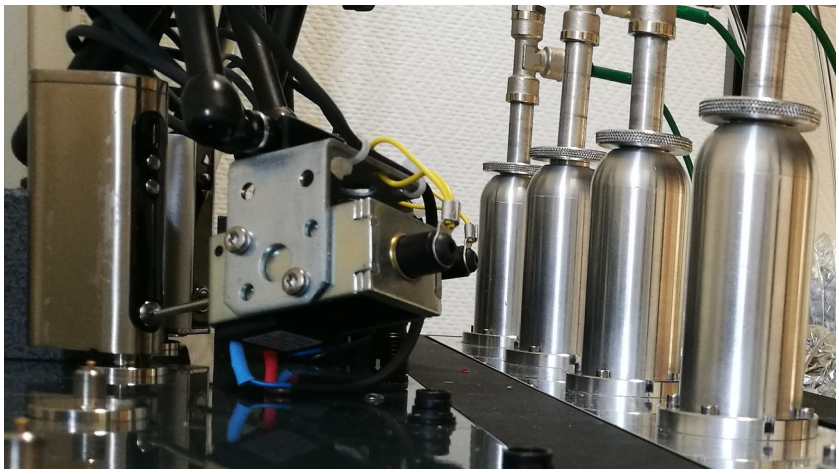
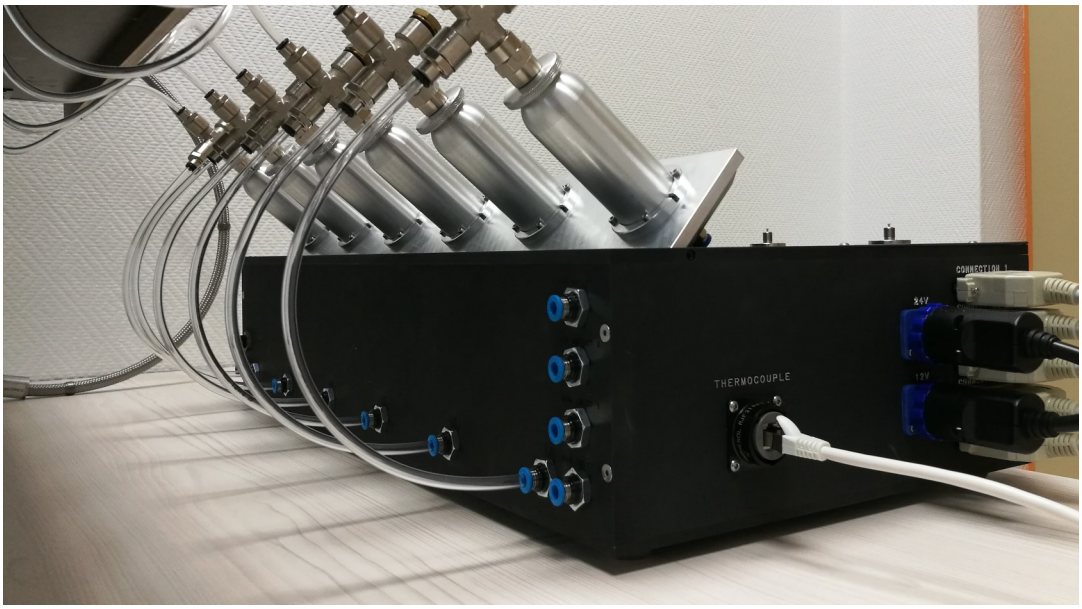
U-SAV



U-SAV Product informations

- ROUTINE ANALYTICAL VAPING MACHINE -



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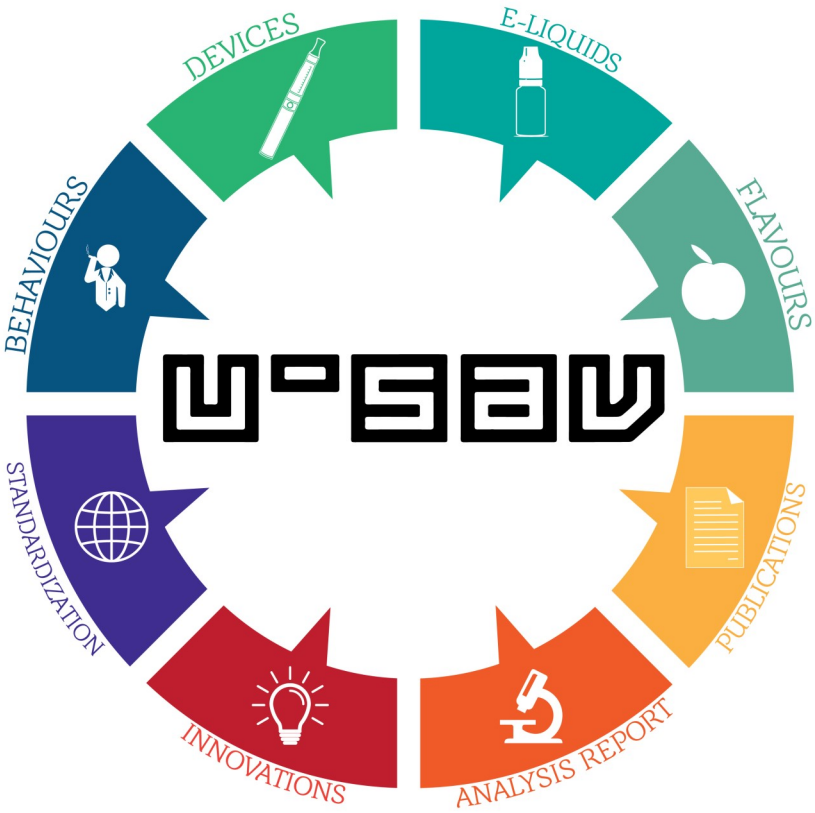
FACT SHEET - U-SAV

U-SAV and its complementary device U-SAV profile, are the ideal tools to record, understand and reproduce the vapers behaviours

U-SAV stable and continious supply energy allows to compare clearomiser efficiency on e-liquid vaporization and nicotine delivery.

Thanks to U-SAV repeatability of the generation of emission, the influence of e-liquid's composition on vapour can be highlighted.



The stability in the generation of emission allows the study of the effect of flavour during vaporization process (preservation, degradation, toxicity…)

U-SAV is a laboratory instrument enabling the conduct of controlled and rigorous research on vaping products.

U-SAV vaping machine is compliant with the ISO 20768 standard and contributes to the normalisation of vaping products by bringing primary results.

U-SAV enables the characterization of vaping products, allowing recommandations on the improvement and development of devices and e-liquids.

The possibility to control the physical parameters of vaporization process makes U-SAV a great tool for the generation of emissions in order to analyze them.

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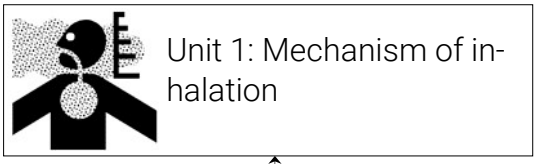
FACT SHEET - U-SAV

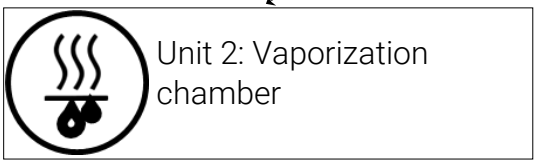
U-SAV IS A VAPING MACHINE DESIGNED AROUND 4 DISTINGUISHABLE UNITS :

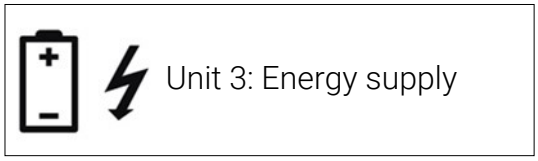
Unit 1 allows the application of flow throught vaping products (Air inlet on the side, at the bottom, at the top…). The 3 different flow profiles are programmed to reproduce accurately a beginner profile to an experimence profile.



Unit 0 is the master part of the machine. Others are enslaved modules. It communicates with all units of U-SAV, sending instructions and collecting measurements. All these parameters are saved on 6 differents files (one per line).

Unit 0: Data controller





Unit 2 allows the connection of a wide range of equipments available on the market. The integration of thermocouple in this module allows to follow in real time the temperature of the vapour at the drip tip entrance.

Unit 3 allows the choice between energy supplied by an external battery or delivered and controlled by unit 0 using its built-in energy supply system. In either case, the measurement of voltage and current enables the monitoring of the values of resistor and power applied in real time.

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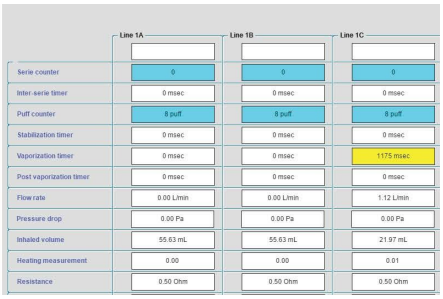
FACT SHEET - U-SAV

VAPING MACHINE: U-SAV (UNIVERSAL SYSTEM FOR ANALYSIS OF VAPING)

GENERAL CHARACTERISTICS

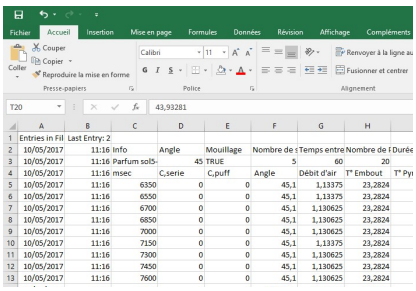
- Size: 660x300x150 (U-SAV), 800x600x200 (electric cabinet)
- 6 lines of vaporization (built-in alimentation or battery using)
- 2 triplicates possible
- Connexion with RJ45 cable



	Line 1A	Line 1B	Line 1C
Serie counter	0	0	0
Inter-serie timer	0 msec	0 msec	0 msec
Puff counter	8 puff	8 puff	8 puff
Stabilization timer	0 msec	0 msec	0 msec
Vaporization timer	0 msec	0 msec	1175 msec
Post vaporization timer	0 msec	0 msec	0 msec
Flow rate	0.00 L/min	0.00 L/min	1.12 L/min
Pressure drop	0.00 Pa	0.00 Pa	0.00 Pa
Inhaled volume	55.63 mL	55.63 mL	21.97 mL
Heating measurement	0.00	0.00	0.01
Resistance	0.50 Ohm	0.50 Ohm	0.50 Ohm

INTERFACE HUMAN-MACHINE

- Controlled use through an Internet Browser
- Interface developped and optimized to program and control U-SAV
- Evolutive software



Entries in Fil	Last Entry: 2							
10/05/2017	11:16	Info		Angle	Mouillage	Nombre de s	Temps entre	Nombre de f	Durée
10/05/2017	11:16	Parfum sol5		45	TRUE	5	60	20	
10/05/2017	11:16	msec		C.serie	C.puff	Angle	Débit d'air	T° Embout	T° Py
10/05/2017	11:16	6350	0	0	45,1	1,13375	23,2824		
10/05/2017	11:16	6550	0	0	45,1	1,13375	23,2824		
10/05/2017	11:16	6700	0	0	45,1	1,130625	23,2824		
10/05/2017	11:16	6850	0	0	45,1	1,130625	23,2824		
10/05/2017	11:16	7000	0	0	45,1	1,130625	23,2824		
10/05/2017	11:16	7150	0	0	45,1	1,13375	23,2824		
10/05/2017	11:16	7300	0	0	45,1	1,130625	23,2824		
10/05/2017	11:16	7450	0	0	45,1	1,130625	23,2824		
10/05/2017	11:16	7600	0	0	45,1	1,130625	23,2824		

DATA RECORDER

- Possibily to extract datas to check the well functionning of the manipulation

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FACT SHEET - U-SAV

U-SAV	
ELECTRIC CHARACTERISTICS FOR THE MACHINE	
Voltage	110/120V or 200/240V 50-60Hz
Power	< 1kW
VAPING PERFORMANCES	
Inclination	0 - 90°
Flow rate	0 - 10 L/min
Flow profile	Square - Sinusoidal - Saw tooth
Clearomiser limit	26 mm diameter, 70mm height
Battery limit	15 A
Battery / Clearomiser connection	EGO 510 connector male/female
Maximum voltage applied	20V
Supplied energy profile	Voltage - Power - Power flux density
Temperature measurements	Vapour at the drip-tip entrance
Ambient parameters measurements	Temperature - Pressure - Humidity rate
ENVIRONNEMENTAL CONDITIONS	
Ambient temperature	15-25 °C
Atmospheric pressure	0.8 - 1.2 Bar
Relative humidity rate	0-100%
NOISE EMISSIONS	< 80 Db
AIR SUPPLY	
Mounting	Suction / Push-in
Type	Pump / Compressor - air bottle
Inlet flow	0.2 - 11 Bar absolute
Purity	

Inlet gaz selection(Succion)	Inlet gaz selection (Push-in)
Laboratory conditions	N2/ Pure air...

ELECTRIC SUPPLY	
Battery mode	0-20 V / 0-15 A
Built-in energy supply mode	0-20 V / 0-10 A
Maximal power supplied (line)	Max 50 W
Heating mode	Voltage/ Power/ Power flux density

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FACT SHEET - U-SAV

TRAP CONNECTION	
Type of connection	BSP Male 1/4 "
Examples	Cryogenic trap, Filter, cartrigde, impinger …
SIZE	
Electric cabinet	800*600*200 mm
U-SAV operative box	660*300*150 mm
WEIGHT	
Electric cabinet	20 kg
U-SAV operative box	35 kg

PERFORMANCES

TESTING CONDITIONS (Based on AFNOR XP D90-300-3 standard)	
Heating	Cubis by Joyetech, BF SS316L 1 Ohm, 15 W
Ventilation	3 s-puff, 30 s-period, max flow 18.3 ml/s, volume of 55 ml
Sequences	5 series, 20 puffs/series, 300 s inter-series
Inclination	45°
STABILITY (FLOW APPLIED)	> 99,5%
PRECISION (VOLTAGE MODE)	> 99 %
REPEATABILITY (VOLTAGE MODE)	> 99,5 %
E-LIQUID CONSUMPTION REPEATABILITY	
Liquide A	6.28 mg/puff ± 14%
Liquide B	5.24 mg/puff ± 15%
PRECISION (POWER MODE)	> 98%
REPEATABILITY (POWER MODE)	> 99.5 %
E-LIQUID CONSUMPTION REPEATABILITY	
Liquide A	9.67 mg/puff ± 7%
Liquide B	8.80 mg/puff ± 8%

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FACT SHEET - U-SAV

OPTIONS

UNIT 0 OPTIONS (Electrical connections)

- - 01 - : UE connector
- - 02 - : UK connector
- - 03 - : US connector

UNIT 1 OPTIONS (Air-flow source)

- - 11 - : Assembly in push-in: A pressure regulator (0-1 bar)
- - 12 - : Assembly in suction: A pump (12,5 kg)

UNIT 2 OPTIONS (Bell updates)

- - 21 - : 6 bells adapted for ciga-like analysis (maximum diameter 10mm)
- - 22 - : Thermocouple for vapour temperature measurements

UNIT 3 OPTIONS (Energy triggers)

- - 31 - : 6 articulated arms equipped with electro magnet triggers (+ 3 testers and adaptators for batteries polarity)

TO ORDER, PLEASE SEND AN E-MAIL AT contact@ingesciences.fr WITH THE REFERENCE PRODUCT AS (LETS XX IF NO OPTION IS SELECTED):

USAV-XX-XX- XX-XX

Unit 0 option | Unit 1 option | Unit 2 option | Unit 3

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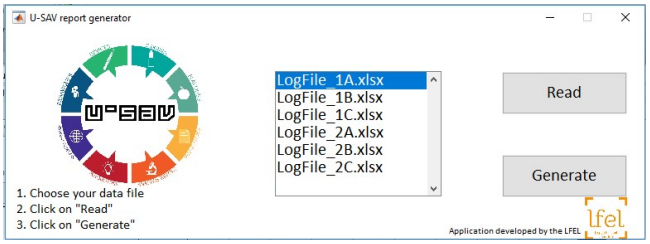
FACT SHEET - U-SAV

COMPLEMENTARY PRODUCTS

TO GO FURTHER IN OUR U-SAV PRODUCTS

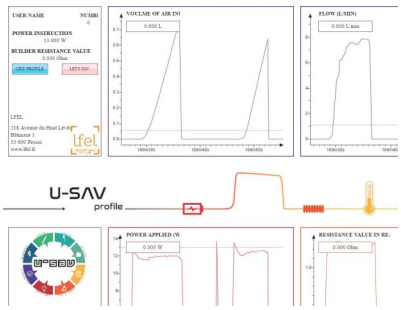


U-SAV REPORT GENERATOR (under development) (code USAV-CP-RG)

- Generate one report by experiment
- Generate all the experiment reports in a data file
- Plot the average power and flow rate applied by puff
- Plot the resistance behaviour by puff
- Plot the maximum vapour temperature measured by puff

U-SAV PROFILE (code USAV-CP-P)

- Dashboard displayed on an internet page
- Recording vapers and batteries behaviours
- Possibility to extract data linked to the user



EXPERTS TO ENRICH

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