

## SUGA Co., Ltd.

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### ANNOUNCEMENT & INTRODUCTION of SPS 2000 and SUGA-Kagaku Collaboration:

April 20, 2020

Dear SPS Clients, Research Colleagues and Industrial Partners,

We would first of all like to thank you sincerely for your patronage of SUGA technology. We have been proud to install several SUGA SPS systems with leading practitioners in Europe, North America and Asia during the past couple of years, utilizing SUGA's unique technology by fusing its original thin film synthesis knowledge to outstanding experiences, garnered over twenty years as an OEM/ODM for conventional SPS manufacturers. We look forward to serving your market with cutting-edge SPS technology for many more years to come.

SUGA is also pleased to partner with Kagaku Analys AB of Gothenburg, Sweden, whose leading sales expert and senior advisor Dr. Lars Helldahl has been serving the European SPS market and beyond with his colleagues successfully for over twenty years. Combined with these manufacturer's strengths, Dr. Helldahl's wide range of client and industry contacts, his depth of knowledge as to demonstrations and applications of SPS technology, poise SUGA to look ahead with confidence in its products, its team, and its future. Our joint mission is to serve our clients with the most innovative and reliable SPS technology possible, thereby fostering long-term, dynamic relationships built on trust and ambition.

In keeping with this our SUGA philosophy, we are proud and honoured hereby to introduce a completely *novel SPS concept* – a new generation succeeding the production line that has been market-leading to date. SUGA's new *SPS 2000* brings with it a range of innovative features, all geared toward making your research and manufacture as flexible and easy to perform as possible.

Among the benefits:

- A very **Small Footprint**, saving valuable lab space (about 50% of the previous bench-top series).
- An amply **Spacious** and easy-to-access **Chamber**, now with a separate window for the Pyrometer.
- **Modular Pulse Generators in Units of 500 A**, which are conveniently ramped up from 500 A to 3000A in steps of 500 A, without any further changes in the system necessary (Bus Bar and other components designed for highest current at delivery).
- **Upgradable Force** to apply on the dies, from initial 20 kN to 70 kN in steps.
- **Direct Connection to 3-phase 400 V** power supply. No separate transformer needed. Saves space and cost.
- **Selectable Wave Forms** to further increase the parameters to optimise sintering conditions. **DC pulses** on/off in unlimited combinations, **Continuous DC** and a new **Full Wave** technology (Option).
- **High Vacuum Option** (<0.00067Pa) with Diffusion or Turbo molecular pumps.
- Capability for **Flash SPS**.
- Force applied by **Servo Motor**, allowing very fine control also in the lower ranges (from 200 N)
- Modern **Touch Panel Control** system with space for up to 30 pre-set programs. Combined with data logging for recording all parameters of interest.

- **Rapid cooling mode** is available to shorten the cycle time depending on materials.

**SUGA** has commercialized a dry coating device for powder and can contribute to the development of new materials so we simultaneously introduce **a new concept of treating powders with ALD** (Atomic Layering Deposition) **or Sputtering System**– allowing, to give one example, the user to deposit a layer of Ceramic on a metal powder for intimate mixing before sintering.

The very first, inaugural **SUGA SPS 2000** will be installed at **Kagaku's premises in Gothenburg, Sweden**, and from here we will organise webinars, video conferences and of course personal, hands-on demo visits in due course.

*You are cordially welcome to contact us for further information at any convenient opportunity. In the meantime, we wish you all a safe and healthy outcome from the present covid-19 crisis, impacting everyone as it does. Please take good care of yourselves, your families, colleagues and friends.*

**SUGA Co., Ltd.**



**Ikumasa SUGA,**  
**CEO and President**

**April 20, 2020**

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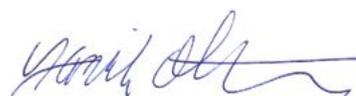
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