



If you think
vertical sterilizers
are all the same,
have a look
at what
we have done:
the new

FVA/A1

FEDEGARI
AUTOCLAVI SPA

We have designed specific solutions for the requirements of our clients.



We have made innovation a constant source for our commitment.



We have used our experience to make technology a feature for every solution we propose.



It took us **fifty years.**
Because we believe



the future cannot
be improvised.

Where will the challenge lie in the technological evolution of these sterilizers over the next ten years ?

We are convinced the decisive factor will be interaction between man and machine during its full life cycle.

We have prepared for this new challenge without waiting for others to make our innovations obsolete.

In under ten years from introduction onto the market of the first FVA and FOB sterilizers and to further increase the gap separating us from other manufacturers, we have fully exploited the knowledge gained from users and machine production to develop the new **FVA/A1** series.

F E D E G A R I

We have opened the doors to innovation.

As of the beginning of the Nineties , vertical sterilizers were essentially big pressure cookers and not very different from the old machines manufactured a century ago. This was precisely when Fedegari introduced the first FVA-series sterilizer on the market, a competitively-priced and modular model, conceived so as to adapt to the changing requirements of users and not vice versa.

By reaping the fruits of its skills in manufacturing sophisticated custom-made industrial sterilizers, **Fedegari introduced a completely new and economically viable concept**, a concept which was also partly adopted by other manufacturers over time. However, there was no way they could ever fill the technological and industrial gap which makes Fedegari unique for originality and innovation on the global scenario of sterilization.

Today, these are still Fedegari's strong points and distinguishing features: a complex and smoothly run industrial structure, accustomed to facing daily challenges from the most demanding pharmaceutical companies all over the world, plus the capacity to "recycle" by suitably re-adjusting technical solutions readied and tested on sophisticated equipment, without having to invent new solutions yet to be field- and time-tested.

At under ten years from the introduction of the first FVA-sterilizers, Fedegari is once again ahead of its time. Taking full advantage of experience gained, Fedegari pursues project innovation by introducing solutions earmarked to considerably improve interaction between man and machine during its full life cycle.



We have gone well beyond flexibility standards.

We offer “**tailor-made**” construction and concept to our clients. All FVA/A1 sterilizers can be customized so as to perfectly adapt to the different requirements of users. We also offer the full technical backing required to choose between our great number of module options, among which:

STEAM GENERATOR •

VACUUM PUMP •

DRAIN COOLING SYSTEM •

AIR COMPRESSOR •

STERILIZING AIR FILTER •

FAST COOLING •

DECONTAMINATION CYCLE FOR HIGH PATHOGEN RISK LOADS

DECONTAMINATION CYCLE •

ADDITIONAL RTDs •

PROCESS PRINTER •

F₀ STERILIZATION CONTROL •

RS232 SERIAL PORT •

CVBLOGGER •



The overall ergonomics of the machine have been improved in terms of access to the machine, both when in use, thanks to a lower loading level making loading and unloading procedures less tiring for the operator, and when being serviced, making access to all internal parts easier.

We have improved ergonomics without forgetting design.

Finally, the design.

Fedegari commissioned Ugolini Design to re-style these sterilizers in the aim of completing and enhancing the image of each machine's functionality and ergonomics.



We have aimed at total safety.



So as to cut down servicing and ensure maximum operator safety, **the lid of the sterilization chamber** was made in a similar way, concept-wise, to the by now well-tested pneumatic gasket with dovetail cross-section patented in the early Eighties.

This solution offers total safety, also thanks to a system of mechanical safety interlocks between the lid and the chamber which prevent opening in the case of any residual pressure.

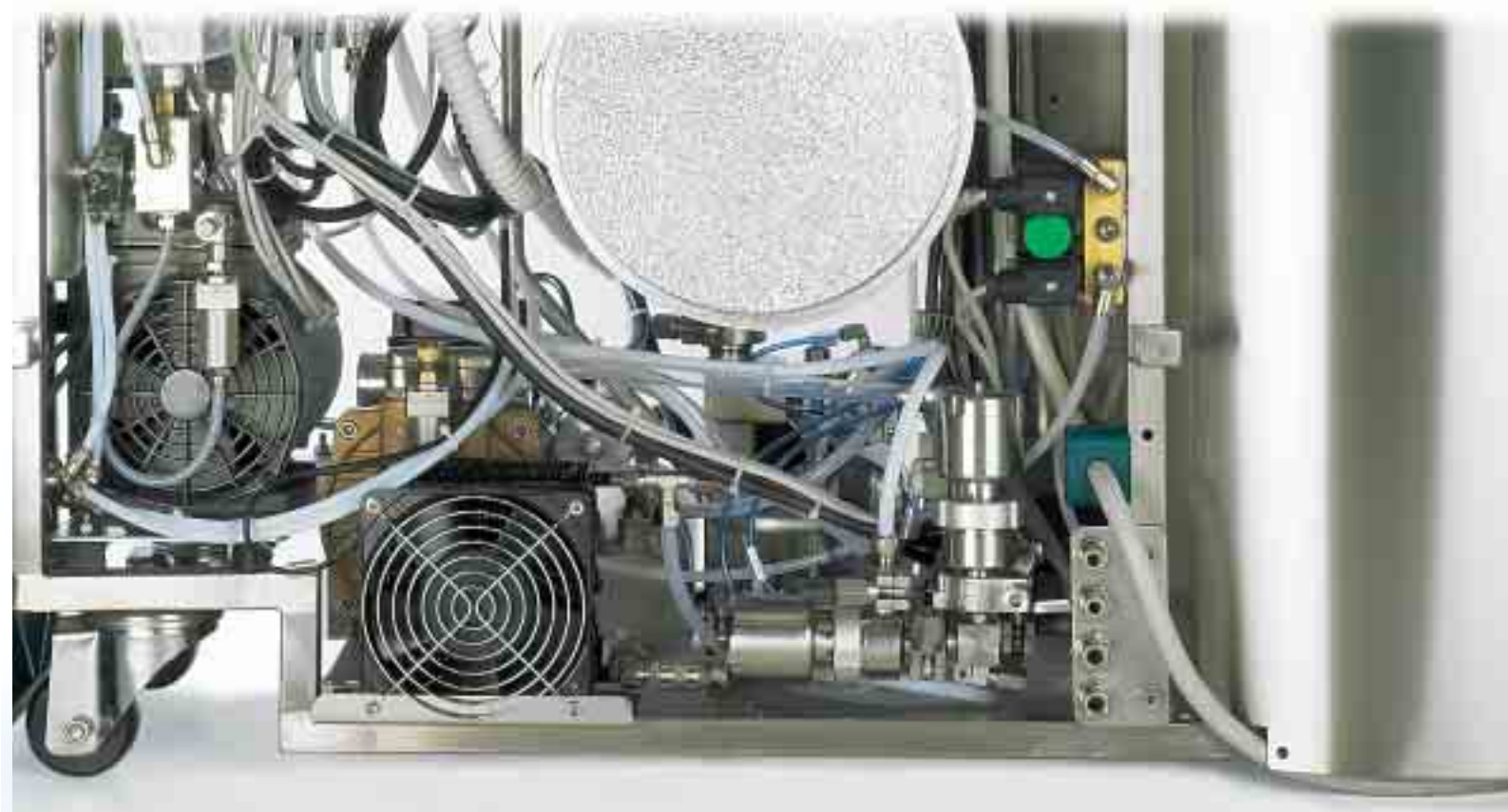
Fedegari also chose the most expensive **process controller**, but this system offered maximum safety and functionality.

The sterilizer uses a commercial PLC (so as to ensure maximum reliability) and the software installed is a simplified version of software installed on

industrial machines, developed, tested and validated (by the same people/by the same structure) by using the same know-how. The software is not produced by third parties or the result achieved by an individual, but the rationalisation of overall experiences which are inaccessible for anyone not manufacturing industrial machines. This all translates into safety in process performance, a feature much claimed by others, but hard to prove.

By means of suitable password levels, the controller enables varying all process parameters, so as to create new programs or edit filed programs.

Moreover, the controller allows for automatic calibration of sensors and execution of trouble-shooting, **all in the aim of ensuring a sure result.**



We have achieved maximum performances



The piping, made of AISI 316L stainless steel, exactly reproduces the system in industrial sterilizers and uses sanitary components, including pneumatic valves with a special PTFE diaphragm, all of which are features that are not available on any sterilizer in this class.

FVA/A1 sterilizers, in their basic version, i.e. without any system options, are able to sterilize both solids and liquids. A special version for high temperature processes or processes using a sodium hydroxide solution enables decontamination of prions (TSE, BSE and CJD pathologies).

Using the suitable system options, FVA/A1 sterilizers are able to perform the sterilization of solids with pre- and post-sterilization vacuum for effective drying and a faster cycle, sterilization of liquids in open containers, sterilization of high pathogen risk loads without having to treat infected effluents, the

chamber leak-rate test under vacuum or pressure, the Bowie & Dick test, plus many others.





FVA/A1
VERTICAL STEAM STERILIZERS

Customization modules



STEAM GENERATOR [K10]

Where mains steam is unavailable, this little electric generator (9 kW) feeds the sterilizer by replacing the old-fashioned system of self-produced steam inside the chamber. The option also includes a water feeding pump.



VACUUM PUMP [K20]

This pump is useful, on treating some specific products, when processes require pre- or post-vacuum phases during sterilization (porous loads, products to dry or for which difficulty in removing air may compromise sterilization).



DRAIN COOLING SYSTEM [K30]

Earmarked for cooling all effluents where local laws do not allow high-temperature drains.



AIR COMPRESSOR [K40]

When mains compressed air is not available, this little compressor supplies all the instrument air required for operating the sterilizer. (The compressor is not suitable to feed oil- and moisture-free compressed air in the chamber).



STERILIZING AIR FILTER [K50]

An absolute filter having a 0,2 μm retention which enables sterilizing air fed in the chamber for process requirements.



FAST COOLING [K52]

Resolves productivity problems connected to lengthy liquid cooling times. A magnetic driven fan recirculates air in the chamber, which is cooled by an internal heat exchanger. (Requires availability of compressed air from the mains).



FVA/A1
VERTICAL STEAM STERILIZERS

Customization modules



DECONTAMINATION CYCLE FOR HIGH PATHOGEN RISK LOADS [K62]

This option is available for the decontamination of high pathogen risk materials, guaranteeing sealed conditions in the sterilization chamber till a positive process outcome is achieved.



ADDITIONAL RTD [K80]

The probe is useful to exhaustively document the process.



PROCESS PRINTER [K81]

Generates an accurate and highly detailed process report, with all the necessary data to trace each cycle performed.



DECONTAMINATION CYCLE [K63]

This is an alternative to the K62 module for lower risk levels. The decontamination filter can be heated, sterilized and dried on-line, in parallel with the chamber.

F₀ STERILIZATION CONTROL [SW1]

For use of the machine in an industrial environment and for temperature-sensitive products.

RS232 SERIAL PORT [SW2]

For remote connection of the PLC (MS Windows).

CVBLOGGER [SW4]

Web-based data collection software, complying with FDA 21 CFR, Part 11, to be installed on a remote PC. Enables collecting and filing data, visualising filed data in various formats, printing a detailed process report at the end of the cycle.

FVA/A1

VERTICAL STEAM STERILIZERS

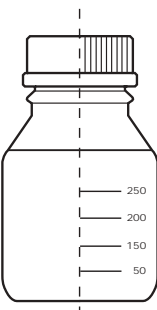
Main features

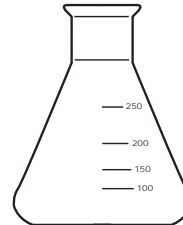
		FV..2	FV..3
CHAMBER INSIDE DIAMETER	[cm]	40	50
CHAMBER USEFUL DEPTH	[cm]	60	70
CHAMBER NOMINAL CAPACITY	[l]	75	140
MAXIMUM WIDTH	[cm]	95	112
MAXIMUM HEIGHT	[cm]	122	122
MAXIMUM DEPTH	[cm]	49	55
MAXIMUM OPERATING PRESSURE	[abs. bar]	3,5	3,5
MAXIMUM OPERATING TEMPERATURE	[°C]	138	138
ELECTRIC POWER SUPPLY		400V, 50Hz 3 Ph+N+PE	
ELECTRIC POWER WITH STEAM GENERATOR	[kW]	10,5	
ELECTRIC POWER WITHOUT STEAM GENERATOR	[kW]	1,5	

Other utilities

		FV..2	FV..3
STEAM (if steam generator not installed)	bar	4,5	
Peak flow-rate	[kg/h]	15	20
Average consumption per cycle	[kg]	4	5
D.I. WATER FOR STEAM GENERATOR		1÷4	
Peak flow-rate	[l/h]	15	20
Average consumption per cycle	[l]	4	5
TAP WATER		3,5	
For vacuum pump		180	180
For drain cooling	[l/h]	20	20
For load forced cooling		70	100
COMPRESSED AIR		4,5	
For lid gasket/valves	[NI/min]	10	10
For counterpressure in chamber	[NI/min]	100	150

FVA autoclave racks • Bottles and flasks loads

	FV..2	FV..3
BOTTLES	N.	N.
 250 ml	21	33
500 ml	13	21
1000 ml	9	15
2000 ml	5	8
5000 ml	2	4
10000 ml	1	2

	FV..2	FV..3
FLASKS	N.	N.
 250 ml	14	21
500 ml	8	14
1000 ml	4	8
2000 ml	3	5
3000 ml	1	4
5000 ml	1	2

SCHOTT DURAN catalog bottles or flasks (www.schott.com)



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www.fedegari.com

All FVA e FOB sterilizers are manufactured and distributed by Fedegari Autoklaven AG • www.fedegariautoklaven.ch

