy between the specialities of our engineers: hydrology-meteorology, hydraulics and modelling, the environment, civil engineering, electricity, hydromechanical engineering.

In addition, we benefit from the expertise of CNR's specialists in operation and maintenance (O&M), renewable energy management with our optimisation centre (COCFIT), and port development.

Lastly, we have an integrated laboratory, the Hydraulic Structure Behaviour Analysis Centre (CACOH), equipped with rare competences in physical modelling, monitoring structures and metrology (hydrometry, bathymetry, hydrography).

We provide a global, customised response adapted to your needs.



19

hydropower plants



14

wide gauge locks

4 locks for
pleasure craft



330 km

of wide gauge
waterway



32

wind farms
(in January 2015)



12

solar power plants
(in January 2015)



400 km
of dikes

Our areas of action

NAVIGABLE WATERWAYS

Backed by its experience of the wide gauge navigable waterway of the Rhone, CNR Engineering gives you advice on modernising and maintaining your infrastructures, and creating new waterways.

- Locks, bridges
- Master development plans for navigable waterways
- Development of navigable waterways in canals and rivers
- Development of industrial ports and marinas
- Navigability studies
- Remote control of locks



HYDROPOWER SCHEMES

Making good use of its experience of hydroelectric structures on the Rhone, CNR Engineering is active in the design and construction of new projects and in the renovation of existing ones. We also offer diagnostics and advice for optimising the operation and maintenance of your hydroelectric power schemes.

- Hydropower plants
- Small hydropower plants
- Dams
- Automated and remote control
- Regulation
- Production optimisation and management
- Assistance for operations and maintenance



RIVER DEVELOPMENT AND RESTORATION

CNR Engineering integrates all the technical, economic, environmental and social dimensions to carry out your river development projects. We rely on the experience of our multidisciplinary teams and on the innovative solutions resulting from our R&D.

- Dikes, bank protection
- Weirs
- Fish passes
- Restoration of natural habitats
- Environmental management plans



HYDRAULIC AND HYDROLOGICAL MANAGEMENT OF RIVER SYSTEMS

CNR Engineering offers you the knowhow it has gained from the Rhone (methods and tools) in forecasting, modelling and managing hydraulic and hydrological conditions on a daily basis to define master development plans of river catchments at regional and national scales, and the installation of a hydrometeorological data collection and processing network.

- Hydrological studies and forecasting models
- Hydraulic studies on mathematical models and scale models
- Flood risk management
- Hydrometeorological measurement networks
- Dam flushes
- Safety studies



A winning partnership at every stage of your projects

For us, the success of a project relies on the quality of the relations forged and in particular our sensitivity to your needs. We also assist you throughout your project by providing all the competences required to ensure it is performed successfully

ADVICE AND STUDIES UPSTREAM

We use our detailed knowledge of the lifecycles of structures to provide you with pertinent advice upstream of projects and orient the studies and technical-economic options (impact studies, technical and socioeconomic feasibility studies, technical due diligences).

ASSISTANCE TO THE PROJECT SPONSOR

Our position as integrated consultant engineers makes us particularly suited for this type of mission which requires taking full account of our clients' ideas and needs and maintaining close relations with their teams.

DESIGN

As manager of the Rhone, we have developed a global vision of the life of a river and its catchment area. Thus we design our projects in view to reconciling the different stakes and uses involved (economic use of water resources, sediment management, optimisation of energy resources, flood protection, development of river transport), with concern given to optimising investments.

CONSTRUCTION

Our role as design and construction manager is constantly fuelled by feedback on two levels: that of the structures on the Rhone and on other rivers. Thus our

engineers are very well-prepared during the construction phase to take into account exacting requirements for sustainable development and safety and security while optimising construction costs.

ASSISTANCE FOR THE OPERATION AND MAINTENANCE OF HYDROELECTRIC AND RIVER DEVELOPMENTS

Our close relations with the operating teams mean that we can provide you with efficient advice on the lifecycles of your structures, and help you to take maximum advantage of your installations and structures in terms of production, availability and reliability.

ASSISTANCE TO THE PROJECT SPONSOR

CONSTRUCTION

O&M ASSISTANCE
AND ASSOCIATED
SERVICES

DUE DILIGENCES TECHNIQUES





Innovation

at the heart of our ambitions

Innovation is part of CNR's DNA. We also forge close links with universities and scientific institutions so that our teams appropriate the latest technical and technological advances. We perform experiments in the laboratory and in the form of pilot projects on our concession.

For example, we have developed a Navigation Management Centre that regulates traffic on the Rhone and have designed numerical hydrometeorological forecasting tools subject to constant upgrading.

In particular, we participate in pilot projects on the internal erosion of dikes, the global optimisation of low head hydroelectric schemes and the restoration of the flow dynamics of the natural bypassed sections of the Rhone. You can benefit from the technical advances that are tried and proven by us.

CNR IN FIGURES

40 communications
per year at national
and international
conferences

50 RID projects
in progress

10 PhD theses
in progress