www.olsenactuation.com

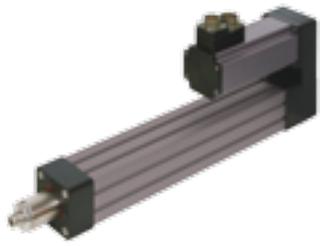
Olsen Actuation UK Ltd

# The Linear Actuation Specialists

Roller Screw Driven_

GSX patented series_

FT high force series_



K series budget range_

EL ATEX series_

Exclusive UK partner

EXLAR a Curtiss-Wright Company

# Supplying The **Most Advanced** Linear Actuation Solutions In The Market

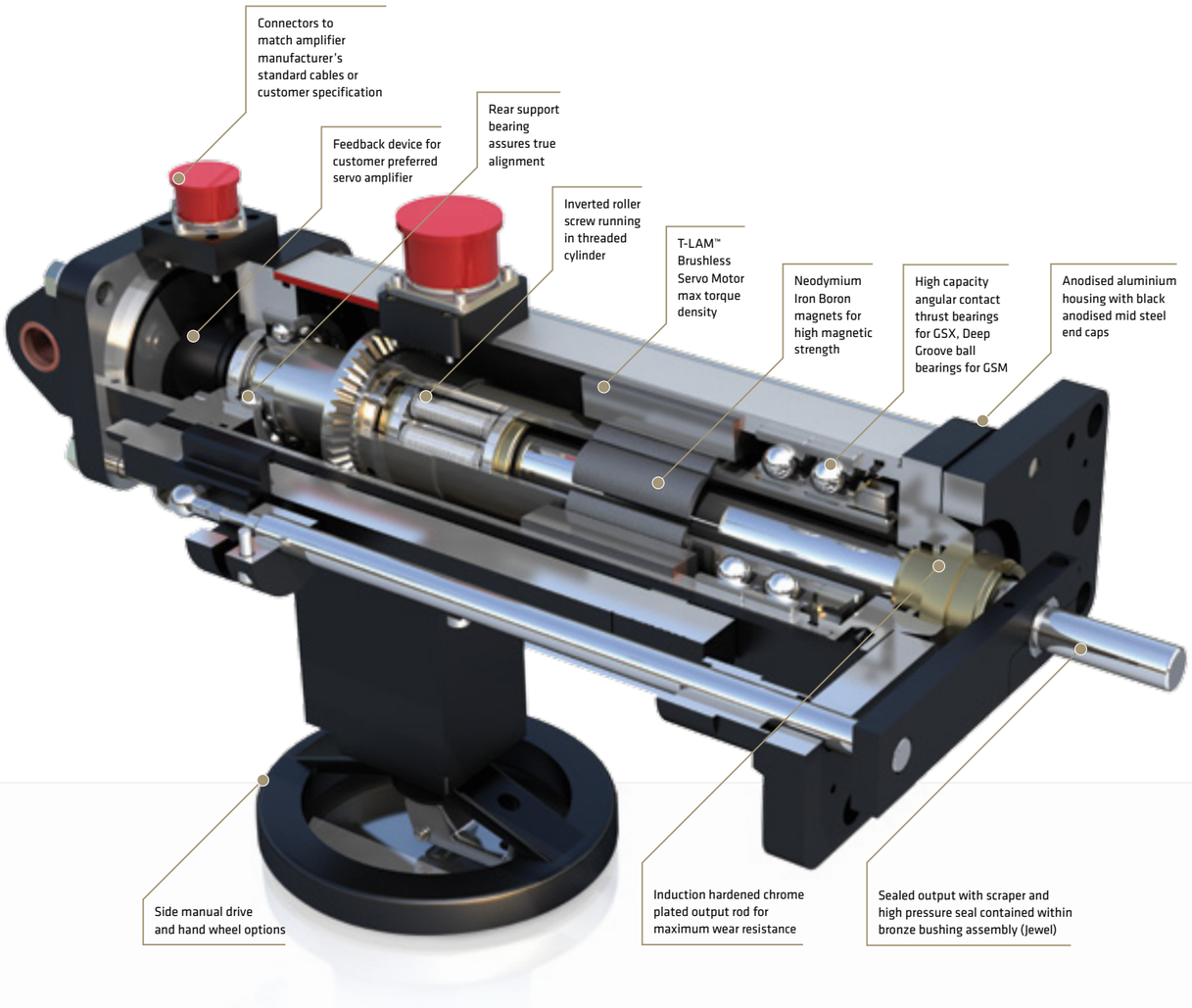
## Our Unique Approach_

Exlar GSX Electric cylinders incorporate a patented direct drive, giving the highest force density available in the market for a given speed.

Exlar GSX are designed with the stator windings directly around the roller screw rotor, removing the need for additional motor in line coupling / parallel mount.

There are over 300 million different permutations of actuator available in the standard catalogue with many non catalogue options available.

MANY OPTIONS AVAILABLE SEE OPPOSITE PAGE

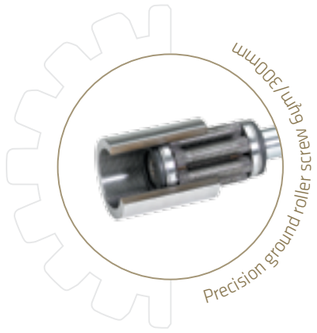



## Superior Technology_

The Exlar GSX series are manufactured with an advanced precision ground annular groove design inverted planetary roller screw mechanism with no conflicting friction, allowing high rotation speeds.

The load is transmitted through the central roller and pinions/gear teeth, whilst the engaging spurs give repeatable positioning capabilities to 3 µm.

There are also internal bumpers allowing safe homing routine.




## Superior Size & Efficiency_

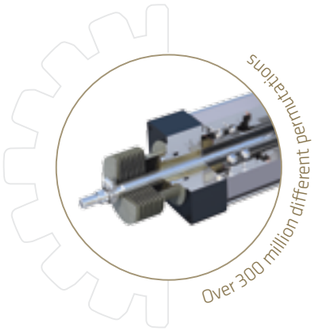
Because of the patented design of GSX series, the footprint is generally 30-40% smaller than other actuators on the market, whilst providing 15 times longer travel life.

The electrical MTBF is 205,000 running or 23 years. So when sized correctly using dedicated sizing software, mechanical lifetime calculations and application knowledge, we expect our solutions to last for +10 years without any headaches, resulting in low maintenance.


## Superior Customisation_

Much like purchasing a new car, there is an extensive options list available, including:

- Various stainless main rods
- Choice of connectors
- Different mounting styles
- 100s of feedbacks to suit servo amplifiers
- Different roller pitches
- 3 levels of force magnet stacks
- Flexible stator voltages and base speeds
- Choice of parking brakes
- Neoprene or high temp protective bellows
- Different front seal materials
- Limit switches
- Internal fail safe springs
- Different IP sealing levels
- Housing coating options
- Selectable grease types / oil filled options
- Internal local cell
- Grease zerks
- Manual side & hand wheel options
- Anti-rotation options
- Triple seal assembly
- Preloaded zero backlash screw option
- Internal LVDT linear transducer



## We Only Supply The Best_

EXLAR a Curtiss-Wright Company

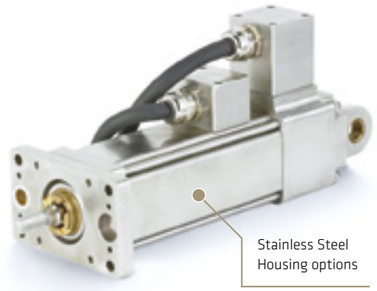
Exlar was formed in 1993 and has an installed based of over 70,000 actuators supported by a global network of dedicated distributors in over 60 countries.

Roller Screw Electric Cylinders offer +10 times energy savings compared with pneumatics and +5 times compared with hydraulics without the risk of air or oil leaks and provide a long life, low maintenance solution.

Additionally, the cylinders are quieter in operation, offer faster cycle times, are easier to install and have better positional accuracy.

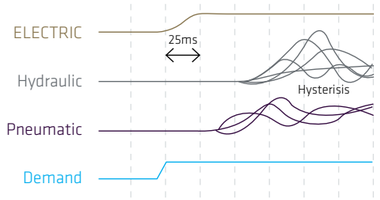
*"Better, Faster, Stronger"*

**Consult Olsen Actuation today for the complete listing of Exlar Roller Screw Linear Actuators.**




## Benefits_

- Highest force density footprint available in the market
- Patented IRS Inverted Roller Screw Design gives very high dynamic response and improved duty cycles
- Advanced TLAM Stator and Servo Magnet technology
- Very long total product life cycles
- Precision ground high quality planetary roller screw assembly




### Precision Ground Rollers_

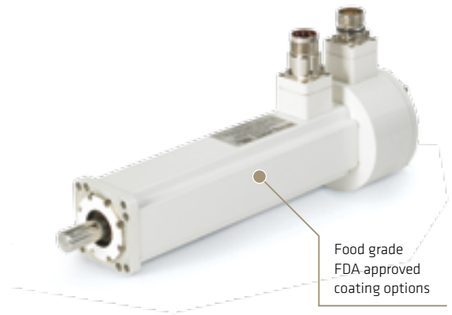
No conflicting friction giving high speeds & acceleration rates. Load is transmitted on the central pinion

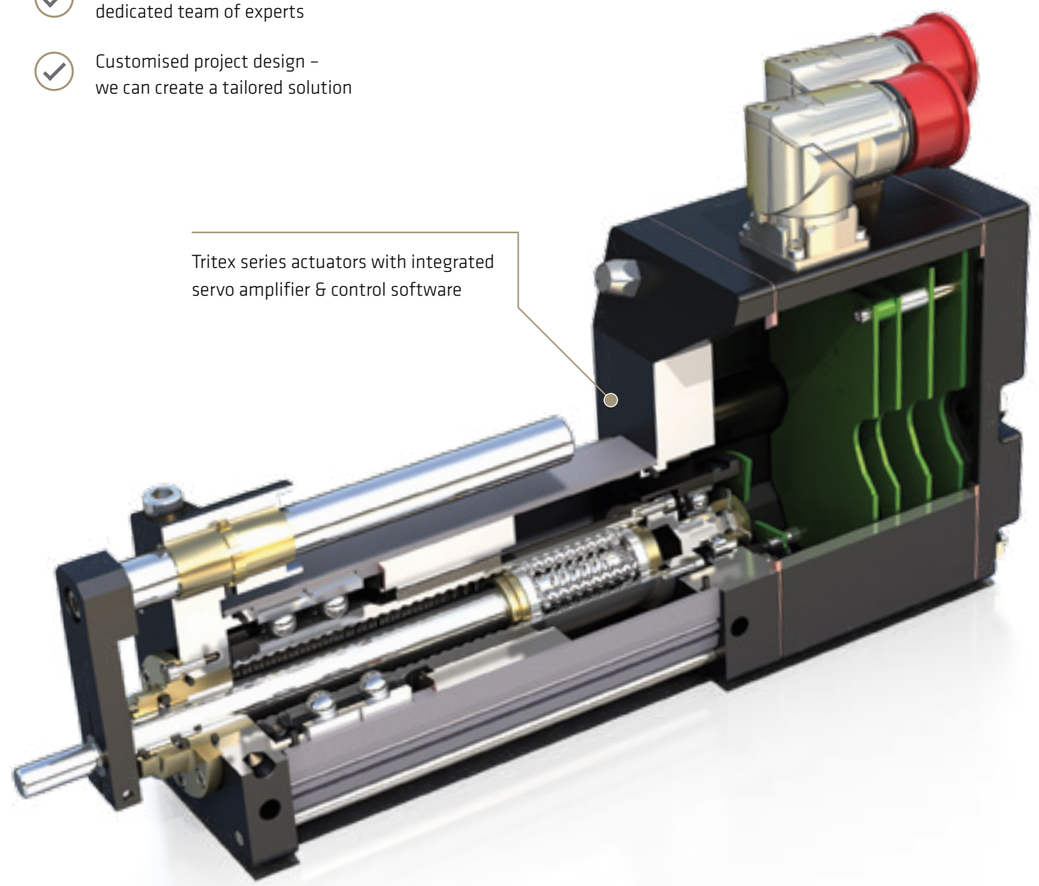
## How We Support Our Customer_

With dedicated, focused Exlar support and a wide range of experience of projects and applications, you can be sure we can help you make the best choice for solving your machine design improvement.

We are happy to supply product only, however, because we design our own project solutions, we can also give detailed advice of how best to integrate with your system.

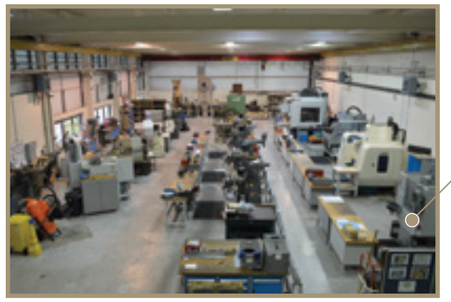
- Solving problems through knowledge and understanding
- Technical know-how and a dedicated team of experts
- Customised project design – we can create a tailored solution



## Control Panels_

Generally we are selecting Beckhoff as our main automation partner with various brands of servo amplifiers over EtherCat fieldbus. The reason is that our programming and software resources are very experienced with over 50 years between them in this environment. This allows fast delivery of high level complex multi-axis servo motion solutions and ongoing experienced support.



## Machine Shop_

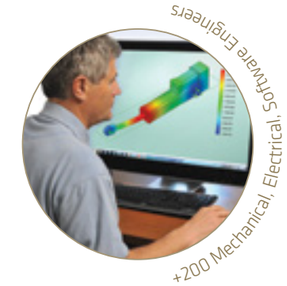
The machine shop has the latest 3d printers in the market, including metal printing. There are CAD/CAM machines capable of 3&4 axis milling and production in most materials up to 2m length. And Hass Milling & CNC Lathes, with various lathes, grinders, bandsaws and inspection Metrology equipment.

## Production & Test_

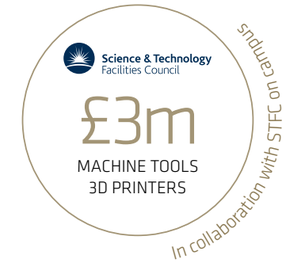
We have an eight-bay production cell capacity complete with a separate office for software development (to IEC 61131-3 + optional 3rd party validation) and a dedicated area for FAT (Final Acceptance Testing). COTS (Commercial off the shelf high quality automation components are always used in the build).

# Core Capabilities_

Olsen was founded in 2004. Our extensive experience is primarily in advanced motion control and automation systems. We are a strategic partner and are located on the science park campus with STFC, one of Europe's largest multidisciplinary research organisations. STFC employs approximately 2000 people. It manages the UK interests in major international collaborations e.g. CERN and ESO, E-ELT, ESA and develops and manufactures in-house patented technology associated with such projects. Olsen has approved access to STFC resources. The STFC budget allocation in 2015 is £529 million, with over 800 PhDs funded.

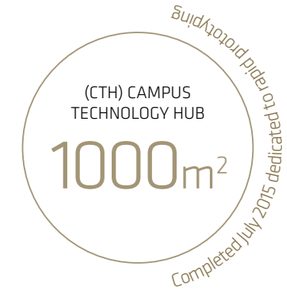



- Test rig design for proving your application requirements
- Life time modelling software & dynamic performance sizing tools
- Mechanical & Electrical Designs – Senior Advanced Level
- FEA and ANSI MATLAB Computer modelling, Solid works
- Software Engineering coders and programming specialists
- 3d printing technology – plastics, metals, rapid prototyping
- Big data computing HP quantum computer and coders
- Virtual Reality & Simulation Laboratory (VEC)

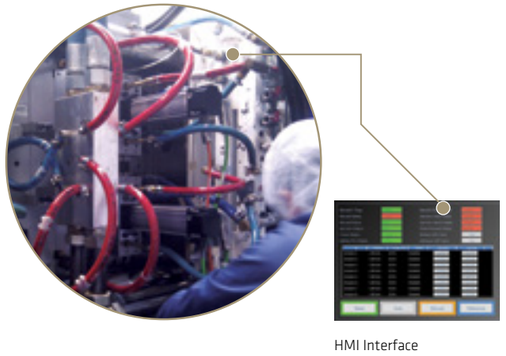



AT OLSEN, WE SPECIALISE IN TAILORED OPTIMISED ACTUATOR SOLUTIONS. DESIGNED, ENGINEERED AND MANUFACTURED EXACTLY FOR YOUR APPLICATION NEEDS.

Piers Olsen / Olsen Actuation UK Ltd



# Example Applications_



HMI Interface

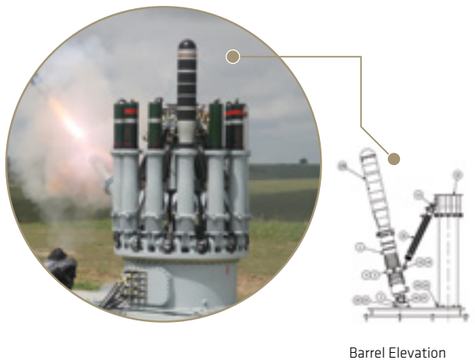
## Injection Moulding Plastics_

With increasing demand for 100% repeatability and no risk of oil leaks, most modern moulding machines are ALL electric, with core ejection and cap unscrewing being completed with electric cylinders. This offers increased production, reduced energy consumption (typically 90%) and ensures no down time through product contamination.

6DOF Motion

## Simulation & Motion Platforms_

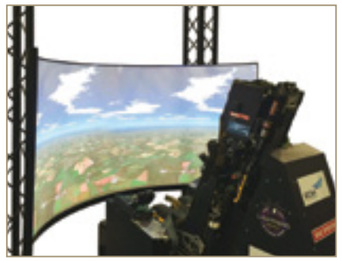
Most modern flight & vehicle simulators are using electrically actuated motion platforms with 6DOF (degrees of freedom) kinematics to produce realistic motion simulations up to level D standards. Many simulation producers are using Exlar GSX and high force FT series compact high efficiency cylinders to provide the positional response and smooth performance needed. Olsen has developed a range of precision motion platforms to further explore this market. In addition many 4D entertainments are using Exlar for chair ride motion dynamics.

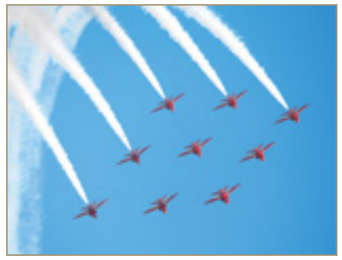


Barrel Elevation

## Centurion Ship Protection_

12 x Exlar GSX series actuators provides barrel elevation to 16µm to Mil shock standards, with housing options to allow long life in off shore marine environment. The launcher protects the ship by having the capability to quickly respond to threats by placing the correct countermeasure in the optimum location in the sky rather than having to actively turn the ship.





## G-seat Hawk_

G-seat systems simulate the effects of G-force within the flight simulator using a set of actuators to provide tactile cues to the trainee pilot.

The Ejection seat is fitted with five actuators which move to produce realistic dynamic forces on the pilot, matching acceleration set points.

The multi-axis solution, including advanced motion software, has been completed and tested for EDM Manchester using the BAE Mach Loop Flight model, which is a set of valleys in Wales, UK.

It is situated between Dolgellau in the north, and Machynlleth in the south (and from which the Mach Loop gets its name). They are regularly used for low level flight training, with flying as low as 250 feet (76 metres) from the nearest terrain.

To the south of the Mach Loop there is an area called Tactical Training Area 7T, in which, at specified times, the aircraft may fly as low as 100 feet (30.5 metres).

When Olsen was based in Newtown Mid Wales, staff often heard the Hawk Jets flying overhead, based out of RAF Valley, who also have these simulators in their training facilities.

DO YOU HAVE A PROJECT IN MIND? CONTACT OLSEN TODAY TO DISCUSS YOUR REQUIREMENTS.

## People We Work With_

Having completed many procurement audits we are proud to say we have official approvals. Here are a sample of blue chip and multinational companies that we have supplied:

babcock · Rolls-Royce · Griffon Hoverwork · Chemring Group · BAE Systems · subsea 7 · BD · Alstom · Sperry · EDM

## Sector Expertise_

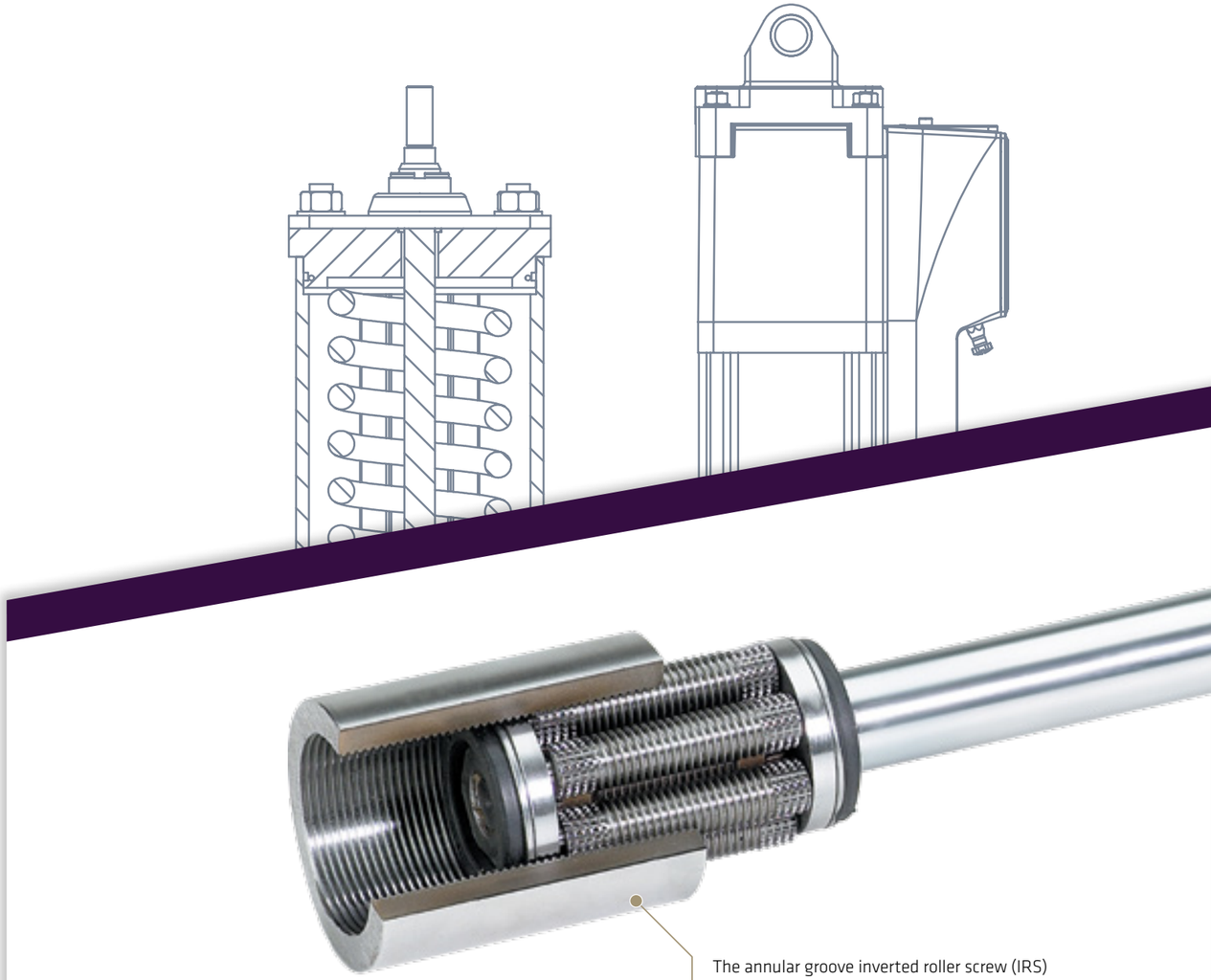
Olsen has a wide range of applications experience in most industries. Consult Olsen for industry specific presentations and reference stories. With Exlar Roller Screw Actuators providing the most advanced linear actuation technology, with the most comprehensive range of speed, force, travel options, you are guaranteed the best performance.

- Aerospace
- Defence
- Marine
- Simulation
- Testing Industry, (Static, Dynamic, Life & Fatigue)
- Automotive
- Process Control & Valves
- Oil & Gas
- Mobile Equipment
- Food & Drink Packaging
- Injection Moulding
- Pressing & Sealing
- Health Sciences & Medical
- Paper & Textiles
- Machine Tool
- Security Industry
- Renewable's Industry
- Forestry & Sawmill
- Hexapod
- Subsea Electric Actuators
- Complete Project Solutions

We also operate in other markets and are always happy to help improve your machine design compared with pneumatics or hydraulics, lead screw or ball bearing actuators.

WHEN PUSH COMES TO SHOVE
OLSEN HAS THE ANSWER

Piers Olsen / Olsen Actuation UK Ltd



The annular groove inverted roller screw (IRS) design perfected through £25m of Exlar R&D with direct drive PM servo motor, gives long life and low maintenance.

**Patent Number 557,154**

DEMAND THE BEST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**Piers C. Olsen**
Eur Ing CEng MIET MIMechE MIEx BEng (Hons)
Technical / Managing Director_
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Olsen Actuation UK Ltd
The Linear Actuation Specialists
Exclusive UK partner EXLAR

Main Offices (The Innovation Centre)

Research & Development (CTH)

Exlar Factory, (Minneapolis)

# Standards & Compliance

Exlar Olsen Actuators have been tested to the many different standards. If you need something specific, please ask and we can organise that for you:

- DEF-STAN 59-41`1 Iss1Pt3 EMC & MIL-STD-461F
  Control of Electromagnetic Interference EMC
- MIL-S-901D + MIL-STD-167B + MIL-STD-810
  Vibration & High Impact Shock Testing
- Environmental qualification to IEEE 323 - (radiation limit of 1 X 10^6)
- MIL-STD-108E Environmental Capability for Electronic Equipment
- EMI/RFI to EPRI TR102323 and Reg. Guide 1.180
- Seismic qualification Cat 1 to IEEE 344
- ATEX 1037X Exd II B T3 Gb IP66;
- Class I, Division 2 - groups A, B, C & D certified - ref 163694;
- Class I, Division 1, Groups B, C, D and T3
- Temperature Range fully tested from -40°C to +100°C
- EU EMC Directive 2004/108/EC
- EU Low Voltage Directive 2006/95/EC
- EMC: IEC/EN 61800-3: 2004 + EN55014-1:2006+A1:2009 + EN55014-2:1997+A1:2001+A2:2008
  Adjustable Speed Electrical Power Drive Systems
  Part 3: EMC Requirements and Specific Test Methods
- Safety: IEC/EN 60034-1:2004 + IEC/EN: 61800-5-1: 2007
  Adjustable Speed Electrical Power Drive Systems
  Part 5-1: Safety Requirements
- Year of CE marking 2004

Certificate of Compliance - Certificate No. 14122500A; 0070085

Certificate of Compliance - Certificate No. 61 071 - 13HH

Certificate of Compliance - Certificate No. 2011220 - E225288B

Certificate of Compliance - Certificate No. 2332992

Certificate of Compliance - Certificate No. 05.B.00923; 1117746947141; 1127746774440

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