

**RUBIG**  
DRIVING SUCCESS

# Top of Nitriding and Coating

Nitriding and Coating Furnaces





# Plasma Nitriding Systems & Plasma Coating System

Innovative heat treatment solutions in plasma nitriding and plasma coating

MICROPULS® Technology from RUBIG Industrial Furnaces is the premium plasma technology in the heat treatment sector. RUBIG partners from across the globe have confidence in this plasma nitriding technology. The customers benefit from over 25 years of development experience in the field of customized thermal treatment systems for a variety of sectors, from job-shop heat treatment operations to fully automated industrial companies.

## Benefits of the RUBIG MICROPULS® Systems:



### Modularity

Flexible systems, perfect for in-house sourcing and future upgrades



### Industry 4.0

Simple data exchange with supervising control and ERP systems



### Capacities

Increased degree of filling for cost-effective plasma nitriding



### Temperature control

Independently controlled heating and cooling zones and temperatures are measured directly at the component



### Efficient operation

Remote maintenance and online diagnostics for increased efficiency



### MICROPULS® Technology

Perfect process control using powerful plasma generators



### SIR concept

Improved surfaces plus cost savings of up to 20 %

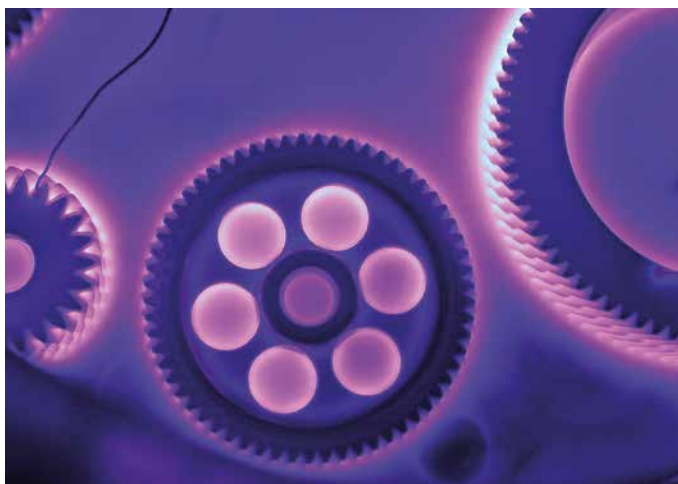


### Environmental compatibility

Optimum energy efficiency and lowest emissions

All systems are AMS und CQI9 suitable.





# MICROPULS® EVEREST



## The Plasma Nitriding System

MICROPULS® EVEREST allows RUBIG customers to benefit from PLASNIT®, PLASNIT®C and PLASOX® processes.

### Longer service life

Lower distortion levels and increased strength

### Short process chain

Minimizes hard fine machining and mechanical masking

### Stability

Reproducible processes for increased reliability

### Flexibility

Variable layer structure, also for complex geometries

### Diversity

PLASNIT®C and PLASOX® processes allow for additional tribology and corrosion critical applications

### Environmental friendliness

No use of toxic gases

### Classic applications

- Shafts (crankshafts, camshafts, geared shafts, ...)
- Gears (hollow gears, pinions, ...)
- Valves
- Bearing parts (bearing rings, bearing ball, ...)
- Tool shapes
- Machine components

- Dies
- Spindles and screws
- Screw fittings from high chromium steels

### STANDARD SYSTEMS & THEIR SIZES

useful diameter x useful height in mm

400 x 600	1.500 x 2.100
700 x 1.200	1.500 x 2.400
1.000 x 1.800	1.500 x 2.700

All the systems are available in SINGLE, DUO or TANDEM design. Special sizes on request.



# MICROPULS® PROCOAT



## The Coating System

MICROPULS® PROCOAT is the optimum system solution in the field of hard coatings. From mold making and job-shop coating to component coating.

### Wide choice of processes

RUBIG offers a great variety in PLASTIT® processes to meet customers requirements

### Diversity

Wide application range for multilayer, gradient or nanocomposite coatings

### Reduced temperatures

Lower distortion levels at lower treatment temperatures

### Industry solutions

From die-cast aluminum and plastic injection molding to food processing

### Wide range of applications

Large and complex parts are coated evenly

### Flexibility

Variable layer structure, also for complex parts

### DUPLEX processes

Our all-in-one solution ensures lower unit costs

### Classic applications

- Plastic injection moulds
- Molds for aluminum
- Deep drawing mandrels

#### STANDARD SYSTEMS & THEIR SIZES

useful diameter x useful height in mm

400 x 600	1.500 x 1.800
700 x 900	1.500 x 2.100
1.000 x 1.500	

All the systems are available in SINGLE, DUO or TANDEM design. Special sizes on request.



# MICROPULS® DIAMOND Xtended



## The DLC Coating System

With the MICROPULS® DIAMOND Xtended system RUBIG offers one of the most innovative system solutions in the field of DLC coating technology. The system helps RUBIG customers realize the DLC Xtended® process.

### Internal coating

For complex geometries and increased wear protection

### Thick layers

For a longer service life and improved corrosion protection

### Improved characteristics

Low temperatures reduce distortion levels

### Cost savings

Less post processing and mechanical masking save time and costs

### Homogeneity

Three-dimensional coating without part rotation

### Wide range of applications

Large and complex parts are coated evenly

### Flexibility

Variable layer structure, also for complex parts

### Classic applications

- Pipes
- Ball studs
- Pistons

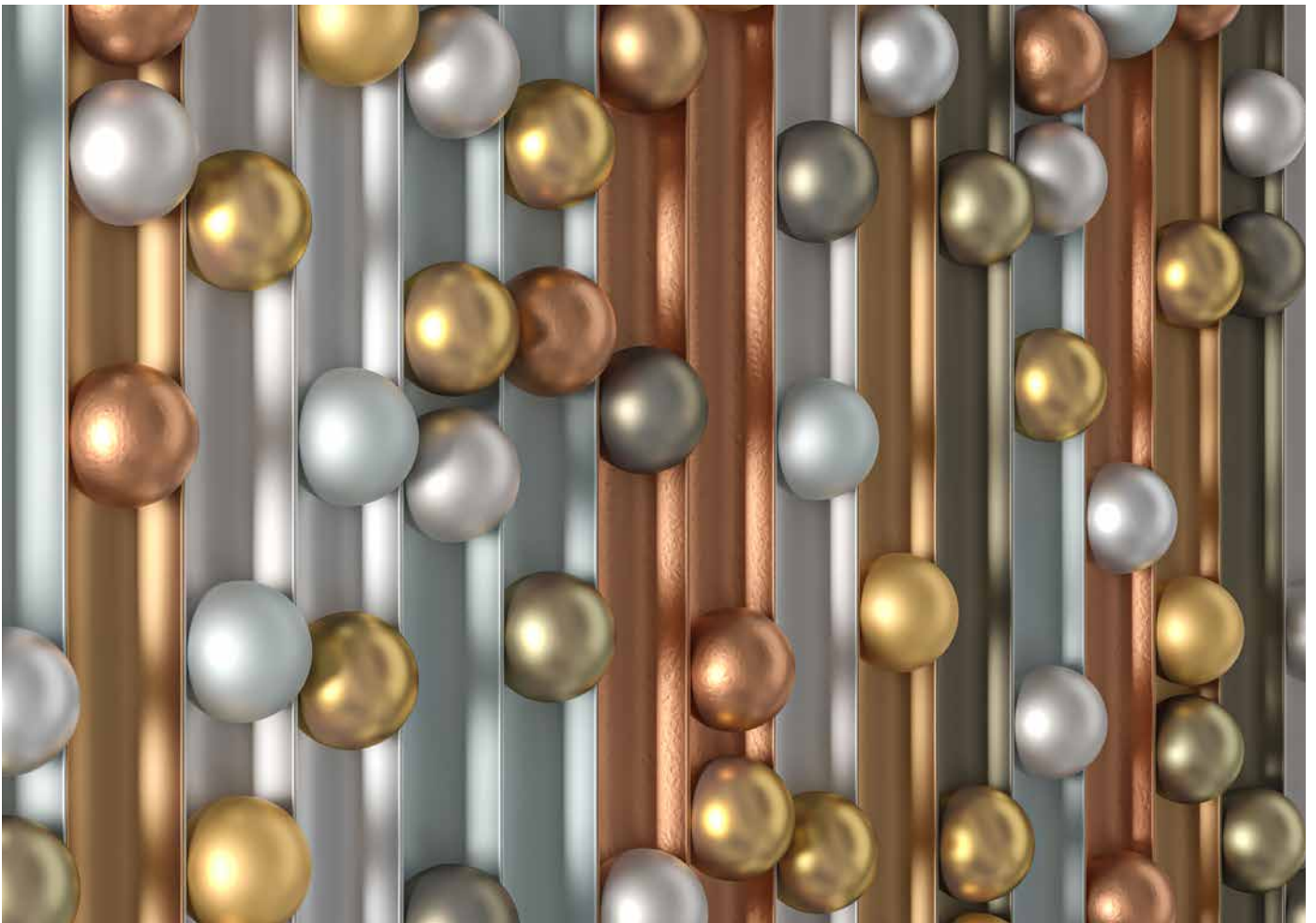
#### STANDARD SYSTEMS & THEIR SIZES

useful diameter x useful height in mm

700	x	1.130
850 / 1.000	x	1.650
1.300 / 1.500	x	2.330

All the systems are available in SINGLE, DUO or TANDEM design. Special sizes on request.





# RUBIG Physical Vapour Deposition

## The RUBIG PVD Coating Technology

Physical Vapour Deposition (PVD) is a purely physical coating process. Sputtering is used, under high vacuum, to detach atoms from a solid metal, also known as a target. This metal vapour combines with a reactive gas, usually oxygen, nitrogen or carbon, that is fed in, condenses and remains as a coating on a component. The coatings can be applied to a wide range of substrates.

### Benefits of the RUBIG PVD Systems:



**Environmentally friendly**  
Optimum energy efficiency and lowest emissions



**Modular design**  
Individually configurable for different product requirements



**State-of-the-art plant technology**  
Very compact design of the chamber as well as upgrades through technology packages such as plasma monitoring, HiPIMS or ion sources



**MICROPULS® technology**  
Optimum processes are made possible by powerful RUBIG high-tech plasma generators



**Process control and regulation**  
Precise setting of the individual process parameters



**Interface integration**  
Integration into different existing ERP systems



# MICROPULS® LOTUS

## The PVD Coating System

The MICROPULS® Lotus was developed and built together with RUBIG Technology and RUBIG Industrial Furnaces in order to be able to offer our customers an innovative overall package.

### Usable substrates

Metals, fleece and fabrics,  
filter materials and plastics

### Coating systems

Pure coatings such as chrome,  
titanium, aluminium, etc.

TiN, TiCN, CrN, CrC, CrCN, CrAlN,  
TiAlN, AlTiN and others on request

### Areas of application (extract)

- Protection of the surface against wear and/or corrosion
- Decorative surface finishing (paint)
- Functionalisation of surfaces (antimicrobial properties, electrical properties, ...)

### Traditional sectors

- Toolmaking/mechanical engineering
- Automotive
- Aeronautics
- Medical technology
- Recreational products
- Jewellery
- Interior fittings for e.g. water taps, door handles, ...

### STANDARD PLANT SIZES

Usable diameter x usable height in mm

500 x 600

Different usable heights possible on request



# Gas Nitriding Systems

The GASCON technology stands for highly efficient and advanced gas nitriding

RUBIG Industrial Furnaces GASCON technology stands for highly efficient and advanced gas nitriding. Constructed in a modular way and adapted according to customer needs, these systems prove themselves through their excellent durability and the possibility to control processes by means of nitriding potential.

### Benefits of the RUBIG Systems:



**Modularity**

Flexible plant systems, perfect for in-house sourcing and upgrades in the future



**Individuality**

From standard systems to customer-specific systems and special system solutions



**Industry 4.0**

Simple data exchange with supervising control and ERP systems



**Longevity**

Usage of Inconel prolongs lifetime of retort



**Efficient operation**

Remote maintenance and online diagnostics increase your efficiency



**Controllability**

Atmosphere control ( $K_N$ ,  $K_O$ ,  $K_{O_2}$  or dissociation) possible

All systems are AMS und CQI9 suitable.





# GASCON K2

## The Gas Nitriding System

GASCON K2 helps RUBIG customers realize R.NIT+® and GASOX® processes.

### Short process chain

Minimisation of hard finishing through minimal distortion

### Stability

Reliability due to reproducible results

### Diversity

Other tribology and corrosion critical applications are possible using the GASOX® process

### Controllability

Optional  $K_N$  control allows optimal reproducibility

### Classic applications

- Shafts (crankshafts, camshafts, geared shafts, ...)
- Gears (hollow gears, pinions, ...)
- Valves
- Bearing parts (bearing rings, bearing balls, ...)
- Machine tool parts
- Spindles and screws

### Standard systems & their sizes

Special sizes on request

#### BELL TYPE SIZES

useful diameter x useful height in mm

650 x 1.200	1.500 x 2.100
1.100 x 1.800	1.500 x 2.400

All bell type systems can be provided as a DUO-system.

#### PIT TYPE SIZES

useful diameter x useful depth in mm

800 x 1.500	1.200 x 3.000
1.000 x 2.000	1.500 x 3.000
1.200 x 2.500	

#### HORIZONTAL TYPE SIZES

useful width x useful height x useful depth in mm

500 x 500 x 600	900 x 900 x 1.200
600 x 600 x 900	900 x 900 x 1.800



# RUBIG

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Technical details are subject to change. ©RUBIG 2022

## Surface Improvement by RUBIG

The RUBIG SIR program represents the development of equipment and processes to ensure optimal and improved performance for the surface of tools and components made of steel, while protecting the environment! SIR allows a reduction in fine machining, offers production integration, partial

nitriding and process combinations, and ensures a prolonged service life. SIR ensures the lowest emissions, minimal gas consumption and extended product lifetimes. Cost savings of around 20 % are realized by eliminating the need for fine machining.



**SiR**  
Surface Improvement by RUBIG  
SAVES MONEY  
PROTECTS THE ENVIRONMENT

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