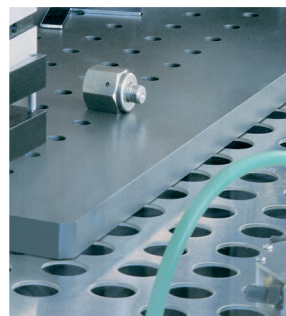
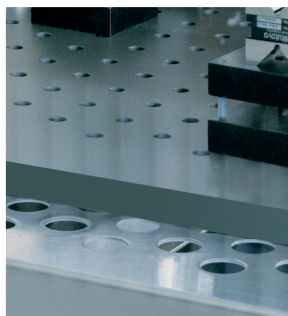




**Where tradition
meets technology**



**INNOVATION
CREATE THE FUTURE**

Company Profile

SVCS opened its door for customers in June 2000, taking advantage of many year experience in Ultra High Purity (UHP) gas, liquid and vapor delivery systems together with deep knowledge of thermal process equipment.

Since that, SVCS build a large installation base worldwide, serving both industrial customers for mass production as well as R&D customers in laboratories or small pilot plants. Our customers could take advantage of high quality equipment still with fair price and professional support either from the headquarters in the Czech Republic or from local offices worldwide.

The company recognizes the importance of continuous improvement as a key factor in its ongoing success. SVCS teamed up with leading R&D laboratories, universities and institutes of academy of science to bring to its customers and partners new products and solutions.



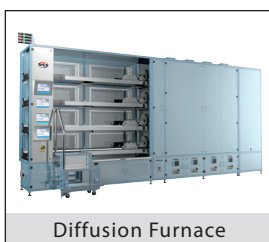
CERTIFICATES AND AUDITS





Solutions

PROCESS EQUIPMENT



Diffusion Furnace



LPCVD/PECVD



Customized Solutions

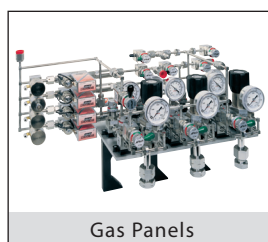
SYSTEM COMPONENTS



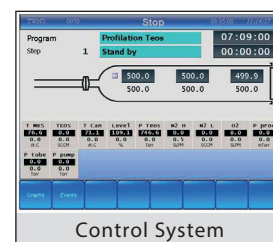
Bubbler



EBS



Gas Panels



Control System

FACILITY SYSTEM



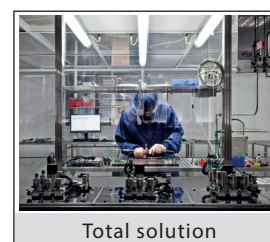
Gas Cabinets



Valve Manifold Box



Chemical Delivery



Total solution



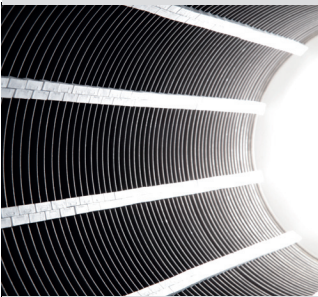
Diffusion Furnace

The design of the SVCS atmospheric diffusion furnaces combines the multiple-process capability with the needs of a maximum capacity for full-production system, as well as high flexibility for small-scale versions to be used for research and pilot production. It provides an easy-to-maintain, safe and reliable horizontal furnace platform. The SVCS design is outstanding for high efficiency, minimised footprint and low cost of ownership while offering high process flexibility.



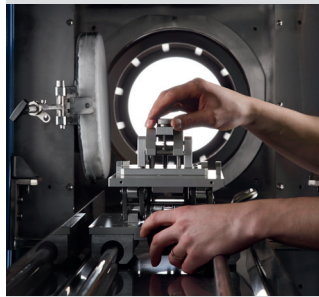
PROCESS APPLICATION

Diffusion - gaseous source



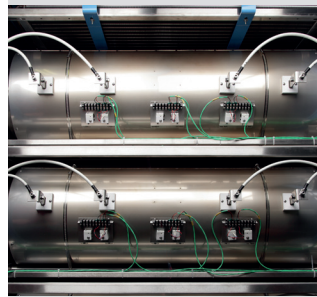
Annealing-curing-sintering

Diffusion - liquid source



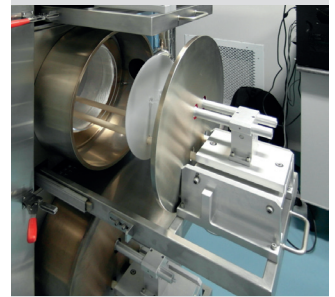
Dry Oxide

Diffusion – solid source



Wet oxide (optional EBS)

Drive-in



High Pressure Oxide

FEATURES

- Furnace construction based on long term experience in semiconductor industry
- Full Production models for large scale semiconductor, MEMS or PV manufacturing
- Customized small size models for research&development or small scale pilot fabs
- State of the art modular control system, in-house designed, highly tailored and in-house manufactured
- Top notch components always selected for excellent results and trouble free long life of the furnace equipment
- Up to 5 stacked quartz or SiC tube reactor chambers for various processes
- Advanced water cooling system at tube level: no thermal interference between adjacent tubes
- Contactless fully automated boat-in-tube loading both cantilever or softloading configurations
- Maintenance-friendly mechanical design





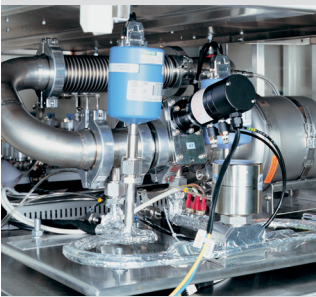
LPCVD/PECVD

The design of the SVCS Low Pressure and Plasma Enhanced Chemical Vapor Deposition furnaces (LPCVD / PECVD) is based on own design of vacuum system in cooperation with leading vacuum systems and pumps manufacturers. Multiple methods of vacuum control are available to meet the specific process requirements. All the vacuum system was optimized in cooperation with fab service engineers to achieve maintenance friendly mechanical design.



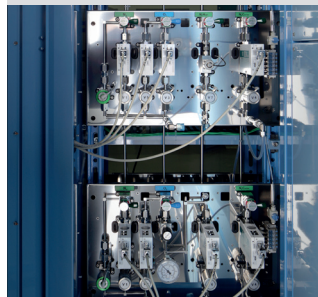
PROCESS APPLICATION

Silicon Nitride



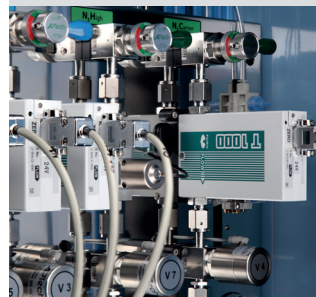
Polysilicon

Low Temperature Oxide



Doped polysilicon

High Temperature Oxide



Metal Oxides

TEOS oxide



Carbon&Graphene

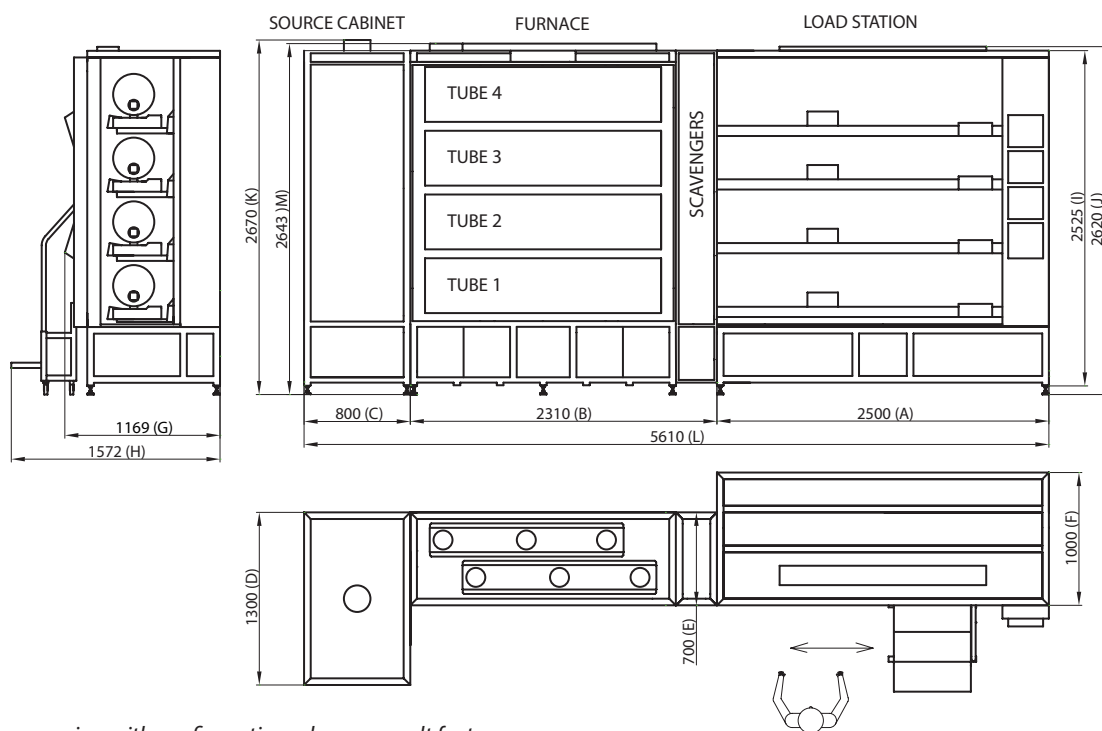
FEATURES

- Up to 4 stacked quartz tube reactor chambers for various processes
- Multiple methods of vacuum control, heated or unheated
 - Throttling Butterfly Valve – TBV
 - N₂ ballast
 - Vacuum pump control with frequency converter
- Integration of vacuum pump system in cooperation with leading vacuum pump manufacturers
- Proprietary designed water cooled flanges
- Proprietary designed in-house assembled graphite wafer carriers
- Contactless fully automated boat-in-tube loading cantilever with proprietary ceramic encapsulated twin rod system
- Proprietary in-house manufactured RF generators
- On request integration of RF generators in cooperation with leading manufacturers
- Contactless fully automated boat-in-tube loading SiC paddle cantilever with softlanding

TECHNICAL PARAMETERS

| | |
|---------------------|---|
| Wafer size | 150 mm, 200 mm, 300 mm or any custom size |
| Wafer load | Wafer load Full Production: 100++ (photovoltaic applications up to 1000/tube) R&D: 10-25 (typical) |
| Heating system | 3 or 5 zone |
| Flat zone | Full Production: up to 1067 mm (42") R&D: down to 300 mm (12") $\pm 0,5^{\circ}\text{C}$ across flat zone |
| Process temperature | 200 °C to 1300 °C |
| Power consumption | 95 kW – 165 kW depending on tube configuration |
| Power supply | 150 mm: 3-phase, 400 or 480 VAC, 140 A, 50 or 60 Hz 200 mm: 3-phase, 400 or 480 VAC, 160 A, 50 or 60 Hz (system is always adapted to country - specific power supply network) |
| Clean dry air | 70 – 110 psig (4,8 to 7,6 bar) |
| Cooling water | 40 - 60 LPM |
| Exhaust | 210 m ³ /h per tube |
| Options | Boat elevator and wafer handling automation |

SAMPLE DIMENSIONS



Dimensions are varying with configuration, please consult factory
 R&D models are always custom designed



BUBBLER

Precursor Temperature Controller

Many modern reaction constituents for semiconductor and PV processes are available only in liquid phase. Suitable delivery systems have been adopted to make them usable for technology. One of the method is based on liquid vapor pick up by flowing gaseous media through the liquid.



FEATURES

The system can furnish all popular and widely used chemical containers from various suppliers. Even adjustments for occasional rare versions are possible.

TECHNICAL PARAMETERS

| | |
|--|--------------------|
| Dimensions (width x height x depth) | 320 x 240 x 320 mm |
| Diameter of the liquid container | 145-155 mm |
| Weight | 15 kg |
| Max. power consumption | 150 W |
| Max. heating/ cooling, relative to ambient | +50 °C/-20 °C |
| Temperature control stability | +/-0.1 °C |
| Cooling power | 30 W |



EBS

External Burn System

The EBS (AKA Ex-Torch) is a diffusion furnace accessory used for pyrogenic oxidation processes. It generates high-purity water vapor by burning Hydrogen in Oxygen. Burning process takes place in an external quartz chamber, so that the source zone of process tube is not affected by hydrogen flame.



FEATURES

Heating to Hydrogen self-ignition temperature is provided by electrical resistance heater.

TECHNICAL PARAMETERS

| | |
|-------------------------------------|--------------------|
| Dimensions (width x height x depth) | 135 x 130 x 270 mm |
| Mass | 3,5 kg |
| Supply Voltage | 230 V/50 Hz, 4,5 A |
| Service Temperature Range | 0 – 50 °C |



GAS CABINETS

SVCS takes advantage of many years of experience in manufacturing tailored gas panels and gas systems for various wafer production technologies, as well as various R&D customized panels. High level of technical design, components from the world leaders and a fully automatic in house developed control system with independent safety functions makes SVCS gas systems one of the best in the market. All panels are manufactured in Class 10/100 Clean room and are helium leak tested after welding and assembly. Specialized mini weld heads of the orbital welding system together with professional design allow very low internal volume of the panels.



PRODUCT SERIES



Single Cylinder GC



Dual Cylinder GC



3-Cylinder Gas Cabinet



Valve Manifold Box

FEATURES

Control system features

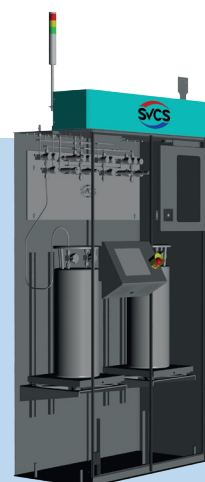
- Fully automated control system with TouchScreen display
- Automatic cycle purging
- Cylinder pressure or cylinder weight monitoring
- Pressure transducer for output pressure monitoring
- Excess flow switch
- Programmable cylinder pressure or weight limits for automatic changeover
- External digital inputs and outputs
- Multiple-level password protection for various operation modes
- Ethernet interface for LAN connection

OPTIONAL ITEMS

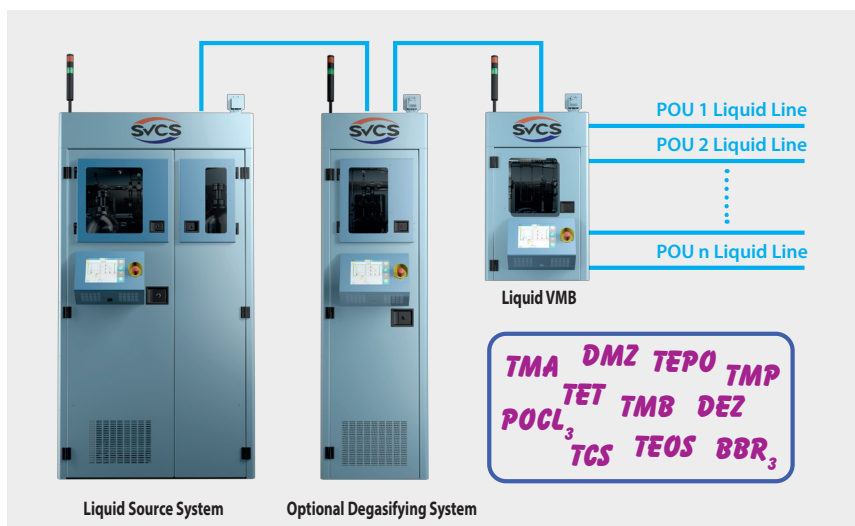
- Monitoring of dangerous gas presence
- Pressure monitoring inside the outer containment of coaxial tubing

LIQUID DELIVERY

SVCS has developed advanced sourcing and distribution systems for a safe and fully automated supply of processes with UHP liquid chemicals. Liquid sourcing systems are available in many configurations, typically as either a single or dual container cabinets customized for any proprietary canister type used by any vendor of liquid chemicals. Sourcing systems provide liquid pressurized with suitable push gas charged to the head space above a liquid in container. Depending on application, optional degassification may be required to remove diluted push gas from the liquid. Buffer tanks and Liquid VMBs can be deployed to distribute the liquid according to manufacturing needs.



APPLICATIONS

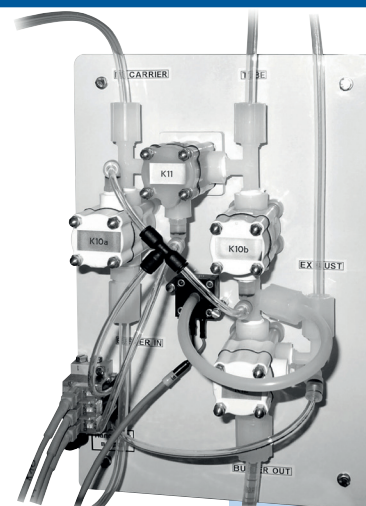


CHEMICAL CONTROL PANEL

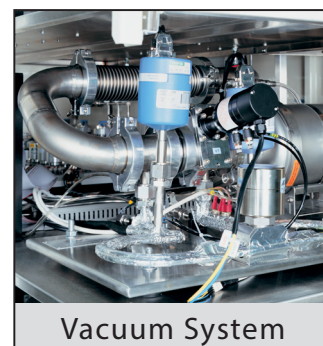
Specialized all-plastic liquid and vapor handling delivery systems were developed for safe and clean fluid handling, as an interface between process reactor and media source.

Important function of the panel is monitoring the pressure inside the container, and automatic vent in case of overpressure.

Point-of-use vessels are refilled from economic bulk chemical sources. Such bulk liquid delivery systems provide safe, automatic, continuous chemical media availability without the need of dealing with numerous low volume containers.

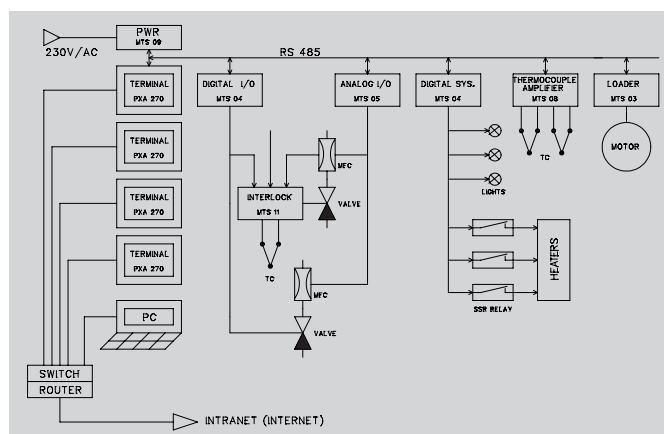


SCOPE OF MODERNIZATION



CONTROL SYSTEM

operators through multiple password scheme.

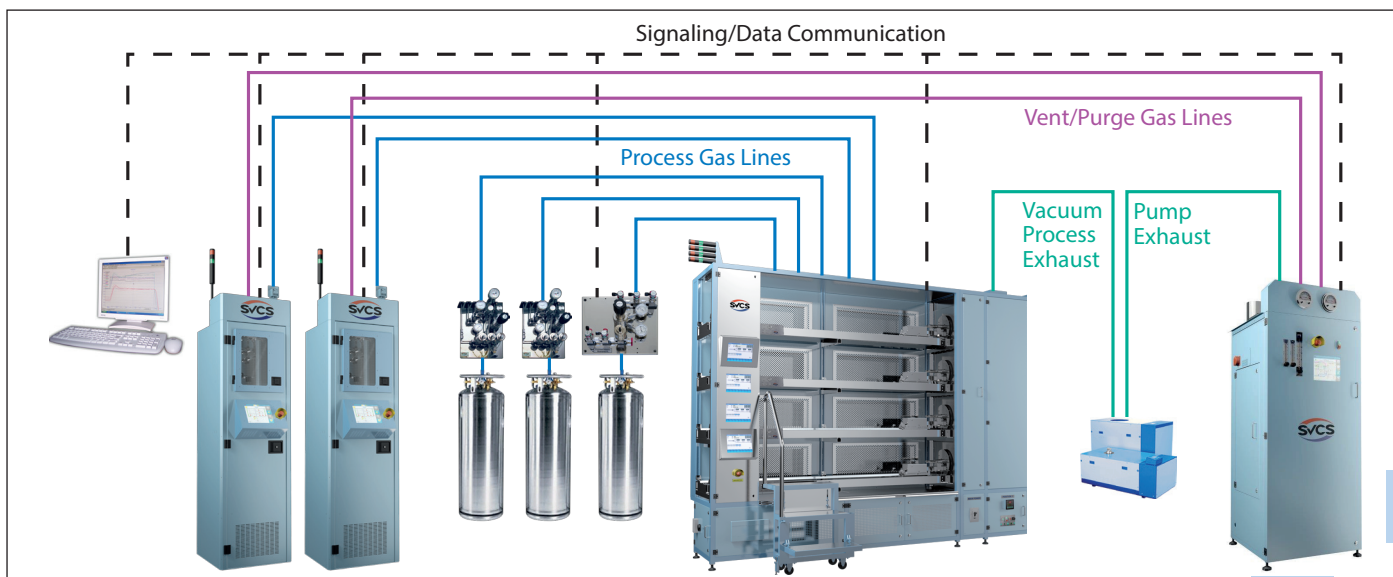
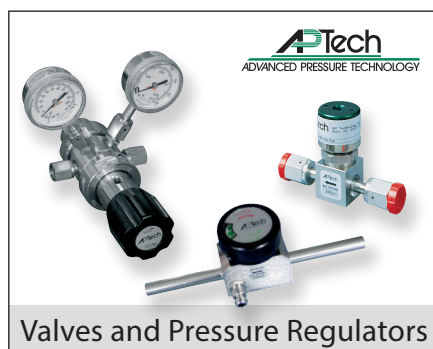


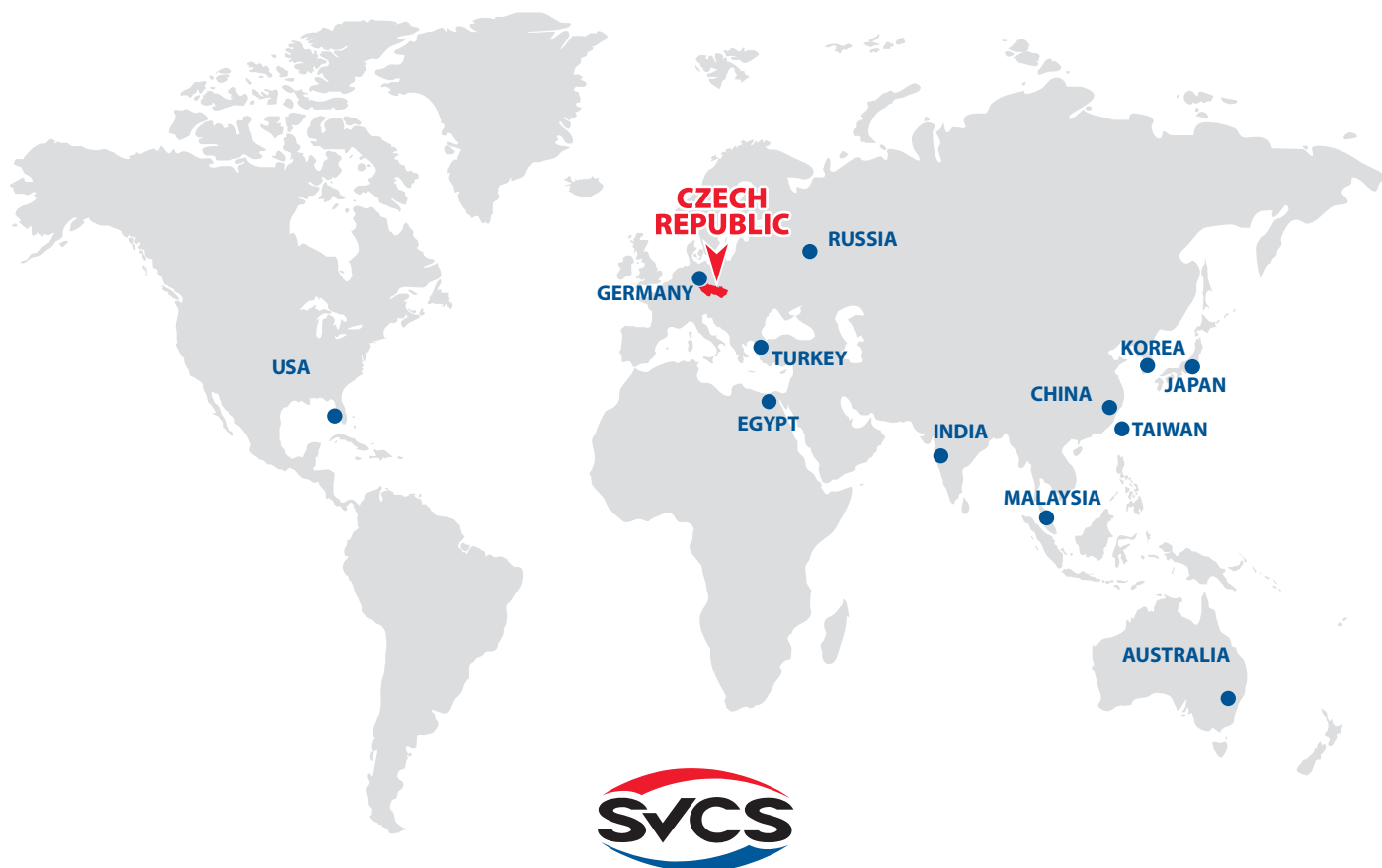
based software package was developed to provide a powerful tool for fab management and process engineers to perform various tasks like recipe development and process data handling. Communication with the system is based on TCP/IP network, so the users have many possibilities of how to use the program, including remote access. One of the top features is its ability to be integrated to various high level manufacturing management systems including communication through SECS protocol.



TOTAL SOLUTIONS

SVCS is not only manufacturer of thermal reactors and Ultra High Purity distribution systems. The team of experienced service engineers provides installations and hookup services worldwide. In partnership with the best in class manufacturers of UHP components – tubing, fittings, valves, pressure regulators, filters and purifiers, MFCs and others, the true total solution is offered to SVCS customers. Besides high purity gas and liquids plumbing, SVCS also provides an integration of all equipment under one single supervisor software. Gas cabinets, liquid deliver systems, process equipment and scrubbers are monitored in one software package to provide to users complex status information. Last, but not least, SVCS offer accredited calibration together with repair service for most Mass Flow Controllers (MFCs) available on the market.





Process Innovation

瑟思

Инновационные Процессы



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