



WE
TEST
YOU
TRY



METALLURGY BUSINESS UNIT

*HARDNESS TESTERS
&
UNIVERSAL TESTING MACHINES*



STEEL MILLS

APPLICATION FIELDS



WIRES PRODUCERS

SPRINGS

AUTOMOTIVE
COILS
AEROSPACE

FORGES
OIL & GAS
RAILWAYS



WE
TEST
YOU TRY

PRODUCTION, SALES AND SUPPORT **100% MADE IN ITALY**

SINCE 1985

We manufacture top of the range **mechanical testing equipment**

With more than 1.200 machines sold worldwide,
EASYDUR is one of the **leading manufacturers** in the field of **quality control**.

Thanks to numerous partnerships with local and international partners and distributors,
we have established commercial relationships
and provide after-sales services **all over the world**.

EASYDUR has always been proud of its **customisation** policy, always aiming
to supply equipment with the highest technological content.

HARDNESS TESTERS **UNIVERSAL TESTING MACHINE**

ACCESSORIES
& **EXTENSOMETERS**

for
METALLURGICAL
APPLICATIONS



HARDNESS

TESTERS

SECTORS

FORGES
STEEL MILLS
ENERGY
RAILWAY
AUTOMOTIVE
RESEARCH
OIL & GAS
CONSTRUCTION

INTERNATIONAL STANDARDS

UNI EN ISO 6506 - Brinell hardness tests
UNI EN ISO 6507 - Vickers hardness tests
UNI EN ISO 6508 - Rockwell hardness tests

INDUSTRY 4.0

Thanks to the intensive work carried out by the **EASYDUR R&D Department**, our equipment allows customers to work in full compliance with the principles of **Industry 4.0**.

Thanks to our control software, EASYDUR machines can be interfaced with the Management Systems used by our customers for maximum speed of operation and exponential reduction of the risk of operator error.

Our technicians can remotely connect directly to our customers' IT systems anywhere in the world, making our **after-sales service immediate and efficient**.

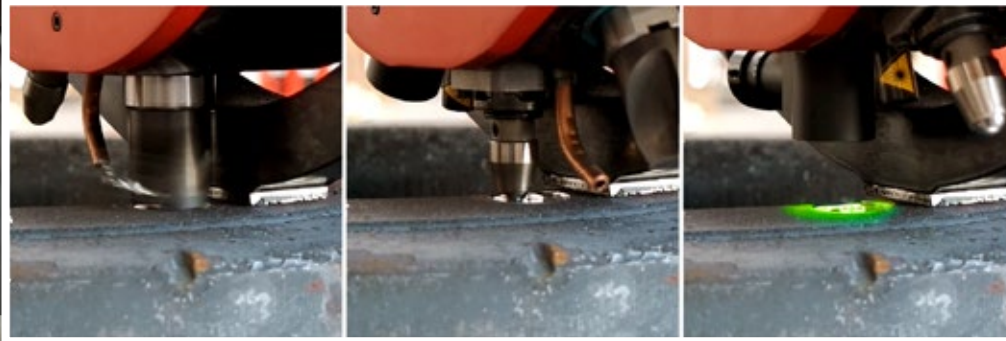
With this range of machines, our primary target is undoubtedly the **metallurgical industry** and all its branches, a sector that EASYDUR has been serving **since 1985**.

Over the years, EASYDUR has developed and produced metallurgical testing solutions, always with the **latest needs of the market** in sight, both in terms of size and mechanical characteristics of the specimen to be tested.

This clearly includes all the **automation infrastructures** surrounding a hardness tester, such as integration with AGV forklifts, conveyors and cranes.

This has allowed us to satisfy a wide range of users and to gain the privilege of **transversally penetrating several sectors** on an international scale:
FORGES AND FOUNDRIES, COILS, AUTOMOTIVE, RAILWAY, AEROSPACE, DEFENCE, OIL & GAS, CONSTRUCTION, RESEARCH.

INTEGRATED MILLING SYSTEM



45 seconds for one complete test,
including surface preparation



Test 100% of production
with maximum Brinell accuracy



Constant surface roughness:
no damages, no heating



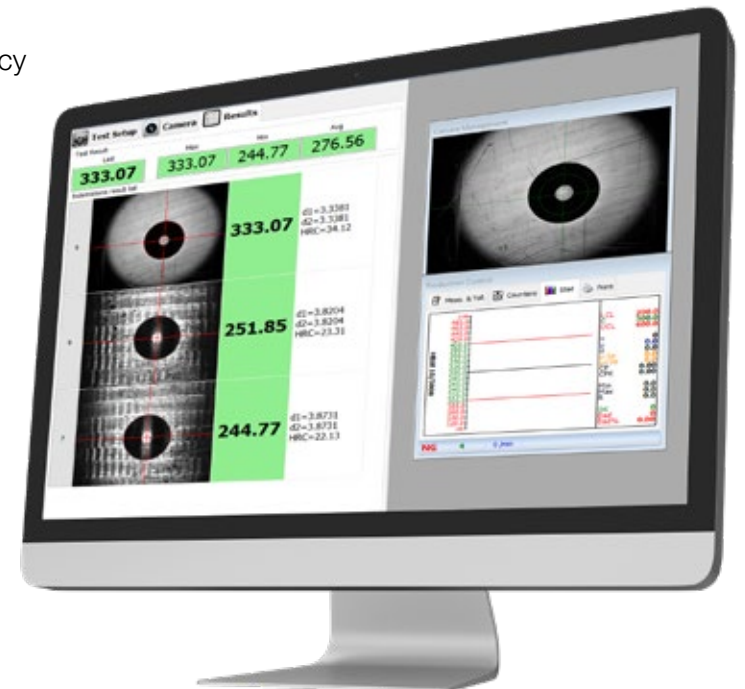
Automatize the quality inspection process



Reduce costs, with economical benefits



Optimize Human Resources allocation



WE
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SMALL TO MEDIUM

PIECES

APPLICATIONS

FORGED PARTS

BRAKE DISCS

WHEELS

WIRES

PIPES

VALVES

SPRINGS

INTEGRAL SERIES

from 1 to 250 kg
from 1 to 3000 kg

INTEGRAL is the range of hardness testers for **Vickers**, **Rockwell** and **Brinell** hardness tests, dedicated to small and medium sized pieces, characterised by the presence of rotary tables, clamping vices and other special grips, depending on the model and the options chosen.

Integrated milling

When the Revolver head is equipped with the **built-in milling system**, the user can enjoy all the benefits of testing on a regular surface and characterise the material thoroughly thanks to the **adjustable milling depth**.

Universal

Alternatively, the customer can choose to use the slots by inserting **different indenters and optics**, allowing a variety of tests to be carried out with the same solution. The INTEGRAL SERIES has a load capacity of up to 3000 Kg and can integrate up to 12 slots.





INTEGRAL UNIVERSAL - MILLING



UP TO 12 SLOTS



AUTOMATIC INDENTATION READING WITH AUTOFOCUS

MILLING SYSTEM or MULTI-SCALE TURRET

Adjustable milling depth (Revolver)	From 0 to 5 mm (Ra 2.5 to 3.2)
Test loads (Revolver with milling system)	750-1000-3000 kg
Test loads (Universal with multi-scale turret)	0.25-120 kg (Vickers), 15-150 kg (Rockwell), 750-3000 kg (Brinell)

OPC-UA Module for interface 4.0 with MES/ERP

QR/Barcode Reader

Optionals such as mechanical locking devices available

Marking tool

NEW

MEDIUM-BIG

PIECES

APPLICATIONS

FORGINGS

CASTINGS

HEAVY PLATES

RINGS

PIPES

WHEELS

MOD. EASYFLAG

A **versatile machine**, perfect for testing more pieces with different shapes and dimensions!

EASYFLAG 3000 is a special series of hardness testers for **Brinell** hardness tests on large and heavy pieces, characterised by a **completely flexion-free swivel arm** that can rotate 180 and even 360 degrees and move the head in any testing zone.

With its integrated milling system, designed to overcome the typical problems of radial drills and to **eliminate the need for manual grinding**, EASYFLAG 3000 is able to apply a load of up to **3000 kg** to perform hardness tests on any metal part, together with the necessary force to block the piece.

After surface preparation and indentation, EASYFLAG 3000 automatically uses its **integrated optics** to measure the results and produce **charts and statistics**. It is available in two models with different dimensions, test areas and levels of automation. EASYFLAG can be equipped with our **self-learning functionality**.

An **electric machine** perfect for testing more pieces with different shapes and dimensions!


EASYOUR

MAXI EASYFLAG & MINI EASYFLAG



Perfect reach on medium-big pieces thanks to its “flag” shape of the arm

Versatility: surface preparation even on small pieces without clamping

Possibility of automatic surface preparation up to	55 HRC
Adjustable milling depth	From 0 to 5 mm (Ra 2.5 to 3.2)
Test loads	750-1000-3000
Spheres from	Ø 5 mm to Ø 10 mm

OPC-UA Module for interface 4.0 with MES/ERP

CNC control

Self-learning

Totally flexion-free swivel arm

QR/Barcode reader

Integrated marking tool

NEW

Repeatability +/- 0.1 HBW

PORTAL FOR BIG PIECES

APPLICATIONS

FORGINGS
CASTINGS
DEFENCE
CONSTRUCTION
SHIPBUILDING
AUTOMATION
NAVY
METAL BARS

PORTALS

EASYDUR offers a range of hardness testing PORTALS designed to perform **Brinell** hardness tests on very large and heavy pieces, varying in size and available options depending on the model.

Our PORTAL hardness testers are equipped with the **EASYDUR Revolver Head**. Otherwise, the customer can choose to use the slots by inserting different indenters and optics and perform **multi-scale hardness tests**, all with one machine.

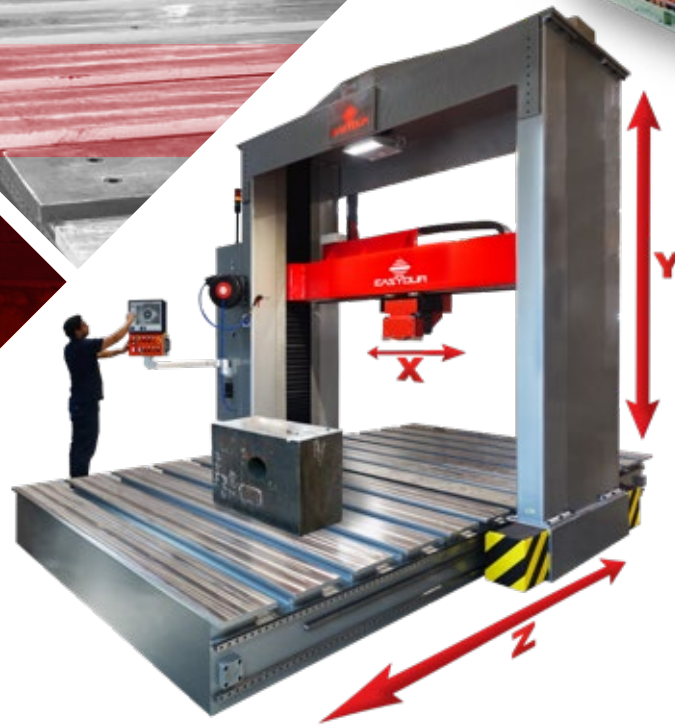
All EASYDUR PORTALS can perform hardness tests with a load of up to 3000 kg moving along the X, Y and Z axes, and can rely on **self-learning functionalities** to test all the pieces they can accommodate. EASYDUR hardness testing PORTALS are **modular machines**, which means that their length can be modified by adding or removing specific pallets, each 2.5 m long, to achieve the desired final dimensions.



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HARDNESS TESTING PORTALS

WITH SELF LEARNING



Can be operated with an intuitive **remote control**

Tests on very big pieces in multiple points (45 seconds per each complete test)

Possibility of automatic surface preparation up to	55 HRC
Adjustable milling depth	From 0 to 5 mm (Ra 2.5 to 3.2)
Test loads	750-1000-3000
Spheres from	Ø 5 mm to Ø 10 mm
OPC-UA Module for interface 4.0 with MES/ERP	
CNC control	
Self-learning	
QR/Barcode reader	
Integrated marking tool	NEW
Repeatability +/- 0.1 HBW	

LINE AUTOMATION

APPLICATIONS

PRODUCTION LINES

100% TESTING

INTEGRATION
WITH OTHER SYSTEMS

QR CODE/BARCODE
SYSTEMS

CONVEYORS

ROBOTIC ARMS

AGV
FORKLIFTS

GANTRIES



EtherCAT®



Easydur hardness testers can be integrated employing the most diffused protocols, such as Profinet, Ethercat or a classical Digital Input/Output, according to the needs and requirements of the customer.

100% TESTING

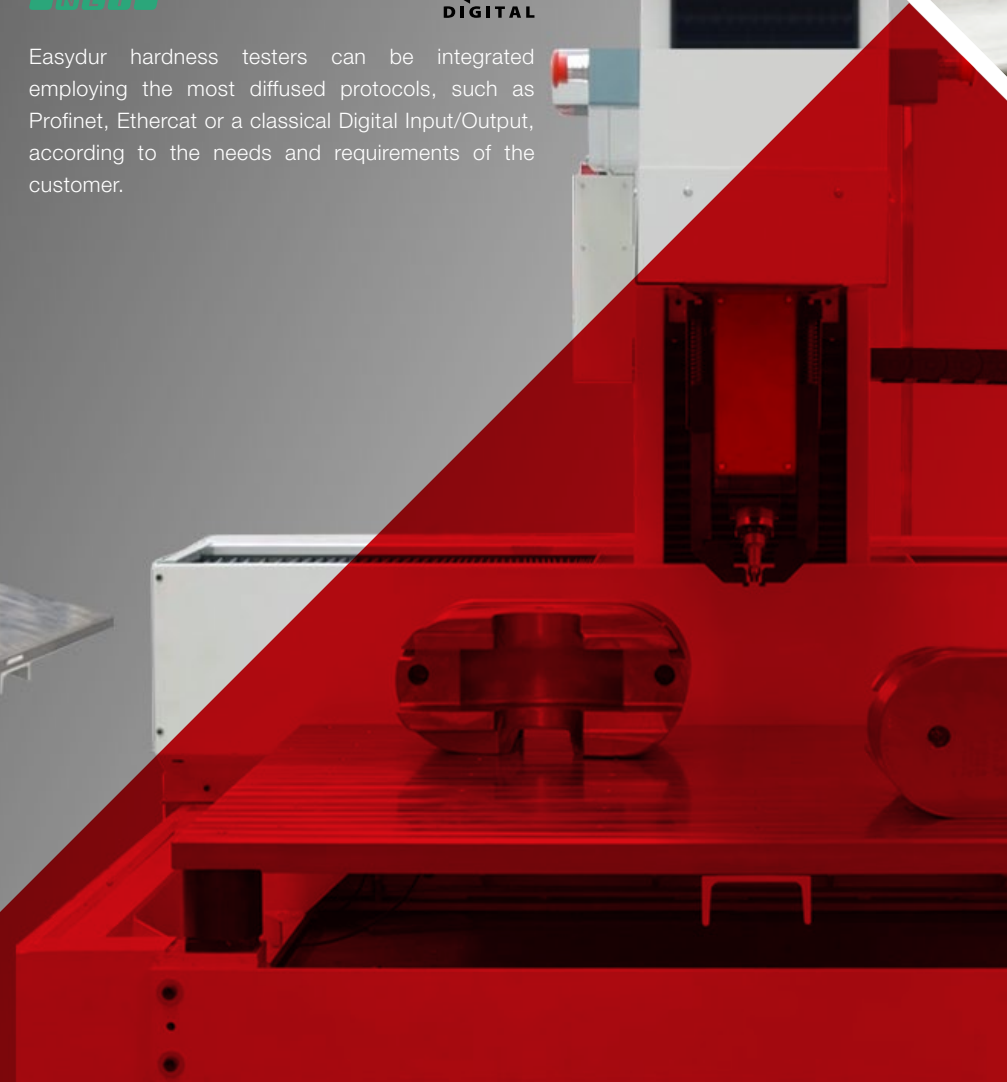
One of the main results of EASYDUR's R&D efforts over the last decades is the high level of **automation** that can be achieved by choosing an **IN-LINE solution**.

Our IN-LINE hardness testers are designed to perform Vickers, Rockwell and Brinell hardness tests on various types of pieces and differ according to the model in terms of size, types and combinations of indenters and standards to be observed, as well as the type of integration (feeding systems, conveyors, automatic forklifts – AGVs – and so on).

Our main objective in developing an **IN-LINE hardness tester** is to test 100% of the production in the most efficient and quickest way possible.

In addition to the advantages of integration with other existing or non-existing structures, this type of instrument retains all the advantages of our hardness testers, such as the possibility of mounting different indenters and optics, as well as the integrated milling system.

Easydur hardness testers can be integrated using the most widely used protocols, such as Profinet, Ethercat or a classical Digital Input/Output, according to customer's needs and requirements.



IN-LINE HARDNESS TESTER



INTEGRATION WITH LINES, CRANES, AGVs AND EXISTING OR NEW PRODUCTION LINES

ALL SCALES, UPON CUSTOMER NEEDS: Universal Multi-Scale Turret

CNC Control for X-Y-Z Axes

OPC-UA Module for interface 4.0 with MES/ERP

Self-Learning

Functional control with a single command

UNIVERSAL TESTING MACHINES

UTM

OUR SOFTWARE

Thanks to our **EasyQs** software, developed in-house by EASYDUR and based on **Windows 10/11**, it is very easy to create recipes that allow the operator to obtain any value of interest of the material being tested, according to all international testing standards: ISO, ASTM, DIN, JIS; we have a **wizard** for each standard.

For instance, EasyQs software allows to measure unit tensile stress, deformations (elongations), modulus, yield strength, break characteristics, maximum elongation, desired stress drop, maximum force and much more.

Thanks to the flexibility of EasyQs, it is also possible to perform **compression and bending** tests on a wide range of materials, allowing a thorough and complete characterisation, with the possibility of **exporting test results**, statistics, post-process analyses and certificates.

SECTORS

WIRE AND RODS
PRODUCERS
LABORATORIES

AEROSPACE

RAILWAY

SPRING PRODUCERS

CONSTRUCTION

AUTOMOTIVE

PRECISION INDUSTRY

STEELWORKS

RESEARCH CENTRES

INSTITUTES

UNIVERSITIES

TEST RESULTS

- Tensile stress
- Deformation/elongation modules
- Elongation L%
- Max/min width
- Break characteristics
- UTS (Ultimate Tensile Strength)
- Yield strength Re
- Offset yield Rp 0.2
- Upper yield strength ReH
- Lower yield strength ReL
- Maximum force at the upper yield strength FeH
- RA% (Necking/reduction area)
- Transverse strain ϵ_{trans}
- Axial strain ϵ_{axial}
- Poisson's Ratio $\nu = - \epsilon_{trans} / \epsilon_{axial}$

EASYDUR offers an extremely complete range of Class 0.5 UTMs. Our solutions can test, with the **highest precision and repeatability**, a wide variety of metallurgical pieces, from **metal wires** (DYNO UNIVERSAL model, with 10 N – 5 kN load cells), through to **aluminium bars** and **sheets** (3MZ model, capable of reaching 50 kN), to large steel **rebars** and other pieces requiring high loads (AURA model, up to 2 MN).

The great versatility of our testing systems makes them true Universal Testing Machines and allows them to perform, with a simple change of accessories, a **complete range of material characterisation** and specimen testing according to the most common **international standards**.

EASYDUR Universal Testing Machines can be fitted with **3 permanent load cells** with adjustable forces according to the customer's needs. Our experience and mechanical know-how allow us to **produce any special accessory**, whatever the standard to be met and the physical characteristics of the specimen.

DYNO UNIVERSAL

TENSILE, COMPRESSION, BENDING, PEELING

The DYNO UNIVERSAL series, with a force range starting at 10 N, is perfect for any **low-load** testing application.

DYNO UNIVERSAL is a highly versatile model in the EASYDUR UTM family and, unlike the other models, is designed with a **single column structure**.

Customisation is always possible when it comes to choosing the best configuration, and EASYDUR is able to produce all the necessary accessories, from grips that can perform tensile tests up to rupture, to plates and cutting tools that can test materials such as aluminium and copper, or thin metal wires and sheets, to springs of various types.

DYNO UNIVERSAL can accommodate **1, 2 or 3 load cells** simultaneously, each of which can be equipped with different accessories.

The machine is equipped with a user-friendly Windows 10/11 **touch-screen PC** with EASYDUR EasyQs software, which allows test results (e.g. tensile stress, deformation/elongation, modulus, fracture characteristics) to be exported in Excel format.

Tech Details	DYNO Universal
Max capacity (N)	5.000
Number of load cells	Up to 3, always mounted
Max division	200.000
Min division (N)	0,025
Free working height (mm)	500
Position accuracy (mm)	0,001
Adjustable speed (mm/min)	0,005-1.000
Data acquisition rate kHz	1
Precision class	0,5



3MZ UNIVERSAL TESTING MACHINE

MOD. 3MZ

TENSILE, COMPRESSION, BENDING

The 3MZ series is the first choice for all **medium load** testing needs, capable of performing any type of test with forces up to 50 kN.

EASYDUR 3MZ is always tailored to each customer's specific requirements and can integrate various options such as **extensometers**, as well as custom grips, flat and round specimen inserts, plates, cutting tools and **3-point bending equipment**.

With the 3MZ, it is possible to perform any type of test on materials ranging **from aluminium to steel**, in the form of wires, sheets, tubes and much more.

All our Universal Testing Machines can accommodate up to 3 different load cells with their respective grips, each of which can be directly **selected** via software and combined at will.

The test results, such as tensile stress, deformation/elongation, modulus, break characteristics, **can be easily edited and exported** in Excel format, as the machines are based on Windows 10/11 OS.



Tech Details	3MZ
Max capacity (N)	50.000
Number of load cells	up to 3, always mounted
Max division	200.000
Min division (N)	0,25
Free working height (mm)	900
Position accuracy (mm)	0,003
Adjustable speed (mm/min)	0,005-500
Data acquisition rate kHz	1
Precision class	0,5



MOD. AURA UTM

TENSILE, COMPRESSION, BENDING

The AURA series is the largest in the EASYDUR UTM family and, thanks to its ball screws, can handle **very high loads up to 200 tonnes**.

Like all EASYDUR solutions, it is specifically designed to meet customer requirements, both in terms of options (climatic chambers, high-temperature furnaces, extensometers, both contact and contactless, and video extensometers) and **accessories** (grips, compression test plates and tools for cutting/bending tests).

This **complete customisation** is part of our philosophy and allows the customer to satisfy both their own needs and the external constraints imposed by the various **standards** (some examples are ASTM B557, ASTM E190, ASTM E21, ASTM E290 and ASTM E446).

The AURA Universal Testing Machine can (where technically possible) mount **up to 3 load cells simultaneously**, each of which can be selected and combined with the others directly from the EasyQ's software.

Test results can be edited and exported for any use, and some examples of parameters provided by the testing machine are: **tensile stress, deformation, elongation, modulus, break characteristics**.

AURA UNIVERSAL TESTING MACHINE

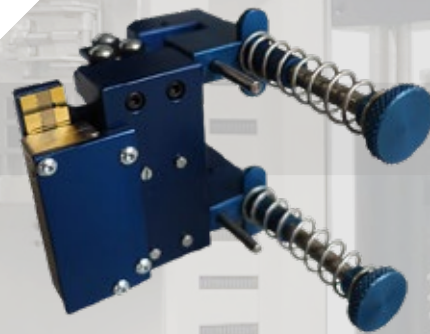


FROM 100 kN TO 3000 kN				
Tech Details	200 kN	400 kN	600 kN	1.500 kN
Number of load cells	up to 3, always mounted			1
Max divisions	200.000			
Min division (N)	1	2	3	7,5
Free working height (mm)	1.200	1.300	1.650	2.000
Position accuracy (mm)	0,002			
Adjustable speed (mm/min)	0,005-400			0,005-300
Data acquisition rate (kHz)	1			
Precision class	0,5			

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ACCESSORIES

FOR UTMS

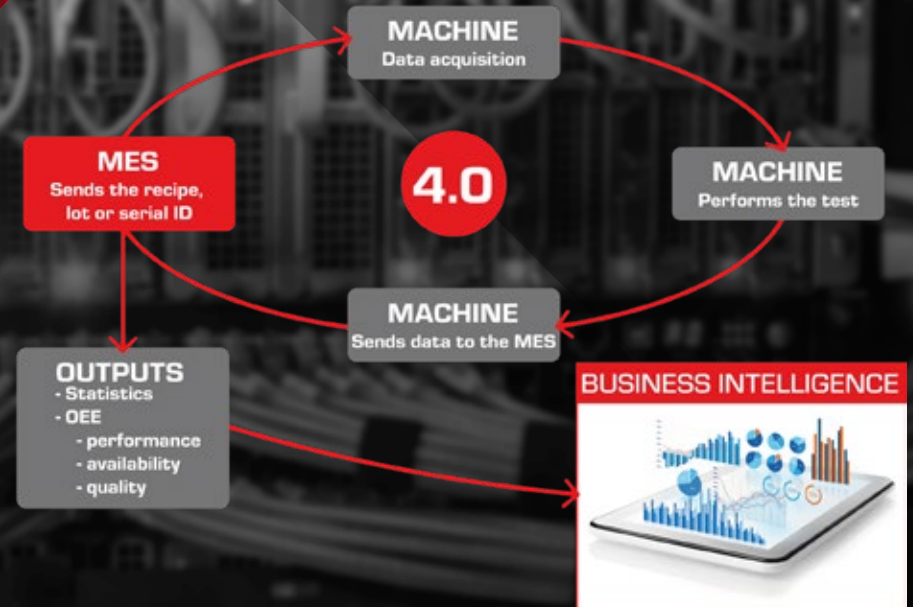


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INDUSTRY 4.0 READY



 **OPC-UA**





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