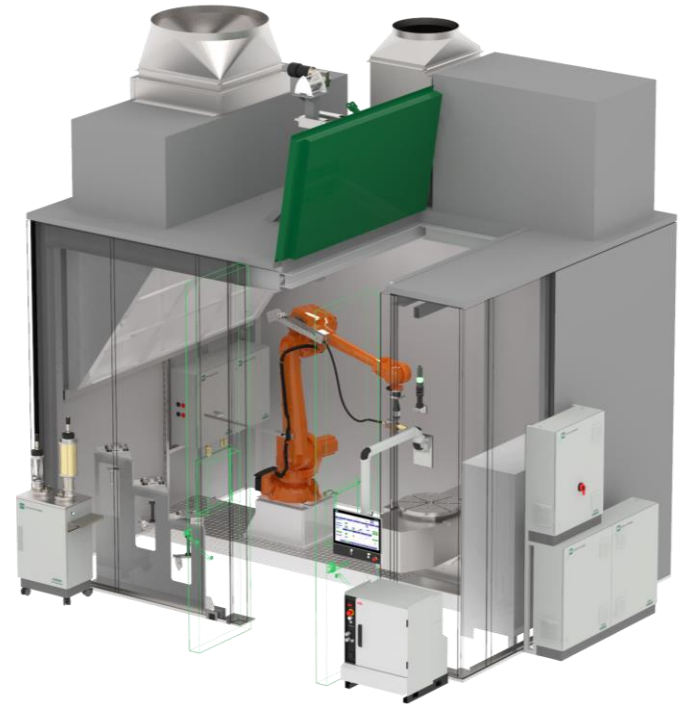


HV-50 DIGITAL SERIES HVOF SYSTEM

FST

- THE DIGITAL SERIES -

- ✓ State of the Art modular design
- ✓ Robust and reliable
- ✓ 100% standardized according ANSI/ISA88
- ✓ Compliant with all relevant CE and UL directives
- ✓ FST Horizon Operation Software
- ✓ Self Diagnose System
- ✓ Versions: liquid fuel / gas fuel
- ✓ Master / slave integration via profinet
- ✓ Close loop control of all relevant media
- ✓ Standard 24 months warranty

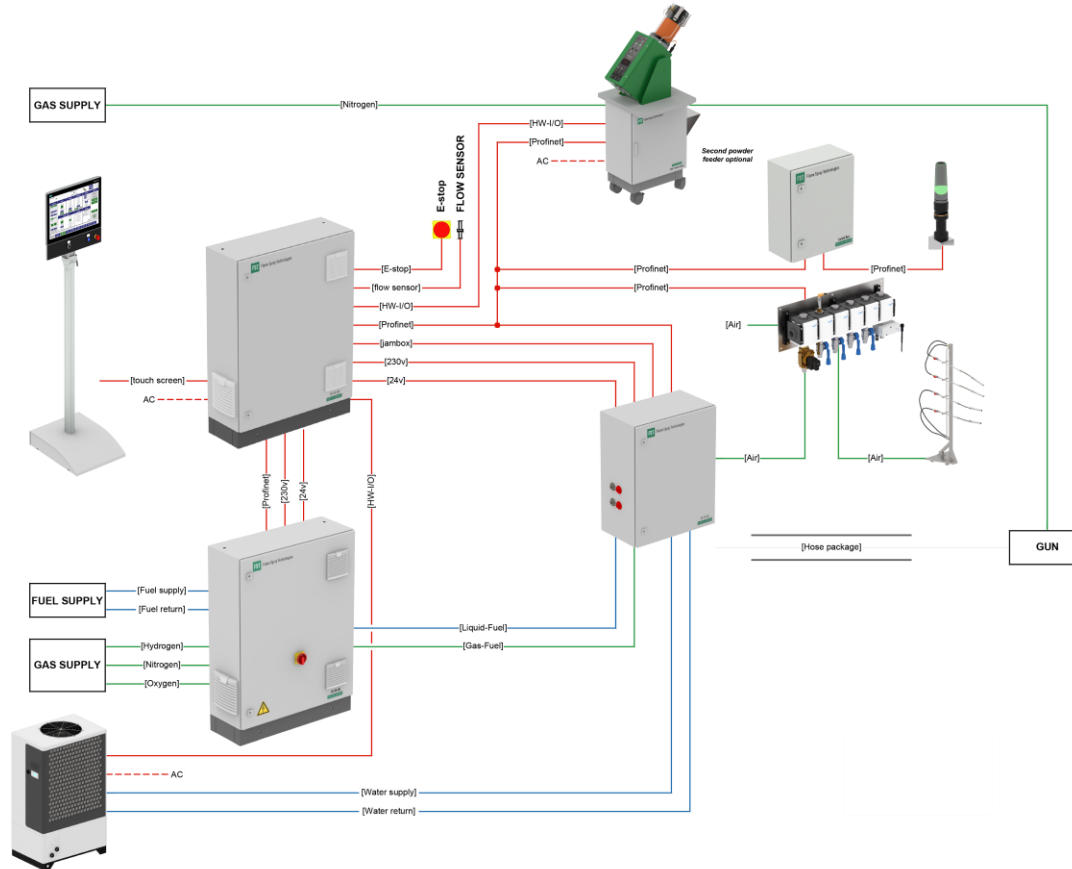


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HV-50 SCHEMATIC OVERVIEW



- THE DIGITAL SERIES -



HV-50 MODULE OVERVIEW



- THE DIGITAL SERIES -



Modules – HMI tool post



Modules – HMI wall mounted

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HV-50 ELECTRICAL MODULE

FST

- THE DIGITAL SERIES -

- Siemens Simatic s7-1500 PLC
 - Compliant with all relevant CE and UL directives
 - Digital communication via profinet
 - No external influence signals
 - Easy sensor replacement
 - Tamper free with automatic identification
 - Automatic Wire break detection
 - Prepared for total of three processes:
 - HVOF / APS / Combustion spray
 - eWon device for remote support
 - Automatic relays
 - E-stop integration of external equipment
 - Automatic service light
 - Temperature switched air ventilation
 - IP55 rated enclosure
-
- Dimensions: 1100x825x355mm
 - Weight: 60kg



Electrical module – open view



Closed view

HV-50 GAS MODULE

FST

- THE DIGITAL SERIES -

- Digitally connected via profinet
 - Compliant with all relevant CE and UL directives
 - Mass flow controllers for all media
 - Built-in pressure regulators
 - Pressure sensors for all gasses
 - In-line micro filters for all media
 - Swagelok stainless steel tubing and fittings
 - Gas detection sensor – GF version
 - Easy accessible for maintenance and calibration
 - IP55 rated enclosure
-
- Dimensions: 1100x825x355mm
 - Weight: 60kg



Gas module – open view



Closed view

HV-50 JAMBOX MODULE

FST

- THE DIGITAL SERIES -

- Digitally connected via profinet
 - Compliant with all relevant CE and UL directives
 - Built-in pressure regulator for cooling water
 - Swagelok stainless steel tubing and fittings
 - Cooling water temperature sensor
 - Easy accessible for maintenance and calibration
 - Automatic ignition device for HVOF torch
 - IP55 rated enclosure
-
- Dimensions: 920x640x360mm
 - Weight: 30kg



Jambox module – open view



Closed view

HMI PANEL – MOUNTING OPTIONS

- THE DIGITAL SERIES -

- Digitally connected via profinet
- 22inch Siemens Pro panel
- USB connection for data export
- Separate stack light for system status
- RFID Reader for login – opt.
- E-stop button
- IP63 rated enclosure
- Versions:
 - Wall mounted
 - Tool post
- Dimensions: 527x330x101mm
- Weight: 20kg



HMI wall mounted



Tool post mounted

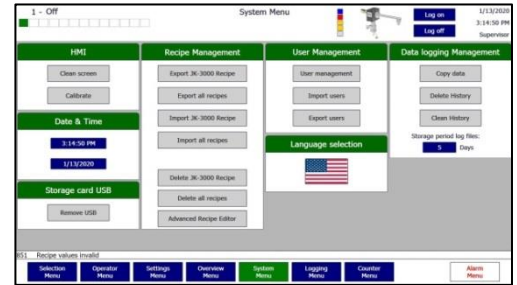
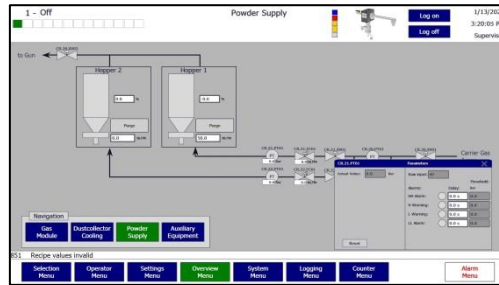
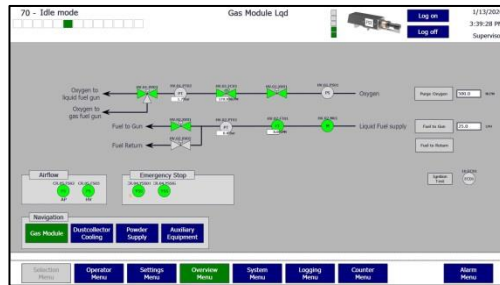
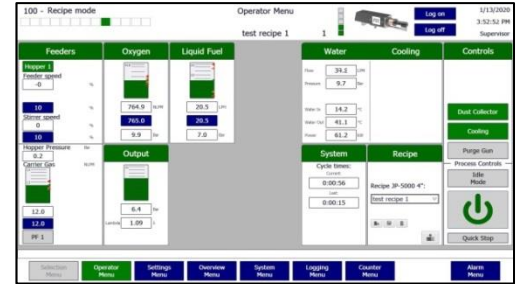
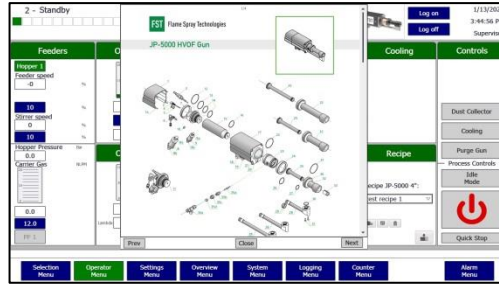


Stack light

FST | Horizon™ Software



- THE DIGITAL SERIES -



- ✓ FST | Horizon™ operation software
- ✓ FST | Horizon™ data reporting
- ✓ FST | Horizon™ maintenance scheduler
- ✓ FST | Horizon™ information center

HORIZON™ OPERATION SOFTWARE

FST

- THE DIGITAL SERIES -

- User friendly intuitive interface design
- Ready for industry 4.0 and IIoT through OPC UA
- One software version for multi-processes:
 - HVOF / APS / Combustion spray
- Master / slave control of external devices
- Close loop control of all relevant media
- Multiple gun technology
- Receipt mode / Idle mode
- Flame detection / safeguarding
- Data logging / data trending
- Receipt management
- Alarm tolerance levels per media
- Automatic receipt back-up
- User levels / user management
- Alarm page incl. remedy messages
- References to FST documentation
- Consumption page
- Counters on all media
- Overview page of all profinet connected components



Horizon operation software

Control your production process with FST Horizon™ operation software.

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HORIZON™ DATA REPORTING



- THE DIGITAL SERIES -

- Logging per batch interval or time interval
- Batch selection possible by means of barcode scanner
- Remote Real-time insights on your production process
- Among other values, the following process values are logged and reported:
 - Process media flows (actual and set point)
 - Carrier gas flows (actual and set point)
 - Powder feeder feed rate in percentage
 - Cooling water flow
 - Cooling water temperature (In / Out)
 - Amperage (actual and set point)
 - Plasma gun Voltage
 - Cycle time (start / stop process)
 - Operating hours system (total)
 - Operating hours feeders (total)
 - Alarms (occurred during spray cycle)
 - Stand-by time
 - Production time
- Other values are configurable in the set-up menu

Get insight on your production with FST's Horizon™ data reporting tool.

FST		Data report		
Starttime: 2017-04-25 14:38:52		Machine: Machine FST APS		
Endtime: 2017-04-25 14:45:09		Batchnumber: 0000hk10002		
Name	Set Point Value	Min	Max	
Actual pressure Cooling water (Bar)	No setpoint	0.285	9.904	
Actual pressure Airjet 1 (Bar)	0	-	-	
Actual pressure Airjet 2 (Bar)	0	0.014	0.021	
Actual flow Cooling water (l/min)	No setpoint	-1.628	11.988	
Actual temperature Cooling water in (C)	No setpoint	18.514	19.230	
Actual temperature Cooling water out (C)	No setpoint	19.293	20.331	
Actual flow Carrier Gas 1 (nl/min)	0	0.002	5.262	
Actual flow Carrier Gas 2 (nl/min)	4.286	-	3.187	
Actual disc speed Powder Feeder 1 (%)	2.571	-	-	
Actual disc speed Powder Feeder 2 (%)	0	-	-	
Actual grams/min Powder Feeder 1 (g/min)	0	-	-	
Actual grams/min Powder Feeder 2 (g/min)	0	-	-	
Actual flow Hydrogen (nl/min)	No setpoint	0.002	0.012	
Actual flow Argon (nl/min)	690.211	0.007	51.689	
Actual flow Nitrogen (nl/min)	28.75	0.007	0.069	
Actual flow Helium (nl/min)	0	0.007	0.116	
Actual current Power supply (A)	0	-	148.628	
Actual voltage Power supply (V)	No setpoint	-	46.139	
Actual temperature Surface temperature	No setpoint	49.177	53.174	
Actual RPM speed Turn Table	No setpoint	-	-	
Actual amount of Pass numbers	No setpoint	-	-	
Alarm Name	Alarm time start	Alarm time end		
Maximum value total operating hours system exceeded. Total operating hours counter will start counting at zero value	25/04/2017 14:39:14	25/04/2017 14:39:47		
Flow helium high (H)	25/04/2017 14:39:16	25/04/2017 14:39:47		

Example data report

HORIZON™ MAINTENANCE SCHEDULER



- THE DIGITAL SERIES -

The *Horizon™ maintenance scheduler* software is used to plan and schedule maintenance and calibration intervals. In the user-friendly scheduler, standard and/or personal intervals can be entered / scheduled.

- User and rights for different log-in levels
- Configurable according your requirements
- Maintenance type description
- Counters for each maintenance type
- Maintenance planning and performing
- Maintenance types and instructions
- Maintenance execution planner
- Maintenance reporting
- Manual references

Avoid unplanned down-time and guarantee optimal system performance with FST Horizon™ maintenance scheduler.

The screenshot displays the 'Maintenance menu' for '9MB' in 'Recipe mode'. It shows a list of maintenance tasks with their respective scheduling parameters and status.

MP-50 General Maintenance									
Description	Actual Hours	Warning Hours	Alarm Hours	W	A	S	User	Manual Reference	
General cleaning of external surfaces	0		100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Operator	AP-50 & HV-50 Manual	Carried Out
Leaktest of all gaslines and connections	0	900	1000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maintenanc	AP-50 & HV-50 Manual - Chapter leak test	Carried Out

MP-50 Jamboxes (APS/HVOF)									
Description	Actual Hours	Warning Hours	Alarm Hours	W	A	S	User	Manual Reference	
Visual check of water leakages, inside and underneath	0		100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Operator	AP-50 & HV-50 Manual	Carried Out

EDC									
Description	Actual Hours	Warning Hours	Alarm Hours	W	A	S	User	Manual Reference	
Clean the inside of the module, by aspiration!!!	0		500	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maintenanc	EDC Manual	Carried Out

Overhead Crane									
Description	Actual Hours	Warning Hours	Alarm Hours	W	A	S	User	Manual Reference	
Change lubricant of the slewing gear	0		2000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maintenanc	Manual Crane	Carried Out
Check crane, all bolts and safety clips for wear and replace if needed	0		2000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maintenanc	Manual Crane	Carried Out

Navigation buttons at the bottom: Selection Menu, Operator Menu, Advanced Menu, Alarm Menu, Settings Menu, Overview Menu, System Menu, Logging Menu, Counter Menu.

Example maintenance scheduler menu

HORIZON™ INFORMATION CENTER

FST

- THE DIGITAL SERIES -

- Production information
- Work instruction by PDF's, videos, images
- Tool verification by RFID or barcode scanner
- Step-by-step instruction guide for operators
- Manufacturing process planning for your applications
- Operator messaging - relating to the production process
- OPC UA Monitoring to external device for dashboard
- Local interfacing between various FST system at your site
- Global interfacing between systems within company
- Remote uploading of robot programs via OPC UA
- User and rights for different operators
- Multi-language
- Remote support

Maximize your production efficiency and minimize operator errors with FST Horizon™ information center.



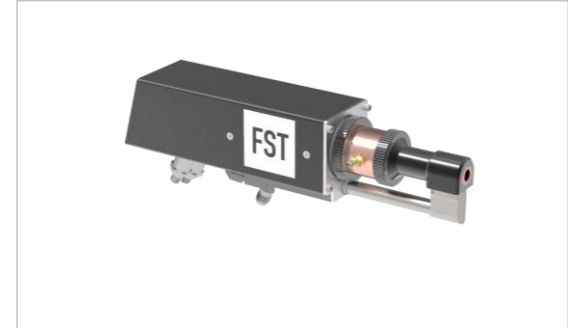
FST Turn-key system

INTEGRATED HVOF TORCHES

FST

- THE DIGITAL SERIES -

- Liquid fuel
 - eGun
 - JP5220
 - JP5250ST
- Gas fuel
 - DJ2600
 - DJ2700
 - JetKote3000
- Other torches on request



FST POWDER FEEDERS

FST

- THE DIGITAL SERIES -

- All powder feeders
 - Master / slave controlled via Horizon software
 - Mass Flow Controller for carrier gasses
 - Stand-alone version
 - Volumetric version (RPM)
- FST-20 Twin powder feeder
- FST-10 Single powder feeder
 - Digitally connected via profinet
 - Weight loss version (Gr. / min) – opt.
 - Suitable for laser cladding
- FST-10/20 Hoppers
 - 1.5 Liter hoppers
 - 5 Liter hoppers
 - High pressure version – opt.
 - Several options for discs / spreaders
 - Three different stirrer types
 - Heater blankets
- PF-50 Single powder feeder
 - 3.3 Liter hopper
 - Std. Heater blanket



PF-50 Single powder feeder



FST-10 / 20 Powder feeder

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HV-50 DIGITAL SERIES HVOF SYSTEM

FST

- THE DIGITAL SERIES -



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LEADING IN THERMAL SPRAY TECHNOLOGY