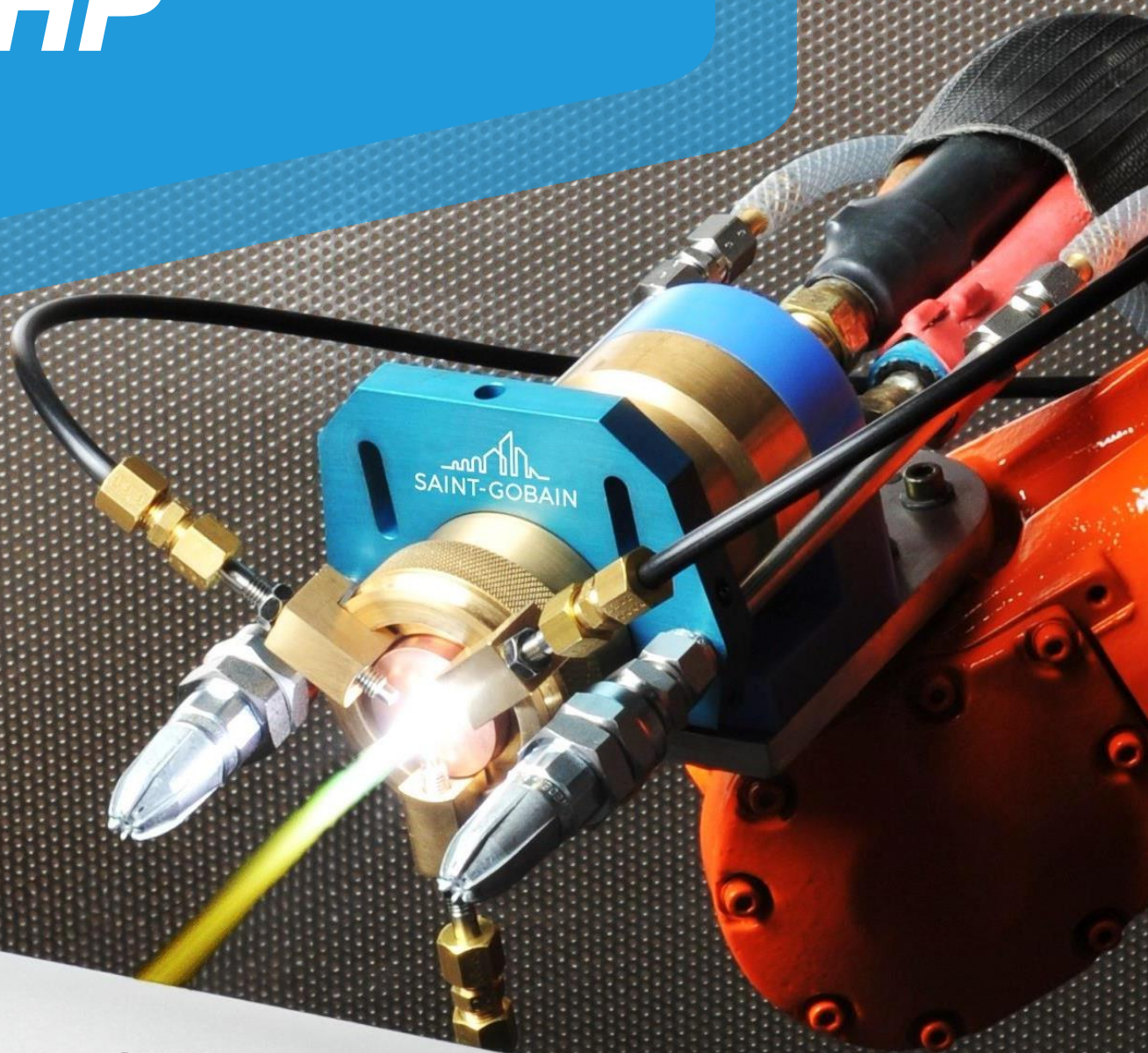


PROPLASMA HP



SPRAY MORE!
SAVE MORE!

SAINT-GOBAIN COATING SOLUTIONS



ProPlasma HP

With the goal to improve the productivity and the versatility, Saint-Gobain designed the ProPlasma HP plasma gun. Simple and unique at the same time, the ProPlasma HP gun reaches very high level of productivity with low energy requirements. Using the ProPlasma HP gun results in lower cost of operation, lower energy consumption, less powder needs, less waste, etc...

2 GUNS IN 1, VERSATILE

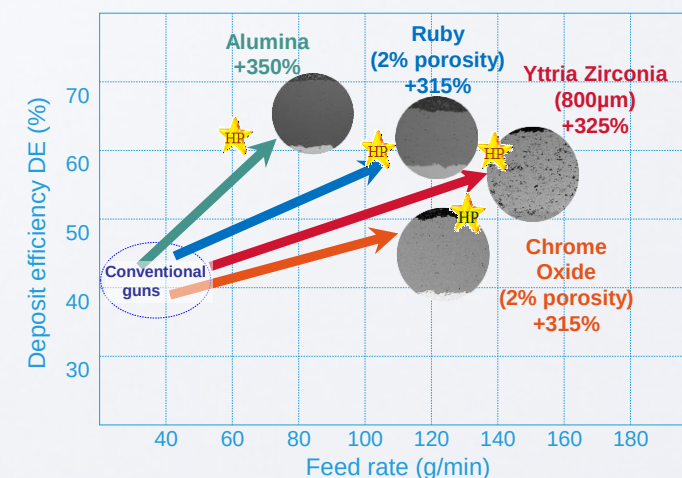
Our ProPlasma HP gun can run as a conventional gun or as a high power gun and it require a few minutes to switch from HP mode to Standard mode.

Compared to conventional single electrode plasma guns, our ProPlasma HP gun has **higher arc stability**. The particle fusion is very uniform and thus the **deposit efficiency improved**.

The ProPlasma HP gun is suitable for long term spray operations **up to 60 kW**.

The ProPlasma HP gun has been approved already for spraying most of the materials such as ceramics, metals, carbides and compounds (abradables...) .

Our ProPlasma HP gun **can be plugged on any existing plasma equipment**.



ENERGY SAVER

The advanced design of the ProPlasma HP allows a **high enthalpy and arc stability and faster deposition rates** :

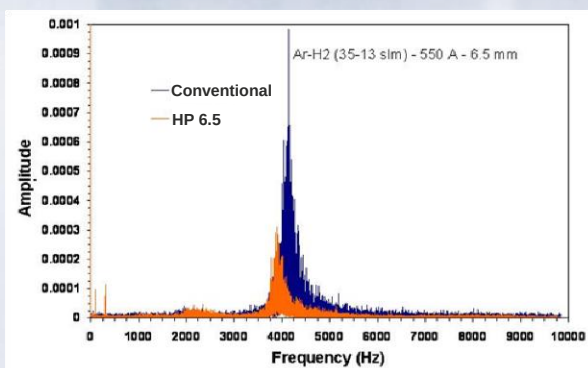
- Limits the electrical power requirement and the excessive consumption of expensive gases such as Argon, Hydrogen or Helium,
- Reduces overspray and decreases the amount of fumes during spraying,
- Reduces spray time and equipment down time,
- Reduces maintenance time and maintenance frequency,
- Reduces the ratio power / deposited material (eg. Cr_2O_3):
ProPlasma 15,9 kWh/kg versus conventional gun 44,8 kWh/kg.

HIGHER POWER, HIGHER SPRAY RATES

The ProPlasma HP runs with a conventional plasma spray system using a single power source. The ProPlasma HP gun can be used from 30 kW **up to 60 kW**, allowing deposition rates **3 to 4 times higher than with conventional plasma guns**.

The ProPlasma HP gun is a universal multi-mode plasma spray gun suitable for a wide range of thermal spray applications such as dense wear-resistant coatings or porosity controlled TBCs. It can run with a wide range of parameters with Ar- H_2 or Ar-He or Ar- H_2 -He.

HIGHER PLASMA STABILITY



OPTIMIZED DESIGN, USER FRIENDLY, CONSISTANCY

Compared to multi-electrodes or cascaded plasma guns, the ProPlasma HP gun has an optimised design using a single anode and single cathode. Our **self-aligning technology** guaranty the concentricity of the cathode and anode in a coaxial position, giving **perfect consistency** during operation even after each rebuilding.

The maintenance of the ProPlasma gun only takes a **few minutes** and can be done completely **from the front side**, no need to dismantle the gun from the robot. The powder injector holders are **easy to set-up**, can be placed on every angular position and allow to choose freely the number of injectors.



Thermal spray industry faces a strategic dilemma between increasing revenue and decreasing cost to enhance profitability. Changing to new "high power" plasma systems is still a difficult choice to make due to the upfront investment required to start production and the switch to a different technology. As a response to these challenges, Saint-Gobain Coating Solutions designed the Pro Plasma HP gun. On top of improving the thermal spray productivity and enhancing the coating performances, the ProPlasma HP permits an economical optimisation by minimizing the cost of the change; the **ProPlasma HP can be plugged on an existing plasma spray equipment** thanks to conversion couplings kits.

Moving from mono application spray systems to flexible spray systems reduces the investments required for each new application or coating product change. This can be easily achieved by using the ProPlasma HP which can run as a conventional gun or as a high power plasma gun.

RUBY

2% porosity – 57% DE
4,1 kg/h deposition rate
7,2 kg/h feed rate

SG DV1196 - Al_2O_3

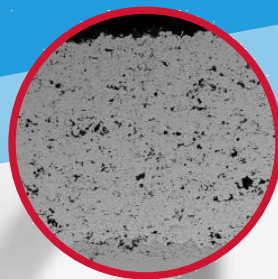
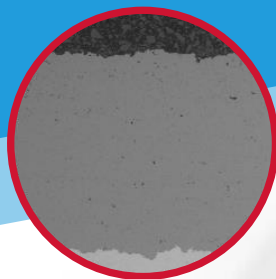
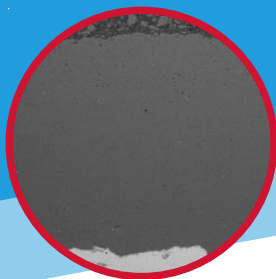
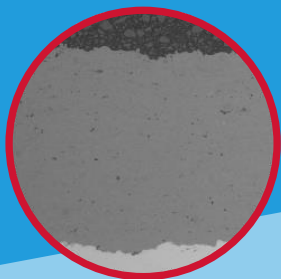
2% porosity – 65% DE
2,9 kg/h deposition rate
4,5 kg/h feed rate

SG 2525 - Cr_2O_3

2% porosity – 51% DE
3,7 kg/h deposition rate
7,2 kg/h feed rate

SG 204 - YZ

14% porosity – 57% DE
5,13 kg/h deposition rate
9,0 kg/h feed rate



Saint-Gobain Coating Solutions also designs and produces the core components of full plasma systems, ready to be integrated to turnkey systems: plasma control console, power source, water cooling unit, powder feeder, robot integration...

Our systems are based on a PLC control of the spray parameters. The ease of use with the automatic modes and the manual modes allows the operator to control and monitor all of the parameters such as the gun power, the powder flow rate, the gas flow rates, the water cooling conditions...



PROPLASMA HP in figures

Continuous operation power*
Number of powder injectors
Available powder injector holders
Water cooling inlet requirements
*at the power source

30 to 60 kW
1 to 6
-15°, 0°, +15°
>20 SPLM - 18 bars - 12°C

SAINT-GOBAIN COATING SOLUTIONS

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Thermal Spray Powders Product List

Product Name	Product Number	Nominal Size	Nominal Chemistry
Aluminum Oxide (Brown) <i>Fused and Crushed</i>	#112	20-70 micron	97% Al ₂ O ₃ , 3% TiO ₂
	#111, #119	20-55 micron	
	#110, #110GE	15-45 micron	
	#117, #117GE	5-30 micron	
Aluminum Oxide (White) <i>Fused and Crushed</i>	#182	20-70 micron	99.5% Al ₂ O ₃
	#183	15-45 micron	
	#184	5-30 micron	
	#150	5-20 micron	99.8% Al ₂ O ₃
Aluminum Oxide (White) <i>Spherical</i>	#153PT	15-45 micron	99.5% Al ₂ O ₃
	#196	15-55 micron	99.9 Al ₂ O ₃
	#195	12-38 micron	
	#194	5-20 micron	
Alumina Zirconia <i>Fused and Crushed</i>	#290	45-125 micron	75% Al ₂ O ₃ , 25% ZrO ₂
	#1610	45-125 micron	60% Al ₂ O ₃ , 40% ZrO ₂
Mullite (Aluminum Silicate) <i>Fused and Crushed</i>	#1020	15-55 micron	75% Al ₂ O ₃ , 25% SiO ₂
Spinel (Magnesium Aluminate) <i>Spherical</i>	#171	20-75 micron	75% Al ₂ O ₃ , 25% MgO
	#172	10-63 micron	
Alumina Titania <i>Fused and Crushed</i>	#106	15-45 micron	87% Al ₂ O ₃ , 13% TiO ₂
	#107	5-30 micron	
	#108	15-45 micron	60% Al ₂ O ₃ , 40% TiO ₂
	#109	5-30 micron	
Aluminum Titanate <i>Fused and Crushed</i>	#1010	5-25 micron	52% Al ₂ O ₃ , 32% TiO ₂ , 9% SiO ₂
Titanium Oxide <i>Fused and Crushed</i>	#1000	5-25 micron	98% TiO ₂
	#1001	15-45 micron	

Thermal Spray Powders Product List

Product Name	Product Number	Nominal Size	Nominal Chemistry
Chromium Oxide <i>Fused and Crushed</i>	#2023	15-63 micron	99.5% Cr ₂ O ₃
	#2020, #2026, #2525	15-45 micron	
	#2021	10-30 micron	
	#2022	5-15 micron	
Chromium Oxide with Alumina <i>Spherical</i>	Ruby L	20-45 micron	75% Cr ₂ O ₃ , 25% Al ₂ O ₃
	Ruby F	15-40 micron	
	Ruby VF	10-30 micron	
Chromium Oxide with Titania <i>Fused and Crushed</i>	#306	25-95 micron	96% Cr ₂ O ₃ , 4% TiO ₂
	#307	15-63 micron	
Chromium Oxide with Silica-Titania <i>Crushed and Clad</i>	#340	25-95 micron	93% Cr ₂ O ₃ , 4% SiO ₂ , 3% TiO ₂
	#341	20-75 micron	
Calcium Stabilized Zirconium Oxide <i>Fused and Crushed</i>	#235	45-75 micron	95% ZrO ₂ , 5% CaO
	#252	15-45 micron	
Ceria Stabilized Zirconium Oxide <i>Hollow Spherical</i>	#222	20-95 micron	79% ZrO ₂ , 21% CeO ₂
Magnesium Zirconate <i>Fused and Crushed</i>	#233	20-75 micron	77% ZrO ₂ , 23% MgO
	#232	5-25 micron	
Yttria Stabilized Zirconium Oxide <i>Hollow Spherical</i>	#202	25-95 micron	80% ZrO ₂ , 20% Y ₂ O ₃
	#204PR, #204RR	44-100 micron	92% ZrO ₂ , 8% Y ₂ O ₃
	#204 series	25-95 micron	
	#204F	10-45 micron	
	#204HP (high purity)	25-95 micron	
	#204HP PR	44-100 micron	
	#204HP F	10-45 micron	
Yttrium Oxide <i>Spherical</i>	#402, #1120	15-63 micron	Various purities
Rare Earth Silicates <i>Fused and Crushed</i>	#1006, #1500, #1533	15-45 micron	Various formulations