MX 4
Modular servo controlled multi-inspection machine

Real-time Process & Quality Controls
The **TIAMA fully modular machine**, MX 4, comes as a direct result of feedback from glassmakers and from the solid experience acquired over many years by SGCC and MSC. Our company has been designing rotating multi-inspection machines for 45 years and has more than 3500 units installed worldwide.

TIAMA has created the MX 4 to enable glass plants to seamlessly integrate the whole range of its technological solutions into one reliable, specially designed framework.

MX 4 is already operational all over the world with more than 500 units installed.

MX 4 benefits from the joint know-how of SGCC and MSC and from their common market insight all combined into one modular machine. Thanks to its specific open design, numerous machine configurations are possible.

MX 4 performs a complete range of measurements and controls positioned independently in accordance with customer needs:

- Dimensional measurement: finish and neck,
- Airtightness measurement,
- Detection of cracks by camera: finish, neck, shoulder, body, heel and base,
- Thickness measurement: body, shoulder, heel,
- Ovalization,
- Leaner measurement,
- Mould number reading: alphanumerical, dots, datamatrix,
- Detection of visual defects: neck and heel.

**Highly modular**

MX 4 combines up to 7 inspection stations, 6 of which are rotating ones.

It is a universal machine adapted to all types of articles, whatever their shape, colour and size.
**MX 4, A CONTINUITY**

MX 4 is a cost-effective solution, retaining maximum compatibility with the M and CHECK+ for:
- spare-parts,
- toolings.

**Successful technical choices**

MX 4 is fully servo controlled. It is designed to provide great repeatability in settings. The job change time can be cut to less than one hour with a standard machine configuration (gauging, airtightness, ovalization, thickness, code reading and cracks).

The HMI (Human Machine Interface) has been developed in continuity with the TIAMA vision solutions MCAL and MULTI. Operators work with the same logic in the same type of environment thanks to the familiar interface that is fast and easily adopted.

The MX 4’s features include:
- **PLC-driven handling** with high efficiency during the life span of the machine.
- **Home-made processing boards** for containers tracking and controls.
- **Windows supervision for screens** offering instant visibility and good accessibility in machine software architecture.
- **Dedicated screens** to maintenance support and trouble-shooting.

MX4 is fully Big Data compliant and contributes to the smart factory concept developed by Tiama, called **YOUniverse**.

Equipped with multiple sensors, the machine is capable to provide a complete range of measures, controls, verdicts, mold numbers and machine uptime parameters.

All these high-value data associated to a single container (Traceability) and linked to hot-end measurements (Monitoring) are forwarded for plant supervision actions and real-time decision-making (Intelligence) with:
- immediate process drifts prevention,
- automatic reporting,
- machine performance follow-ups to support you with efficient strong preventive & predictive maintenance policies (Service).

**NEXT STOP:**

**Big Data Analysis** to have the production process under an increasingly sophisticated control and to push glass profitability.
**Dimensional defects detection in the finish and neck**

Servo controlled gauging device

- based upon a multilevel measurement device
- for external and internal finish diameter
- up to 120 mm in depth

Also available as a contactless device: the NCG (non-contact gauging).

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**DIP**

Servo controlled DIP device

- for tightness measurement
- coupled with a differential pressure measurement
- detection of unfilled finishes

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**Cracks detection**

Digital cracks detection device

- up to 24 digital channels to detect cracks on the finish, neck, shoulder, body, heel and base
- integrated oscilloscope for easy adjustments

Also available as a vision, camera-based device is the ATLAS. Job-change time is drastically reduced.

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**Ovalization**

OVA’L, out-of-round non-contact measurement device

- up to 2 levels of differential measurement
- one system covering all your needs with a precision of ± 0.2mm
**Thickness**

UTM, Universal Thickness Measurement
- up to 4 user-defined levels of thickness calculation
- 5 kind of probes:
  - LBT
  - LBC
  - LED
  - CHROMA
  - BTM

**Mould number reading**

MX 4 integrates all types of code reading solutions with a reading rate of more than 99%.
- dot codes,
- alphanumerical codes,
- datamatrix codes (hot-end laser engraved).

**Visual defects**

NCI, visual detection of neck defects or HCl for heel
- optimized performance thanks to its megapixel linear camera focused on a targeted 50 mm area
- modular solution: light source, camera and processing fully adaptable to your needs

**Leaner**

NCL, non-contact leaner measurement
- easy set-up with high accuracy: better than ±0.4 mm
- installed in the ovalization station

**Container specifications**

**Universal**: all shapes and colours
- Standard container diameter: 40 mm to 140 mm
- Standard height: Up to 400 mm
- Optional: max. diam. 180 mm
  - max. height 600 mm
  - pharmaceutical kit < 40 mm

<table>
<thead>
<tr>
<th>Type of containers</th>
<th>Speed</th>
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<tbody>
<tr>
<td>Pharmaceutical</td>
<td>350-400 BPM</td>
</tr>
<tr>
<td>Beer</td>
<td>280-330 BPM</td>
</tr>
<tr>
<td>Wine and spirits, light-weight</td>
<td>200-250 BPM</td>
</tr>
<tr>
<td>Wine and spirits, heavy</td>
<td>150-200 BPM</td>
</tr>
<tr>
<td>Non-round</td>
<td>130-180 BPM</td>
</tr>
</tbody>
</table>
Your main benefits

- A highly reliable solution based upon proven and optimized technological choices.
- The integration of new tools for easier preventive maintenance and machine monitoring.
- A modular platform improving machine robustness and accessibility:
  - Conceived to host each standard detection and exclusive Tiama’s systems as well: LBT, NCL...
  - Ensuring the handling of all type of containers.
- A one-piece frame combining the best of both the M and CHECK + market references for easier use and maintenance.
- A solution developed in continuity with the Tiama vision product range (MCAL and MULTI) to be easily and quickly adopted by all operators:
  - Same interface
  - Same communication protocol
  - Same logic and environment

MX 4 characteristics

Technical specifications
3 phase 380-440V; 50-60Hz
25A
Compressed air: 3 to 6 bars (40 to 90 psi) depending on the weight of the container.

Main framework

| Width       | 3750 mm |
| Height      | 2410 mm |
| Depth       | 1415 mm |

Some of MX 4 references

- Allied Glass (UK)
- Ambev S/A - F. Vidros
- Ardagh (UK,USA)
- Asia Pacific Glass (Thailand)
- BA Vidro (Poland)
- Bangkok Glass Industry Co. Ltd
- CJSC (Russia)
- Crisnova (Spain)
- Huapeng Glass (China)
- JSC Mina (Georgia)
- Mahmood Saeed Glass
- Industry (Saudi Arabia)
- Nafis Glass (Iran)
- Nampak (South Africa)
- Noelle Und Von Campe (Germany)
- NFGB Zoujaj (Saudi Arabia)
- O-I (Brasil)
- Park Cam (Turkey)
- Ruscam (Russia)
- SGD (France)
- Sisecam (Turkey)
- Stirom (Romania)
- TA Hsiang Containers (Taiwan)
- Taiwan Glass (Taiwan)
- Verallia (Chile, France, Italy)
- Vetropack (Croatia, Czech Republic, Austria)
- Vitro (Mexico)
- Wiegand (Germany)
- Yantai Changyu (China)