

TIGRON



auma®

Solutions for a world in motion

Electric MULTI-TURN ACTUATOR

for valve automation
in potentially explosive
atmospheres



More than 50 years of experience in development, production and distribution of electric actuators. This is an excellent background for combining classic values of the oil & gas industry like reliability and safety with the requirements for digitisation.

AUMA has broken new ground.

The result:

Powerful, flexible and intelligent,
the Tiger is the perfect namesake.

THE TIGRON



economic

- > Low standby consumption
- > Simple and low-maintenance power supply
- > High availability



smart

- > Commissioning assistant
- > Signalling via display and output contacts in case of power failure
- > Separately mounted controls for installations in confined spaces



user-friendly

- > Simple installation
- > Intuitive menu navigation
- > Combi-Switch for robust operation





certified

- > IECEx/ATEX certification, recognised in many countries
- > Further certifications under preparation



compact

- > Low space requirements
- > Low weight and advantageous centre of gravity
- > Large performance range



robust

- > Engineered & Made in Germany
- > Flameproof enclosure
- > Wide temperature range
- > Premium corrosion protection

TIGRON – YOUR BENEFITS



MULTI-TURN ACTUATOR FOR GATE VALVES

The TIGRON is a multi-turn actuator with classic mission: Automation of gate valves with or without rising stem.

Almost unlimited stroke

Rising stems are lead through the multi-turn actuator hollow shaft driving the stem thread. The stem protection tube protects the stem from pollution and people from injuries.

Open-close and modulating duty

TIGRON actuators versions are available for both types of duty.

Combinations with multi-turn gearboxes

In combination with GK or GST gearboxes, torques up to 16,000 Nm can be reached.





TIGRON within manifold

Manifolds are typical for a large number of gate valves.

For operating the illustrated gate valves, torques of approx. 700 Nm are required.

TIGRON torque range

30 Nm to 1,000 Nm
in six sizes.

The actuators can be mounted onto the manifold gate valves without requiring an additional gearbox.

Robust and future-proof

Manifolds are often installed in salty maritime environments. The premium AUMA corrosion protection is also decisive for TIGRON's long life cycle.

TIGRON multi-turn actuators are designed to satisfy digitisation demands. The numerous actuators within the manifold are easy to integrate into the DCS environment.

TIGRON – THE MULTI-TURN ACTUATOR

Display with plain text
indication in more than 30
languages

Combi-Switch as robust
operator

Five clearly visible indication lights
can be programmed to user speci-
fications

Handwheel activation via push button

Protection against unauthorised use

Plug-in electrical connection

COMBINATIONS FOR BALL, BUTTERFLY AND GLOBE VALVES

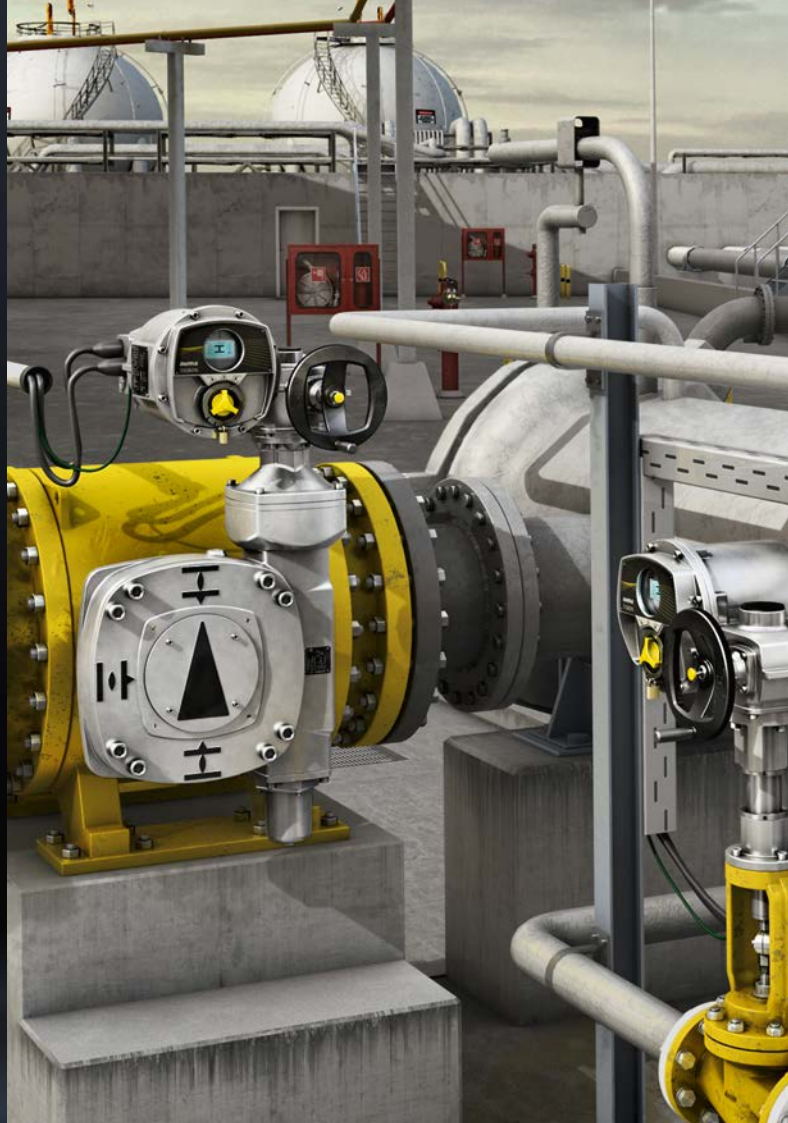
Modular AUMA scheme

Six gearbox type ranges are part of AUMA's product portfolio. They are ideally suited to complete and enhance TIGRON's application range even to other valve designs.

This includes numerous butterfly valves or the conventional ball valves of the oil- and gas industry requiring a part-turn movement of mostly 90 degrees.

In these cases, TIGRON is combined with AUMA part-turn gearboxes.

AUMA linear thrust units convert TIGRON's multi-turn into a thrust movement which is required for globe valve automation.





TIGRON within pig traps

The ball valve must be precisely set to position OPEN to ensure that the pig can smoothly enter the piping.

The by-pass valve is designed as globe valve.

TIGRON multi-turn actuator combined with a GS part-turn gearbox on a ball valve

Torques up to 675,000 Nm.

TIGRON multi-turn actuator combined with LE linear thrust unit on a globe valve

Thrusts up to 217 kN,
strokes up to 500 mm

TIGRON – PART-TURN & LINEAR ACTUATORS

Modularity:

Uniform

> Automation

> Installation

> Device integration

> Commissioning

> Operation

> Service schemes

> Spare parts management

for all valves at the site.

SEPARATELY MOUNTED CONTROLS

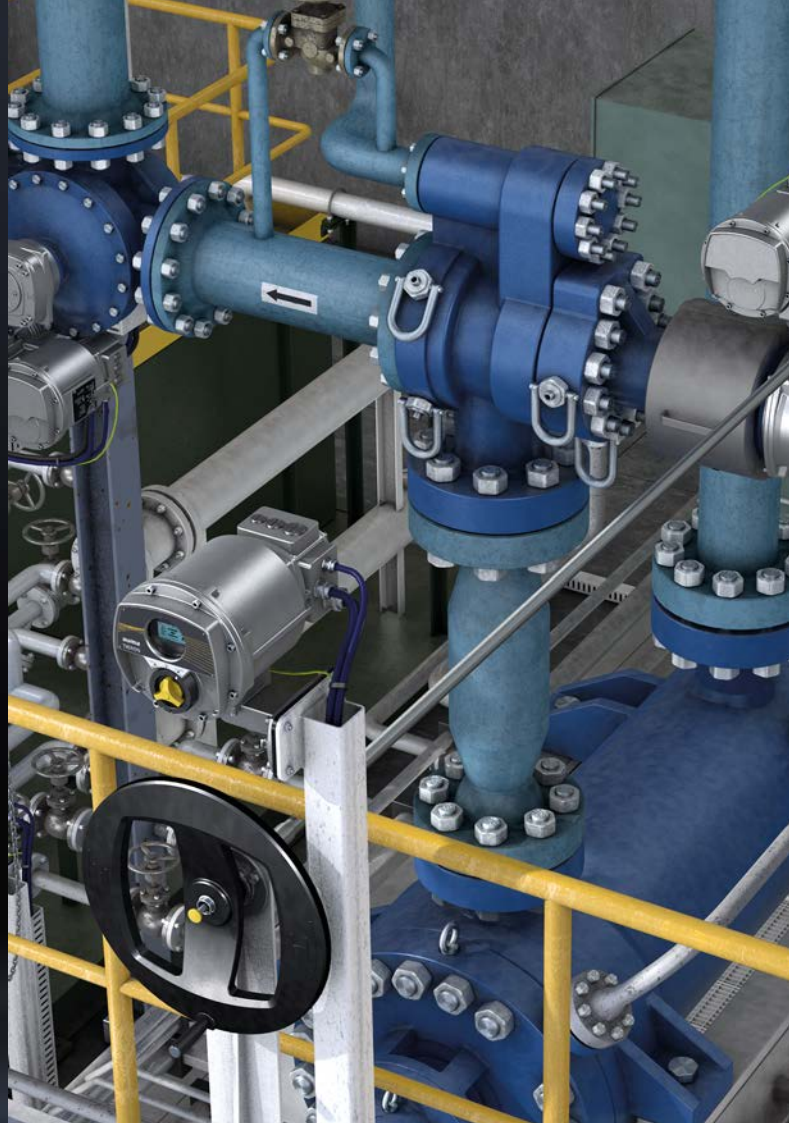
When do you dislodge TIGRON's controls?

Pipes and consequently valves are mounted within ducts, below ceilings or in between other pipes. TIGRON's accessibility is then difficult and potential dangers like high temperatures might be related, causing people to refrain from approaching the actuator.

The solution: TIGRON's controls can be dislodged from the actuator in an own housing and be installed at a perfectly accessible position. The connection to the actuator is made via cable set, supplied by AUMA, to cover the required distance.

At AUMA, the scheme of dislodged controls has been proven for several decades.

Another reason for separate mounting might be strongly vibrating valves thus avoiding to subject the sensitive electronics to vibration.





TIGRON within cracker & coker applications

When using decoking control valves, dislodged controls are the best option to operate the actuator locally, to request device status or perform settings.

In the illustration, the cable length between TIGRON and dislodged controls is roughly 40 m. Cable lengths up to 100 m are feasible.

The handwheel extension allows for manual actuator operation from a safe position.

TIGRON – DISLODGED

When to decide in favour of dislodged controls?

- > difficult accessibility
- > potential dangerous environment for people
 - > high ambient temperatures
 - > strongly vibrating valves

CLEAR TEXT

TIGRON is locally set via the display and the Combi-Switch, no additional setting tools are required.

Unauthorised operation and setting changes are prevented by password protection.

The display indicates the device status in clear text with clear and straightforward symbols. TIGRON speaks more than 30 languages.

The display is backlit allowing good legibility even under unfavourable lighting conditions.

The display scheme is completed by five indication lights. Besides the standard display scheme, colours and blinking behaviour of the LEDs can be adapted to user specifications. Consequently, the device status is clearly visible even from a larger distance.





**The commissioning assistant –
Pointing the way ahead right from
scratch!**

The commissioning assistant leads
through the setting menu, showing all steps
in the correct order –
fast and safe for operators, valve
and TIGRON.

**Robust Combi-Switch or
magnetic pen operation**

Single hand operation possible even when
wearing protective gloves as personal
protective equipment – this is the asset of
the new Combi-Switch. It is used to locally
operate and perform settings at TIGRON.

Alternatively, a version is available in
combination with a magnetic pen instead of
the Combi-Switch to navigate through the
menu.

TIGRON – SIMPLE OPERATION

Clear communication

-> safe actions

What to do if I
have to intervene?

TIGRON clearly shows the
current status to the user
– the perfect basis to
do the right thing.

SERVICE MADE EASY

Plug-in electrical connection

TIGRON's electrical connection is a separate unit which can be completely removed from the actuator without requiring to separate individual connections. A proven principle contributing to TIGRON's service friendliness.

Many device-internal electrical connections are also ready to plug in.

The 90 degrees housing scheme

All of TIGRON's housing elements can be arranged in four different positions, shifted by 90 degrees. This allows to optimise the local controls' position to the operator's needs and to mount the electrical connection to suit the available cable inlet.

Required tools: An Allen key and a Phillips head screwdriver. That's all you need to optimise the housing orientation within minutes.





Easy opening of the housing

Thanks to the design of the flameproof enclosure, the inside of the housing is isolated from the environment. This is the basic principle of a standardised protection scheme: Even an explosion inside the housing does not ignite a potentially explosive surrounding atmosphere.

TIGRON's required flameproof joints are made as combined conical joint.

When removing or replacing the housing cover, the pressure compensation is immediately active. This design also prevents jamming of cover and housing.

This considerably facilitates opening and closing of the TIGRON housing compared to conventional flameproof joints in parallel design.

Caution: Opening of TIGRON's housing is only permitted if potentially explosive atmosphere is not present.



TIGRON – FRIENDLY HANDLING

Worldwide service network

TIGRON is reliable and service-friendly but requires expert care.

Therefore, the AUMA Service is available for expert and friendly handling via a worldwide network.

AUMA is globally represented in more than 70 countries. An AUMA Service expert with required qualifications is always in your proximity.

KEEP COOL – TIGRON FOR EXCEPTIONAL SITUATIONS

Power failure causes stress and you need to anticipate actions to stay on top of things.

TIGRON considerably contributes to a controlled situation. There are two options to preserve TIGRON's electronics and sensors in operation. All status signals are comprehensively available and the on-site staff or control room is reliably informed by TIGRON.

- > TIGRON's electronics can be supplied via a separate 24 V DC input by an independent power supply.
- > TIGRON's electronics is supplied by an internal power buffer.

Both systems can be combined.

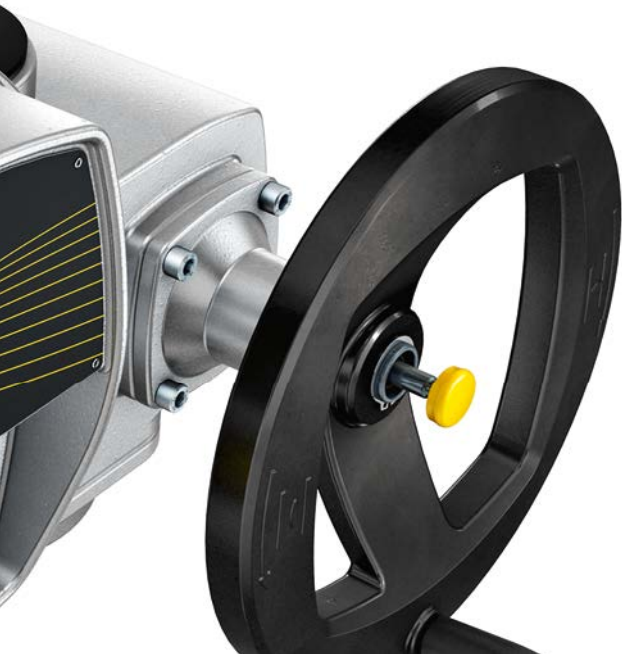


Power failure!

The TIGRON internal rechargeable power buffer takes over the internal electronics supply. The buffered current would even be sufficient for power failures taking months. Once the power supply is reconnected, the power buffer is recharged.

This does not allow electric operation of TIGRON; however, the valve position can be read on the display. Manual TIGRON operation via the handwheel are recorded.

If an intact connection is available to the control room, all signals are transmitted.



TIGRON – ON TOP OF THINGS

Commissioning even if power supply is not available

The internal power buffer does not only increase the capacity to act in case of power failure, it provides valuable support during commissioning.

Upon delivery, the power buffer is completely charged. Hence, the commissioning can be performed on site, even if power supply is still not available.

FLEXIBLE AND RESISTANT

Tigers live and thrive in both tropical jungles and frozen tundra. They are powerful and elegant on land or in water.

Our TIGRON reliably operates on platforms in tropical seas as well as on pipelines in Alaska. TIGRON is used to the same environmental conditions and extremes of the oil & gas industry.

High or low temperatures, corrosive atmospheres and rough handling in a challenging working environment – TIGRON has been designed to satisfy these demanding requirements.

AUMA's experience of more than 50 years in this market segment have been combined for product development.





+75 °C

-65 °C

Wide temperature range

IP68

Highest enclosure protection

C5-M/C5-I

or C5/CX

according to EN ISO 12944-2

**Premium
corrosion protection**

Flameproof housing
enclosure

Ex d

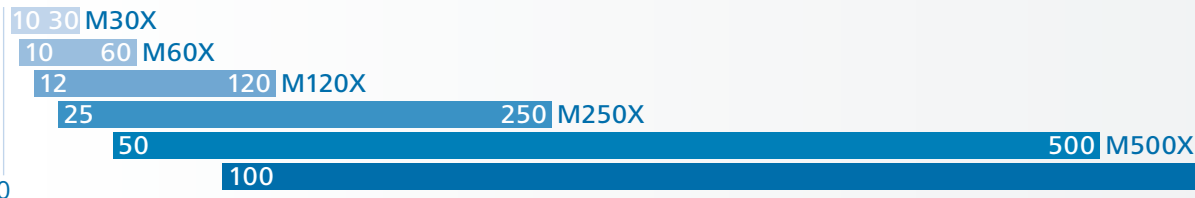
Type of protection

TIGRON – GLOBALLY ROBUST

Engineered & Made
in Germany

Double layer powder
coating of the individual
housing parts prior to final
assembly. The power coating
remains undamaged even when
opening the housing.

TIGRON MULTI-TURN ACTUATORS – Torque and operating speeds



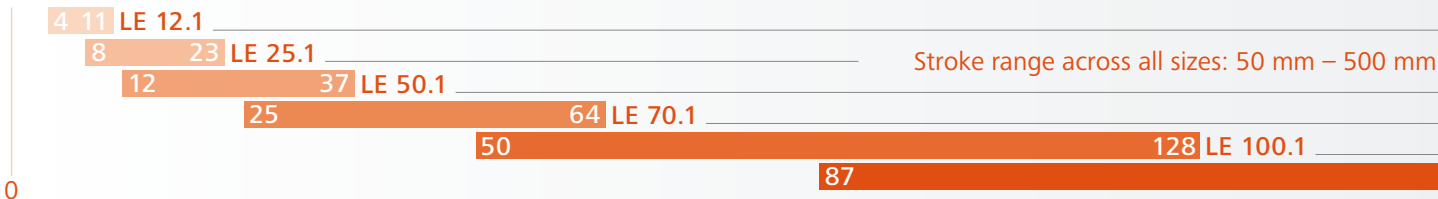
Setting range for tripping torque in Nm

PART-TURN ACTUATORS: TIGRON WITH GS PART-TURN GEARBOX – Torques and operating speeds



Torque range in Nm

LINEAR ACTUATORS: TIGRON WITH LE LINEAR THRUST UNIT – Thrusts, strokes and operating speeds



Setting range for thrust in kN

TIGRON – BASIC DATA

Operating speed range in turns per minute


50 Hz: 4  180

60 Hz: 4.8  216

1,000 M1000X

GS 630.3

Operating time
range in seconds

 286
792

360,000

675,000

Operating speed range in millimetres per minute



20 – 220

20 – 225

24 – 270

28 – 315

28 – 315

32 – 360

217 LE 200.1

Open-close and
modulating duty

Limit and torque seating can be
configured








Operating time/operating speed to be
selected in steps

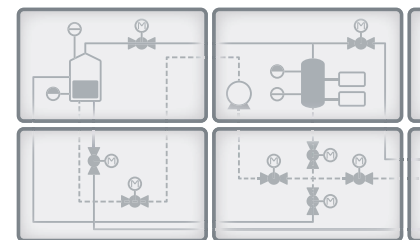
Standardised valve attachments

Explosion protection

- > II2G Ex db h IIC T4 or T3 Gb
- > II2G Ex db eb h IIC T4 or T3 Gb
- > II2D Ex tb h IIIC T130 °C or T190 °C Db

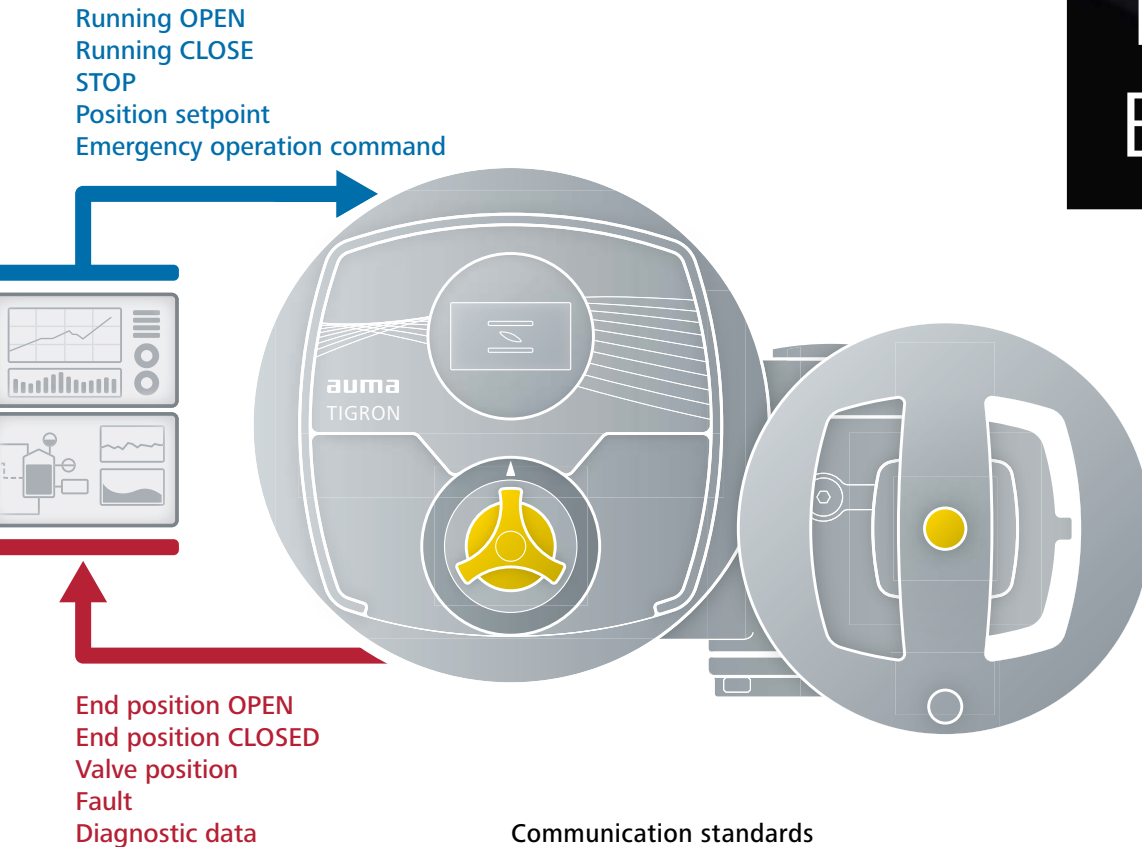
TIGRON – IN BRIEF

-  Operation of valves depending on DCS operating commands and setting specifications.
-  Signals the valve position to the DCS.
-  Receives and sends commands or signals via selected communication technology either parallel or serial (fieldbus/Ethernet).
-  Equipped with two independent automatic seating facilities:
 - > Limit seating: Tripping once end position is reached.
 - > Torque seating: Tripping once the valve torque limit value for the valve set at the actuator is reached – permanent overload protection. Can also be used for conventional end position tripping.
-  Versions for both types of duty: OPEN - CLOSE duty and modulating duty.
 - > OPEN - CLOSE valves: Approaching the end positions.
 - > Modulating valves: Flow control for valve position.
-  Safety functions ensure predictable valve behaviour in case of functional deviations, e.g. for signal loss.
-  Handwheel for emergency operation in case of power failure.
Easier device setting during commissioning.



DCS

TIGRON – BASICS



Communication standards

AUMA exclusively uses open data protocols, including PROFISAFE, which was especially designed for use in potentially explosive atmospheres. TIGRON actuators are compatible in communication with other field devices.

TIGRON masters conventional data exchange without digitised signals.

BE ON THE SAFE SIDE!

For more than 50 years, AUMA has been developing, manufacturing and distributing electric actuators for the oil & gas industry.

AUMA is renowned in this market segment for supplying safe and reliable products.


This confidence is based on numerous successfully passed certification procedures with notified bodies as well as for vendor approvals. AUMA is qualified as supplier with many major oil and gas companies.

Selection

- | | | |
|------------------|-------------------|---------------------|
| > ADCO | > ENAGAS | > Repsol |
| > AMEC Paragon | > ENI | > SAUDI ARAMCO |
| > BANAGAS | > ERG PETROLINE | > Shell |
| > BP | > EXXON Mobile | > STATOIL |
| > DOW | > OPET | > TOTAL |
| > Chevron Texaco | > Pertamina | > Turkish Petroleum |
| > ConocoPhillips | > Petronas | and many more. |
| > CNOOC | > PTT Public | |
| > DUPONT | > Qatar Petroleum | |



AUMA – GLOBAL CERTIFI- CATION



■ Notified bodies approvals
● Vendor approvals

TIGRON certification
TIGRON is certified to IECEx/ATEX which is recognised in many countries. Like for all explosion-proof AUMA actuators, the certifications for all other countries will follow step by step.



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