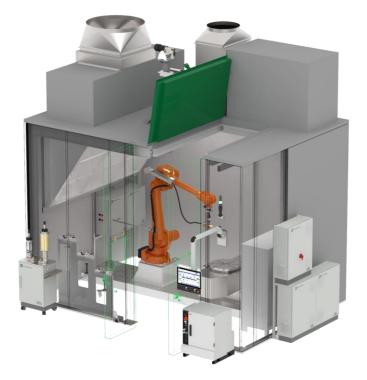# AP-50 DIGITAL SERIES APS SYSTEM
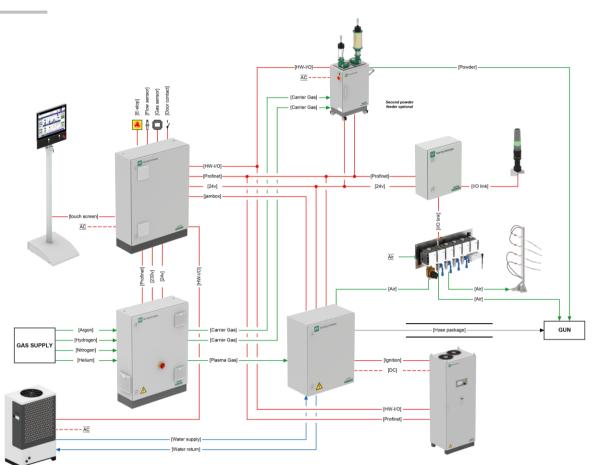
- THE DIGITAL SERIES -

FST

- ✓ 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
- ✓ Various gas configurations
- ✓ Master / slave integration via profinet
- ✓ Close loop control of all relevant media
- ✓ Standard 24 months warranty

AP-50 SCHEMATIC OVERVIEW

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AP-50 MODULE OVERVIEW

- THE DIGITAL SERIES -

Modules – HMI tool post

Modules – HMI wall mounted

AP-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

Closed view
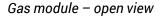
Electrical module – open view

AP-50 GAS MODULE

- THE DIGITAL SERIES -

- Digitally connected via profinet
- Compliant with all relevant CE and UL directives
- Mass flow controllers for all media:
  - Argon / hydrogen / helium / nitrogen
- 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
- Easy accessible for maintenance and calibration
- IP55 rated enclosure
- Separate integrated air manifold with:
  - Proportional valve (set. bar / PSI)
  - Valve for cooling air
  - Valve for manual air gun
- Dimensions: 1100x825x355mm
- Weight: 80kg
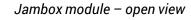
FST

Closed view

Air manifold

Gas module – open view
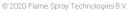
AP-50 JAMBOX MODULE

- 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 APS torch
- Voltage measurement at the torch
- IP55 rated enclosure

- Dimensions: 920x640x360mm
- Weight: 50kg

Closed view

Jambox module – open view

AP-50 PLASMA POWER SUPPLY

- Digitally connected via profinet
- Compliant with all relevant CE or UL directives
- Highly efficient and heavy duty secondary chopped (inverter) rectifier
- Versions iPS-80 and iPS-50:
    - Maximum output 80kW (1000ADC/80VDC or 800 ADC/100VDC)
    - Maximum output 50kW (670ADC/80VDC or 800 ADC/100VDC)
- @Duty Cycle 100%
- Cascaded plasma torch compatible – option
    - Switch to 500 ADC/200VDC
- Electricity Supply in accordance with valid "EMC" standards
- Ripple-free currents
- IP21 rated enclosure
- IP44 rated enclosure - option

- Dimensions: 2000x800x600mm
- Weights: iPS-80 : 640kg
                   iPS-50 : 480kg

Module plasma power supply

HMI PANEL – MOUNTING OPTIONS
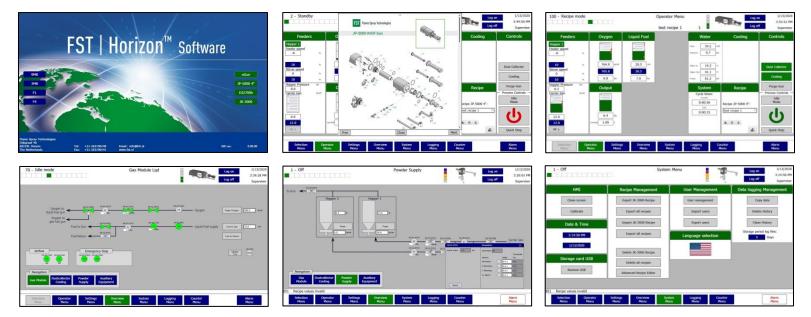
FST

- 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 – option
- E-stop button
- IP63 rated enclosure
- Versions:
  - Wall mounted
  - Tool post

- Dimensions: 527x330x101mm
- Weight: 20kg

HMI wall mounted   *Tool post mounted*   *Stack light*

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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.

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: 00000hk10002

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	-	146.628
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

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HORIZON™ MAINTENANCE SCHEDULER

FST

- 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.

Example maintenance scheduler menu

HORIZON™ INFORMATION CENTER

- 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 APS TORCHES

- THE DIGITAL SERIES -

The AP-50 supports the following torches:

- cGun™
- Sinplex
- F4XL
- F4HBS
- F1 ID
- SG-100
- SG-100/2700 & 2086
- 9MB
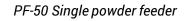- 3MB
- 3MB-T ID

Other torches on request

FST POWDER FEEDERS

- 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) – option
  - 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**
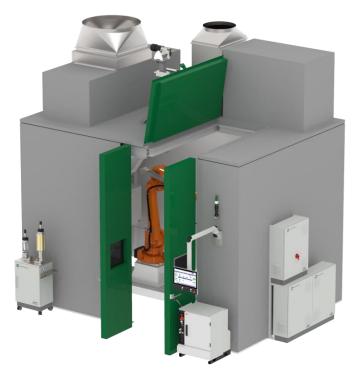 - 3.3 Liter hopper
  - Std. Heater blanket

PF-50 Single powder feeder

FST-10 / 20 Powder feeder

AP-50 DIGITAL SERIES APS SYSTEM

- THE DIGITAL SERIES -

FST

LEADING IN THERMAL SPRAY TECHNOLOGY