

100% INSPECTION

VISUAL INSPECTOR

LEAK TEST

MONOBLOC

MODEL	ARGO PRIME		ARGO			ANGKOR	ICON		EVO	
PITCH	60	85	60	85	110	60	SVP - Small Volume	LVP - Large Volume	60	110

FEATURES

MAX SPEED [pcs/hour]	up to 4000	up to 3000	up to 24000	up to 18000	up to 12000	up to 18000	up to 18000	up to 12000	up to 18000	up to 12000	
MAX SPEED [pcs/min]	up to 66.6	up to 50	up to 400	up to 300	up to 200	up to 300	up to 300	up to 200	up to 300	up to 200	
MOTION	Intermittent		Continuous			Continuous		Continuous			
NUMBER OF GRIPPERS	up to 14	up to 14	up to 48	up to 39	up to 28	up to 39	-	-	up to 39	up to 28	
NUMBER OF CHAMBERS	-		-			-		-		-	

CONTAINERS

TYPE	Ampoules		Ampoules		Vials	Pre-filled syringes	Ampoules		Ampoules		Vials	
	Vials	Cartridges	Vials	Cartridges	Bottles		Vials	Bottles	Vials	Bottles	Cartridges	Bottles
SIZE [mm]	A=10.75±36 B=47±67	A=10.75±67 B=47±132.5	A=10.75±36 B=47±67	A=10.75±67 B=47±132.5	A=46±98 B=76±223	6,85±17 in diameter	A=10.75±36 B=47±67	A=46±98 B=76±223	A=10.75±36 B=47±67	A=46±98 B=76±223	A=10.75±36 B=47±67	A=46±98 B=76±223
VOLUME [ml]	1÷30	1÷250	1÷30	1÷250	50÷1000	1÷10	1÷30	50÷1000	1÷30	50÷1000	1÷30	50÷1000
MATERIAL	Glass		Glass		Glass	Glass	Glass		Glass		Glass	
	Plastic		Plastic		Plastic	Plastic	Plastic		Plastic		Plastic	
CONTENT	Liquid (solution, suspension, emulsion, oil based product)		Liquid (solution, suspension, emulsion, oil based product)		Liquid (solution, suspension)	Liquid (solution, suspension, emulsion, oil based product)	Liquid (solution, suspension, emulsion, oil based product)		Liquid (solution, suspension, emulsion, oil based product)		Liquid (solution, suspension, emulsion, oil based product)	
	Lyophilized		Lyophilized		Lyophilized	Lyophilized	Lyophilized		Lyophilized		Lyophilized	

FUNCTIONS

INFEED	Tray or inline (vials only)	Tray or inline (vials only)	Inline	De-nester unit or inline	Tray or inline (vials only)	Inline	Tray or inline (vial only)	Inline
CONFORMING OUTFEED	Tray or inline (vials only)	Tray or inline (vials only)	Inline	Re-nester unit or inline	Tray or inline (vials only)	Inline	Tray or inline (vials only)	Inline
REJECTS OUTFEED	Tray or conveyor (vial only)	Tray or conveyor (vials only)	Tray or conveyor	Basket or coveyor	Tray or conveyor (vials only)	Tray or conveyor	Tray or conveyor (vials only)	Tray or conveyor
REJECT SYSTEM	Pneumatic		Pneumatic or suction	Pneumatic or suction	Pneumatic or suction	Suction	Pneumatic or suction	Pneumatic or suction

INSPECTION AND CONTROL

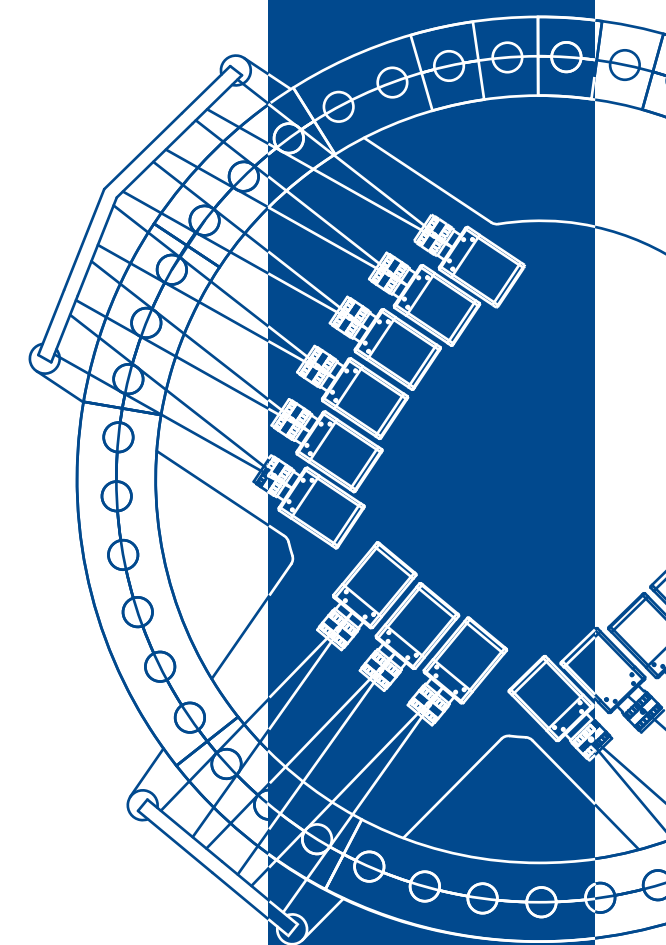
NUMBER OF CAMERAS	1+1	1+1	2+2 ÷ 4+4	2+2 ÷ 3+3	1+1 ÷ 2+2	1+1 ÷ 3+3	-	1+1 ÷ 3+3	1+1 ÷ 3+3
INSPECTION CHARACTERISTICS	Double independent station fitted each with two different illumination systems for proper detection of reflective and opaque particles		Double independent station fitted each with two different illumination systems for proper detection of reflective and opaque particles			Non-destructive integrity check with vacuum decay		Double independent station fitted each with two different illumination systems for proper detection of reflective and opaque particles + Non-destructive integrity check with vacuum decay	
STANDARD INSPECTIONS	Double particle and level		Double particle and level			Vacuum leak detection		Double particle and level	
OPTIONAL INSPECTIONS	Cosmetic (sidewall surface)		Cosmetic (sidewall surface)		Plunger		Cap/tip integrity Flip-off integrity and color		
	Cap/tip integrity and quality		Cap/tip integrity and quality		Still particles on the plunger				
	Bottom (particles and surface)		Bottom (particles and surface)		Needle cover inspection				
	Flip-off integrity and color		Flip-off integrity and color		Flange inspection				
	Floating particles		Floating particles		Glass defects				
	Powder/lyophilized inspection		Powder/lyophilized inspection		Liquid between ribs				
	Powder/lyophilized bottom inspection		Powder/lyophilized bottom inspection		Hanger presence and integrity				
	-		-		-		-		

OTHER OPTIONS

LABELLING application & verification	•	•	•	•	•	-	•	•	•
CODE application & verification	•	•	•	•	•	-	•	•	•
RINSING	•	•	•	•	•	-	•	•	•
BLOWING	•	•	•	•	•	-	•	•	•

OTHER FEATURES

DIMENSIONS L x D	1800x2000	2000x2000	Tbd	Tbd	Tbd	Tbd	Tbd	Tbd	Tbd	Tbd
HEIGHT H	2500		2500			2500		2500		
CONSTRUCTION	Stainless steel		Stainless steel			Stainless steel		Stainless steel		
PLC	Siemens									
FUNCTIONS	Customized user access with password, Setting of control parameters and tolerances, Compatible with 21 CFR part 11 19" touch screen, Industrial PC (Windows OS)									
QUALITY AND VALIDATION	User requirements specifications review, Validation plan, Risk analysis, Functional design specification, Software design specification, Hardware design specification IQ/OQ protocol, FAT protocol, SAT protocol, Support to customer SOPs upgrade, Validation report									
SAFETY AND ALARMS	Alarms for safety guard opening, minimum load, failed rejection. Coloured warning lights and buzzers									
POWER SUPPLY	400 V 50Hz, UPS backup for PC									



VRI VISUAL ROTATING INSPECTORS



VRI VISUAL ROTATING INSPECTORS

VRI are inline and standalone machines designed to inspect a wide range of glass or plastic medical containers for liquids (such as solutions, suspensions, emulsions and oil-based products), powder or lyophilized drugs.

Visual Rotating Inspectors are made of four product families and ten different models to cover all inspection needs:

- the Argo and Angkor models combine particle checking, filling level checking with cosmetic and functional faults detection;
- the Icon models perform vacuum leak testing to verify the integrity of containers;
- the monobloc Evo models integrate all the above functions with labelling, rinsing and drying options.

The vast set includes machines able to inspect volumes from 1 ml to 1000 ml, ranging from the inspection of Small Volume Parenterals (vials, ampoules, cartridges, syringes) to Large Volume Parenterals (such as medical bottles or Blow Fill Seal).

Intermittent motion and high-speed continuous motion rotary systems allow productions up to 24.000 containers/hour.

Several light sources and different lighting techniques (direct light and back light) enable the identification of all the defects. The high resolution of the cameras and the optics used enable tiny defects to be identified, while sophisticated analysis algorithms minimise false rejections even in conditions of maximum sensitivity. Reject verification system based on "fail-safe" principle ensures that containers recognized as defective will not reach the channel of good products.

The machines can be run by a single operator through the built-in touch-screen display, where all the controls and configuring functions are available.

FEATURES AND BENEFITS

VERSATILE MACHINES

- Wide range of inspected formats (from 1 to 1000 ml).
- Inspection of small and large volumes plastic/glass containers or pre-filled syringes.
- Liquids, powder and lyophilized products inspection.
- Gripping pressure/strength is adjusted to the appropriate value according to the bottle size, weight and kind of cap using a pneumatic regulation.
 - In case of different neck/cap, pads can be easily and quickly replaced simply pushing the release button.
- Motor rotation speed is automatically set depending on product size and in control type.

PERFORMED CONTROLS

- Particle inspection inside the product.
- Leak test with vacuum trend analysis.
- Inspection of foreign bodies over the product level.
- Filling level checking.
- Container cosmetic and functional faults detection.
 - Flip-off seal cap: color and integrity.
 - Cap and tip integrity.
 - Aluminium vial seal: crimp quality, dents or snicks.
 - Container body, neck, upper and lower part: cracks, scratches, air bubbles, stains.
 - Containers bottom and bottom edge: breaks and chippings.
 - Hanger presence and integrity verification.
- Labelling application and verification.

SMART AND EFFICIENT

- High throughput (up to 24.000 containers/hour)
- High accuracy: detection of reflective and opaque particles inside the products up to 20 µm of dimension.
- High reliability: double independent particle inspection to provide redundancy
- Accurate cosmetic inspection with detection of defects up to 1 mm x 1 mm.
- Non-destructive integrity leak check with vacuum decay with an accuracy up to 20 µm.
- Automatic rejection system with various outlet channels depending on the nature of the defect.
- Latest vision technologies used to minimize number and complexity of inspection stations.
- Multiple cameras high resolution based inspection system with high speed vision capturing and processing system to increase accuracy and efficiency of the machine.
- Wizard menu for new formats or modification of current format.
- Leak test, visual inspection and labelling application/inspection in the same base.
- Quick change of container gripper pads without using tools.
- Fully automatic height adjustment of carousel by servo-assisted screw jacks to accommodate different bottle sizes.
- Easy exchangeable infeed screw starwheels and guides for rapid changeover of different product sizes.
- Carousel grip the containers from above keeping it clear for best illumination and inspection of all parts.
- Carousel supported from top for a comfortable access to mechanical and electrical equipment as well as to the vision system (cameras and illuminators) allowing an easy cleaning and a simpler maintenance.
- Advanced statistical analyses with detailed reject typology to help detecting the reject causes in the upstream production process.
- CFR 21 Audit Trail Reports can be printed on a laser printer built into the machine.

ADVANCED HMI

- Single touch-screen display to control all machine functions:
 - check of all cameras,
 - machine status,
 - programming of formats,
 - diagnostics.
- Industrial 19" PC Windows OS based.
- Easy and user-friendly graphic user interface.

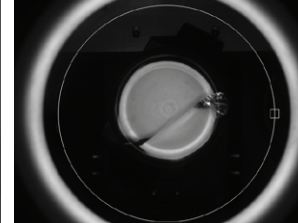
QUALITY AND VALIDATION

- Manages up to 5 user login levels.
- FDA 21 CFR part 11 and GMP Annex 11 compliant.
- Developed following GAMP 5 approach.
- Availability of all documentation involved in the GAMP approach.

BOTTOM INSPECTION (PARTICLES AND SURFACE)



POWDER AND LYO BOTTOM INSPECTION



HANGER PRESENCE AND INTEGRITY



VACUUM LEAK TEST GRAPHIC



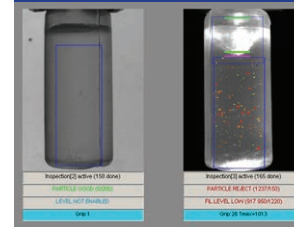
LEAK TEST



POWDER AND LYO INSPECTION



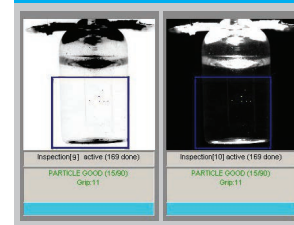
SECOND PARTICLE INSPECTION AND LEVEL CHECKING



SECOND CENTRIFUGATION



FIRST PARTICLE INSPECTION



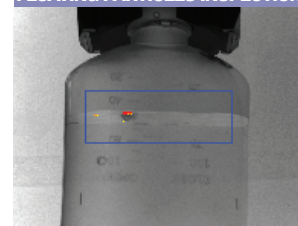
FIRST CENTRIFUGATION



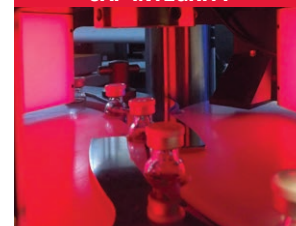
COSMETIC CONTROL



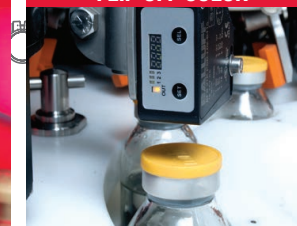
FLOATING PARTICLES INSPECTION



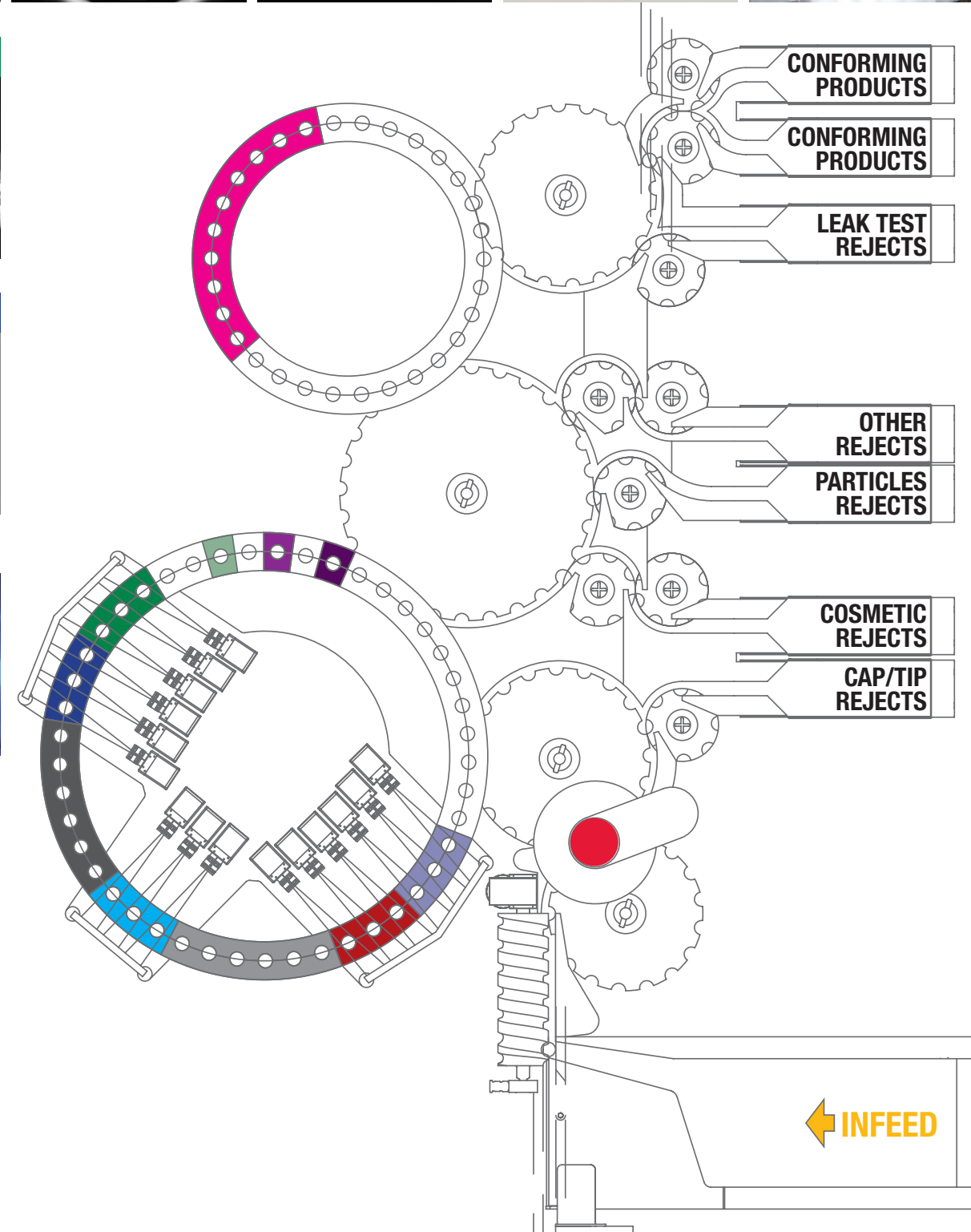
CAP INTEGRITY



FLIP OFF COLOR



INFEEDING



ARGO PRIME
for slow speed visual inspection of ampoules, vials and cartridges



ARGO
for high-speed visual inspection of ampoules, vials, cartridges, bottles



ICON
for leak test detection of ampoules, vials, cartridges, bottles



EVO
for visual inspection integrated with the leak test detection of ampoules, vials, cartridges, bottles



ANGKOR
for visual inspection of pre-filled syringes