FlexiBowl®

by ars

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A single feeding system for many different parts

Sector Overview

The market has changed, and so have needs. Volumes are up and more types of objects are being produced, since variety and evolution are fundamental requirements for staying on the market.

At all levels, there is a need to drastically speed up development and production, to make processes and investments more efficient, and to continue to reduce waste.

Flexible production chains can facilitate continuous evolution – and the first step in this direction is to select highly integrated, connected technologies. In parts feeding technology, FlexiBowl® stands for automation.

What is FlexiBowl®

FlexiBowl® orients and separates parts and can be integrated with any vision system and any robot for parts feeding.

The FlexiBowl® system is highly versatile, capable of feeding parts between 1 and 300 mm and from 1 to 300 g, regardless of
→ **Geometry**
→ **Surface**
→ **Material**

Its lack of product-specific tooling and its easy-to-use and intuitive programming permit quick and multiple product changeovers even during the same work shift.

Industries

| Metal components | Electronics | Electrical components | Plastic components | Toys and gadgets | Cosmetics | Non-rigid materials | Automotive | Home and personal care | Life sciences | Medical | Many others |

Applications

| Rotary table loading | Tray loading | Belt loading | Workpiece transport | Machine tending | Screw driving | Quality Control | Press feeding | Mold feeding | Packaging | Kitting | Many others |

How does it work

FlexiBowl® executes a predetermined sequence of actions, strategically designed to reduce inefficiencies. FlexiBowl® is the only parts feeding system based on a circular principle: the combined action of bidirectional rotation and pulsed actuation separates the parts dropped by the bulk feeder onto the FlexiBowl® surface. The singulated parts are identified by the vision system, which sends the pick location coordinates to the robot. The programming permits changing speed and acceleration parameters and impulse frequency according to parts geometry, to achieve optimal results.

Part dropping, **orientation**, and **picking** take place simultaneously in dedicated sectors. For higher productivity.

SOME OF THE ADVANTAGES OFFERED BY FLEXIBOWL®

High performance (>90 parts/min)

Compatible with 99.9% of parts

Maximum load: **7 kg**

Essential design, **robust construction**

Cleanroom certified (ISO 5)

Remote-controlled electronics for use in **dirty environments**

Rapid, intuitive **integration**

Low **maintenance**

Ready to ship

Patented

Operating Mode

Traditional Operating Mode

The flexible feeding system performs **3 different functions**:
▶ Dropping from the bulk feeder
▶ Separating, by the flexible feeder
▶ Picking, by the robot

The FlexiBowl® disc is split into three sectors; each phase is confined to a specific sector to allow the three functions to take place simultaneously and independently. The entire process usually lasts 0.5 seconds – a benchmark in the flexible feeding systems sector.

FlexiTrack

FlexiTrack enables **circular conveyor tracking** of the FlexiBowl®.
In the FlexiTrack mode, the vision system operates in the sector just ahead of the robot picking area; processing for the vision system and the robot is simultaneous. With FlexiTrack, a second camera positioned in the sector preceding the bulk feeder controls the flow of parts. This mode offers several advantages:
▶ Higher productivity
▶ Greater cycle time stability
▶ Smaller footprint
▶ Ideal for synchronous applications
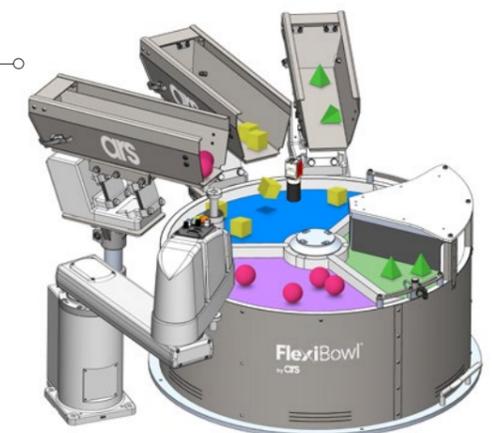(e.g., rotating tables).

Multiple Parts Feeding

This mode permits simultaneous feeding of different parts. One FlexiBowl® can reliably manage **up to 6 different part types**, so minimizing layout and production costs. For maximum flexibility, the sector surfaces may feature coatings with different:
▶ Colors
▶ Textures
▶ Degrees of adhesion

FDA and antistatic surfaces are also available.
This mode is ideal for assembly, kitting and tray loading applications when multiple parts must be handled.
Multiple parts feeding is available for the FlexiBowl® 500, 650 and 800 versions.

Models

FlexiBowl® is available in 6 models,
each of which **can be customized**.

Selection of the model most suitable for a specific
application will be based on such variables as:

‣ Part **dimensions** (1-300 mm)
‣ Part **weight** (up to 300 g)
‣ Part **geometry and material**
‣ **Industrial** application

‣ Required **parts capacity**
‣ **Productivity**

Optimal configuration is attained thanks to the
feasibility studies ARS offers its clients. Simulation
with real components permits defining the model
and optional features.

Part dimensions	1 mm	300 mm
Part weights	1 g	300 g
Bulk feeder	1,5 L	60 L
Max load	1 kg	7 kg

PATENTED

FlexiBowl® **500**/**500e**

Part dimensions	1 mm	300 mm
Part weights	1 g	300 g
Bulk feeder	1,5 L	60 L
Max load	1 kg	7 kg

PATENTED

FlexiBowl® **650**

Part dimensions	1 mm	300 mm
Part weights	1 g	300 g
Bulk feeder	1,5 L	60 L
Max load	1 kg	7 kg

PATENTED

FlexiBowl® **200e**

Part dimensions	1 mm	300 mm
Part weights	1 g	300 g
Bulk feeder	1,5 L	60 L
Max load	1 kg	7 kg

FlexiBowl® **350e**

Part dimensions	1 mm	300 mm
Part weights	1 g	300 g
Bulk feeder	1,5 L	60 L
Max load	1 kg	7 kg

PATENTED

FlexiBowl® **800**

Part dimensions	1 mm	300 mm
Part weights	1 g	300 g
Bulk feeder	1,5 L	60 L
Max load	1 kg	7 kg

PATENTED

FlexiBowl® **1200**

Options

		Toplight Backlight Ringlight Backlight strobe	Air-Blow and standard diverter	Wedge and brush diverter	Quick-emptying with box	Rotary disc	Round edged disc	Custom disc	Multiple parts feeding	Cleanroom version	Remote control box	Camera bracket base stand	Analog electro-pneumatic regulator	External swivel gripper	Calibration plate
FB® 200e		■	■				■					■	■	■	■
FB® 350e		■	■				■	■			■	■	■	■	■
FB® 500e		■	■				■	■			■	■	■	■	■
FB® 500		■	■	■	■	■		■	■	■	■	■	■	■	■
FB® 650		■	■	■	■	■		■	■	■	■	■	■	■	■
FB® 800		■	■	■	■	■		■	■	■	■	■	■	■	■
FB® 1200		■	■	■	■	■					■	■	■	■	■

multiple parts feeding

remote control box

lighting

diverters

external swivel gripper

rotary discs

FlexiTrack

analog electro-pneumatic regulator

calibration plate

quick-emptying

custom grooved discs

cleanroom version

camera bracket base stand

FlexiVision

Vision Software
for Robot Guidance

FlexiVision is a PC vision software package for robot guidance that can be supplied as an option with the FlexiBowl® systems. Developed with Cognex Vision Library tools, FlexiVision supports multiple cameras to offer great flexibility of use. The system, compatible with all industrial robots, permits rapid setup of automated feeding cells incorporating FlexiBowl®. No advanced user programming skills are required.
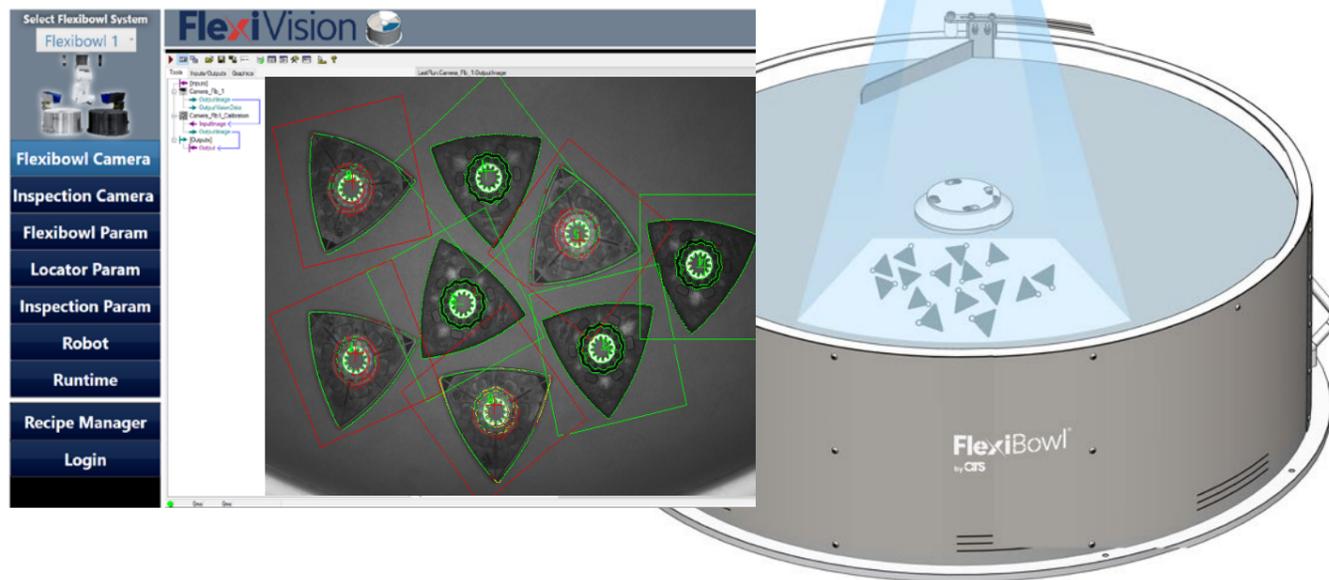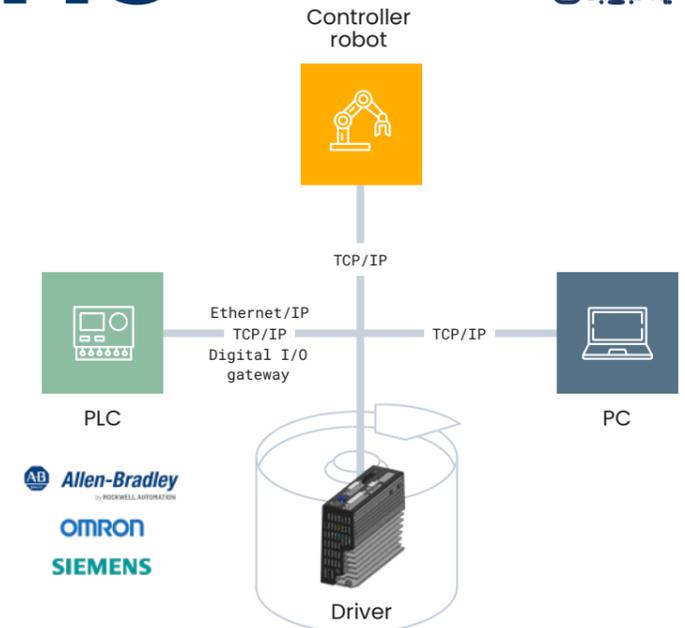

The main features offered by the system include:

Dynamic control of all FlexiBowl® functions	Management of bulk feeder algorithms	Option of linking up to 2 FlexiBowl® systems
Definition of vision models	Recipes database	Option of linking up to 2 inspection cameras
Management of communications with FlexiBowl® and with robot	System calibration	Compatibility with all the Cognex VisionPro software tools

Plug-Ins

Compatible with all TCP/IP socket languages

FlexiBowl® supports communication in all high-level programming languages. Fully-documented plug-ins for a wide range of robots and PLCs reduces integration costs. Our software plug-ins for FlexiBowl® control are easy to integrate with any customer application software.

Available Plug-Ins

ABB   Denso   Doosan   Epson   Fanuc *   Kawasaki   Kuka

Mecademic   Mitsubishi Electric   Omron   Stäubli   Techman Robot   Universal Robots **   Yaskawa

Compatible with***

Dobot   Hyundai   Kassow   Nachi   Shibaura   Wyzo   Yamaha

* premium plug-in, native vision system and FANUC integration
** premium plug-in, URCap with UR+ certification
*** Communication with robots not on the list via Ethernet/IP, TCP/IP, or Digital I/O protocols

Bulk Feeders

Perfectly matched with the FlexiBowl® system, the ARS bulk feeders deliver materials in a wide range of applications. They are especially suitable for pre-dosing small- and medium-sized parts. The drive component is a vibrating linear base. The ARS bulk feeders feature a range of hopper volumes: 1.5 l, 5 l, 10 l, 20 l, 40 l, 60 l, depending on the required feeding capacity in relation to production rate. The standard models are constructed of stainless steel; polyurethane coating is available on request.

Polyurethane coating

Stainless steel
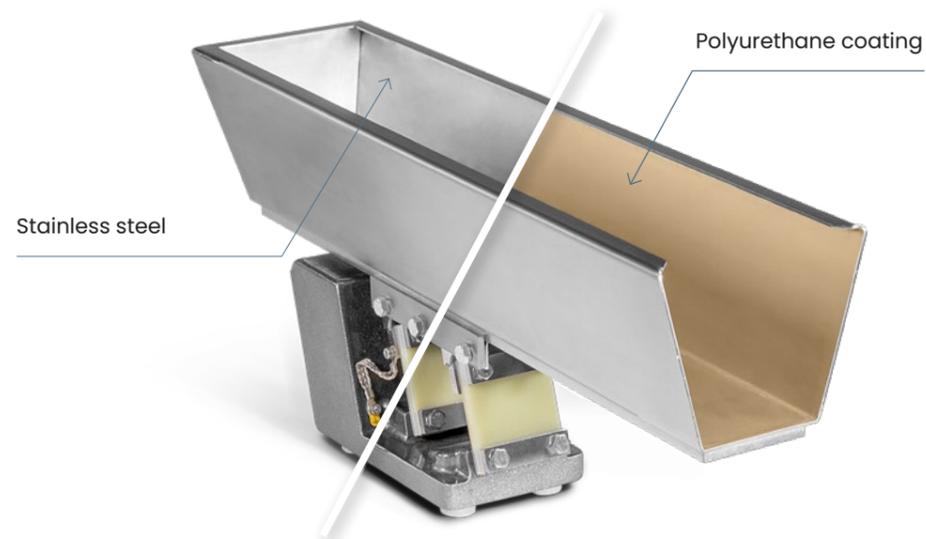
Standard capacities

1.5 l
5 l
10 l
20 l
40 l
60 l

Options

quick emptying hatch

hand guard

front and rear photocell kit

dosing gate

Belt hopper

Motorized hopper

Service

Pre and **post-sales support**

ARS assists clients from the very start of the project; in the preliminary phase, with a complete, free-of-charge feasibility study: an important tool for correct evaluation of your requirements.

Running the feasibility study is quick and easy. Send samples of the parts to be processed to ARS to obtain an in-depth report on how the parts can be managed by a FlexiBowl® system and information on the configuration most suitable for optimizing your cycle times. ARS can design special equipment for specific projects. Our highly-qualified technical support team is ready to promptly assist you on request, both on site and remotely.

Free feasibility study

Company   ARS

Free feasibility study form and sample   FlexiBowl®   Video   Test result

Services

Preliminary analysis

Free study

Layout and cycle-time optimization

Equipment design

Real-time support and diagnostics

Training

On-site support for system start

Remote support

About us

ARS has been working for more than 30 years in development and supply of solutions for flexible automation.
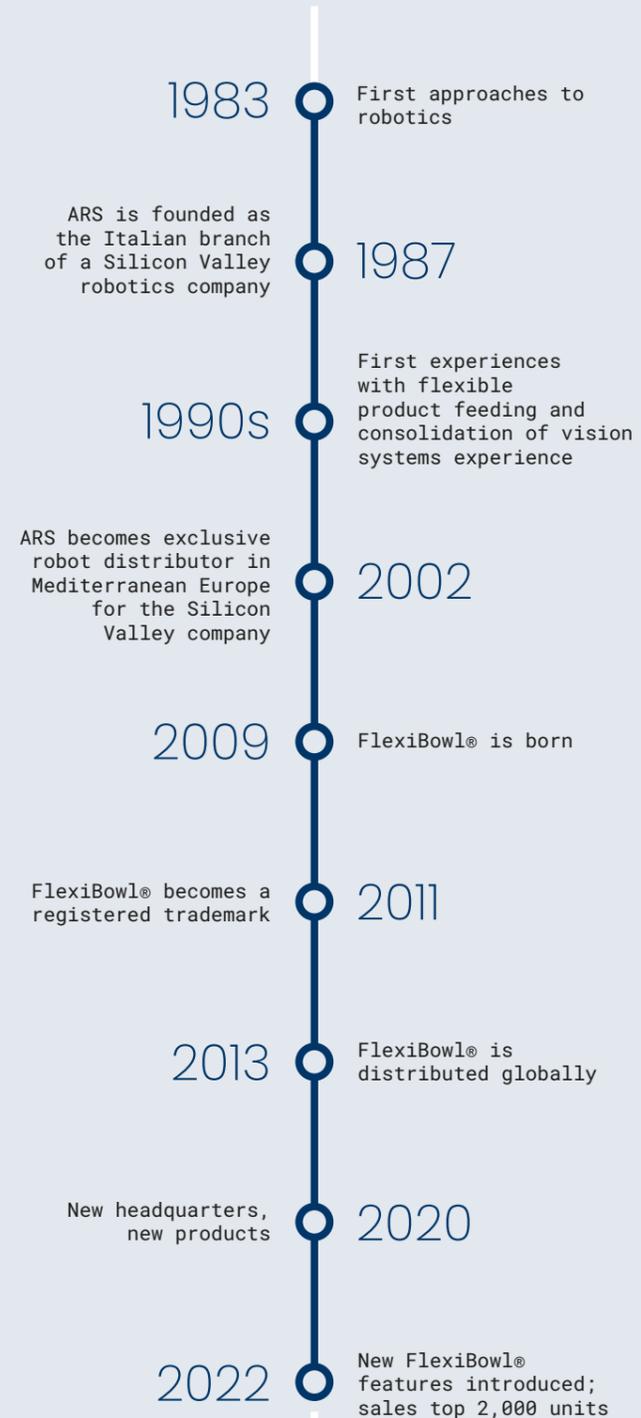
Based in Arezzo, Italy, ARS has accrued experience in fields ranging from industrial robotics to artificial vision, operating internationally in many sectors of industry.

ARS collaborates on a regular basis with universities and research centers around the world. Our goal is to provide up-to-date solutions that are flexible, reliable, efficient, and technologically advanced.

Our clients are at the center of every process – and all our solutions are designed with our clients and their specific needs in mind.

Timeline

1983 — First approaches to robotics

ARS is founded as the Italian branch of a Silicon Valley robotics company — **1987**

First experiences with flexible product feeding and consolidation of vision systems experience — **1990s**

ARS becomes exclusive robot distributor in Mediterranean Europe for the Silicon Valley company — **2002**

2009 — FlexiBowl® is born

FlexiBowl® becomes a registered trademark — **2011**

2013 — FlexiBowl® is distributed globally

New headquarters, new products — **2020**

2022 — New FlexiBowl® features introduced; sales top 2,000 units

Distributors

ARS' network of distributors extends to **Europe**, **North America**, and **Pacific Asia**. Our distributors are always available to demonstrate all the FlexiBowl® features and offer on-site technical support.

ars
automation

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