



High Precision Ball Bearings & Electromechanical Systems



technology in **motion**



...adapted to each environment

ADR covers a comprehensive range of products, solutions and services in various fields of application where high precision and high sensitivity are required:

- Defense & Security
- Optronics
- Aeronautic
- Space mechanisms

- Medical & Robotics
- Energy
- Nuclear

ADR benefits from **significant technical success on high precision applications and systems** such as optronic systems, missile seekers, naval systems, gyroscopes, landing gear, aeronautical board instruments and controls, scientific machines, space mechanisms and launchers, robotics...and many more application areas.





Products designed to your needs...

ADR proposes **technical solutions for complete mechanical sub-systems** integrating complex functions based on **ball bearing technology**.

- **High precision ball bearings**
Best performance in stiffness and friction torque
- **Electromechanical actuators**
*Mechanism's enhanced reliability,
precision and repeatability of movement*
- **Electromechanical & Opto-mechanical subsystems assembled in cleanrooms**
Optimization and control of the complete system performances

ADR works to order.

Partnership working relations are enhanced by the special direct contacts that exist between ADR's engineering office and those of its clients.

technology in motion

With more than **90 years of experience**, ADR, member of the ALCEN group, has developed a **unique technological know-how** in the design, development and production of rotating systems and high precision bearings.

To **meet clients' latest requirements**, we **provide remarkable levels of technical performances** such as precision of rotation combined with an extremely low level of vibration, a reduced friction torque and a superior service life.

Our solutions are being **used worldwide** and ADR conducts over half of its turnover abroad.



Innovation & Partnership

ADR invests a **substantial proportion of its turnover in Research and Development**, the key pillar on which its ongoing innovation is based.

ADR is **heavily involved in some long-term R&D projects**, at the **ASTECH** competitiveness cluster in particular, working in partnership with some large multinationals and well-known research centres, as well as with **RAPID** - Régime d'Appui pour l'Innovation Duale (**Dual support system for innovation**).



Services

To develop **technical solutions where high precision and high rotational sensitivity are essential**, ADR relies on a sustained investment on its core business.

- Engineering & Design
- Grinding
- Assembly in clean rooms (category 100 000/ISO 8 to 100/ISO 5)
- Expertise & Measurement

ADR **also offers to manage obsolete items** and ensures that a system works properly throughout its service life by offering bespoke in-service support facilities (**MRO**: Maintenance, Repair and Overhaul).



HIGH PRECISION ball bearings

From 1 mm (bearing bore) to 330 mm (external diameter)

Up to ABEC 9T - ISO 2

- Miniature and Thin section bearings
- Specific bearings (hybrid)
- High speed ball bearings
- Integrated bearings

Each solution has its own specifications and is available in metric or imperial shafts, deep groove or raw angular contact versions, paired or unpaired, with or without protection.



INTEGRATED ball bearings

This innovative design ensures repeatability of behaviour and a perfect control of the complete system performances.

Integrated bearings allow:

- Improvement in the rotational and guidance precision
- Improvement of repetitiveness (preload and torque)
- Improvement of stiffness factors depending on the design chosen
- Reduction of dispersion
- Reduction of rejects

The user can optimize its production chain while avoiding adjustment, unnecessary setting and mounting time.

Integrated SEALED ball bearings

Based on technical specifications, ADR proposes specific designs to meet the antagonist needs of servo-controlled and sealed systems, particularly in the optronic field where precision, repeatability and cleanliness are required.

Innovating sealed solution:

- Sealing against dust, fluids and gas
- Controlled and measured performances
- Optimized torque/leakage rate

Our specific seals are designed and developed in partnership with our suppliers or customers. Controlling performances are under ADR's responsibility.



Electromechanical SUB-SYSTEMS

Following the evolution and understanding of specific needs of high-risk markets, and a wish to further develop its partnership with its clients, **ADR offers its skills and expertise for engineering, integration and industrialization of complete sub-systems.**

To **achieve its customers' objectives**, ADR's experience in ball bearings technology is a key element of success for the solutions provided.

Calculation models that are specifically developed at ADR **ensure a high level of reliability in predicting the behaviour** of the complete system.

ADR combines its permanent research for enhancing performance with a logic based on lower final costs to the **quality of its production** and its **capacities and expertise for precision assembly in a clean environment.**

Additional skills such as project management, industrialization of complex products, production management under aerospace and defence standards, and know-how in technology transfer positioned **ADR as a key partner for the integration of demanding and high-technology sub-systems.**

Capacities already proven in the integration area

- Bearings on castings for electro-optic balls
- Complex sub-systems integrating motor, reducer, electronics, wirings
- Assembly subcontracted
- Rotating actuators designed on specification





Electromechanical ACTUATORS

ADR has developed a **particular expertise in the design and manufacture of specific actuators**. Our range of actuators is particularly appropriate for scientific, space and aeronautical environments.

High precision actuators

- Precision of positioning (displacement) or deflexion (deformation)
- Resolution of a few nanometres (linked to the drive electronics for the motor-reducer)
- Low hysteresis and low level of maintenance
- Reduced mass & dimension
- Ultra-High Vacuum compatibility (UHV option)

Electromechanical actuators

- Controlled positioning and repeatability of motion
- Increased power and high load capacity
- Speed and length of displacement
- Low torque to improve cold starts
- Reduced mass and dimensions

Keys to technological success

Developed on specification, **our products are suited to each environment**, taking into account their harsh environments such as high vacuum, high temperature and hyper-corrosion.

All our process of design and manufacturing, as well as each component will be adapted according to the performance level required by the application domain.

A wide variety of components will be proposed according to your needs for example: conventional or specific steel, cage shapes and materials, seals, balls, solid or fluid lubrication, etc.





ADR
ALCEN

ADR

12, chemin des Prés
77810 Thomery - France
mail@adr-alcen.com
Tel. +33 (0)1 64 70 59 50
Fax +33 (0)1 60 96 43 46
www.adr-alcen.com

ALCEN

Head office
6, rue Paul Baudry
75008 Paris - France
alcen@alcen.com
Tel. + 33 (0)1 40 72 55 00
www.alcen.com

