

A man with a mustache, wearing a blue hard hat with the 'SC' logo and a blue work jacket over a light blue shirt, stands with his arms crossed in an industrial setting. Behind him are several glowing orange furnaces and complex piping. The 'SC' logo is also visible in the top right corner of the image.

SC

Superior when things get hot

Solutions for industrial  
furnace construction

Schmidt + Clemens Group

A detailed view of industrial machinery, likely part of a furnace construction, featuring large rollers and complex metal structures. The scene is dimly lit, emphasizing the metallic textures and mechanical components.

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with “dry” furnace rollers, know-how  
and materials from S+C

Page **6** **Added values**

to provide advantages, illustrated by an actual case example

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offers you the optimum solution for your work

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the strength of our unique materials laboratory

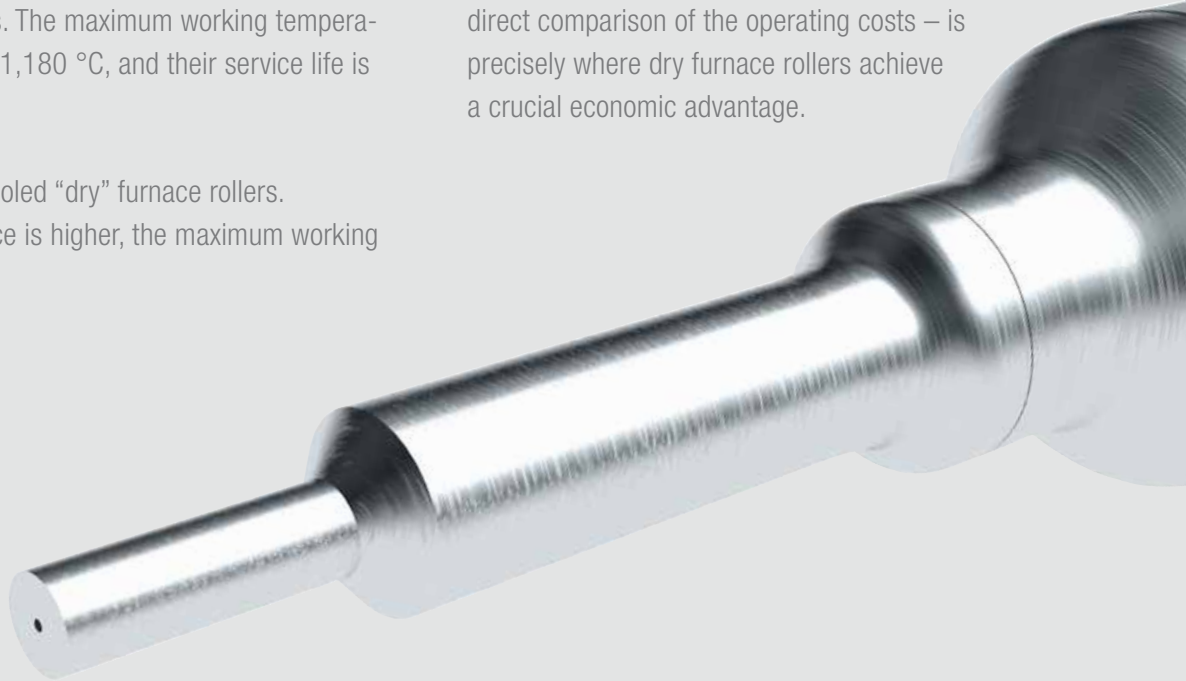
# Why Schmidt + Clemens?

# Furnace rollers with built-in advantages

There are generally two types of furnace rollers: Firstly water-cooled rollers, the main advantage of which is their low procurement costs. The maximum working temperature of these rollers is 1,180 °C, and their service life is about two years.

The alternative is uncooled “dry” furnace rollers. Their procurement price is higher, the maximum working

temperature is identical or higher, but their service life is between three and four and a half years. This – in a direct comparison of the operating costs – is precisely where dry furnace rollers achieve a crucial economic advantage.



## The advantages of dry furnace rollers compared with water-cooled furnace rollers:

- On average 95 % less heat loss
- Lower energy usage
- Lower maintenance costs
- No water storage / water supply systems required

S+C furnace rollers bring additional advantages: Our innovative material Centralloy® 60 HT R increases the maximum working temperature to 1,250 °C, and the service life is again extended to as much as five years.

# Advanced design



## Rotary kilns, e.g. made from Centralloy® 60 HT R

For use in rotary kiln furnaces for the calcination of pigments or metal powder.

Characteristics:

- Material heat-resistant up to 1,250 °C
- Tube pieces spun, flanges rolled or forged, processed and welded as per the drawing
- Diameter from 50 to 1,350 mm
- Length up to 20 metres
- Delivered ready to install
- Longer service life compared to standard materials

## Pusher tubes made from heat-resistant stainless steel

For use in pusher tube furnaces, for example for making tungsten carbide powder.

Characteristics:

- Material heat-resistant up to 1,250 °C
- Horizontally spun, processed and welded as per the drawing
- Diameter from 100 to 250 mm
- Length up to 15 metres
- Suitable for a hydrogen atmosphere
- Static-cast reduction boats



# Example calculation: Furnace rollers in a HT plant

Following in-depth consultation by S+C, a customer who previously used water-cooled furnace rollers in their furnace changed over to “dry” furnace rollers made from Centralloy® 60 HT R.

The higher procurement costs compared with the usual water-cooled rollers were offset by lower operating costs and other advantages:

	Water-cooled, repaired	Water-cooled, fibre wool	Dry 360 mm	Dry 425 mm
<b>Energy consumption (GJ/tonne)</b>	0.7	0.6	0.45	0.45
<b>Energy costs (million USD/year)</b>	7.200	6.200	4.700	4.710

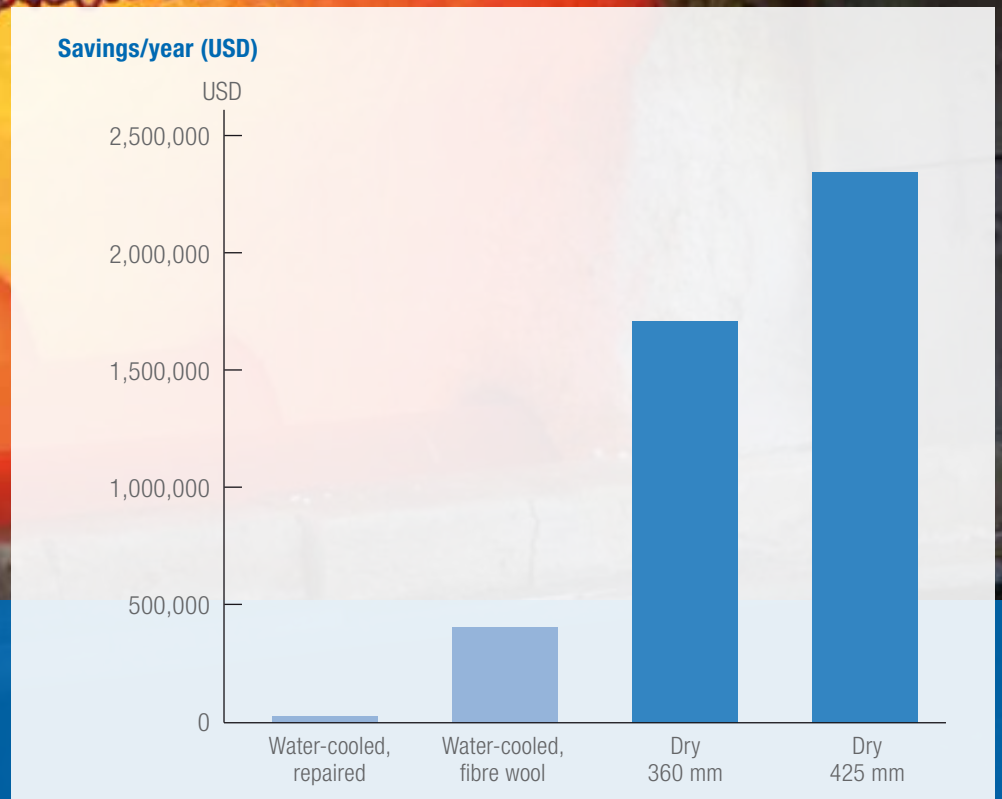


## Added values

Changing over to dry furnace rollers made from Centralloy® 60 HT R (360 mm or 425 mm) reduced energy consumption and therefore energy costs by up to 55 % annually. Taking as a basis the entire HT plant of our customer (capacity 4 million tonnes/year) and taking into account the longer service lives of our furnaces, (50 to 150 %), savings of between 1.7 and 2.3 million USD are achieved per year!

The lower energy input and the lower raw material requirement (for manufacturing the rollers) have another advantage: Both protect the environment, something that is of increasing importance to companies pursuing sustainability.

	Water-cooled, repaired	Water-cooled, fibre wool	Dry 360 mm	Dry 425 mm
<b>Σ Costs/run time (USD)</b>	17,000,000	19,000,000	20,000,000	27,000,000
<b>Service life (years)</b>	2	2	3	4.5
<b>∅ Costs/year (USD)</b>	8,500,000	9,500,000	6,670,000	6,000,000
<b>∅ Savings/year (USD)</b>	Reference	400,000	1,800,000	2,300,000



The following table provides a general overview of materials that S+C has in its standard range. We would be happy to provide you with more detailed technical information – just call us or send us an e-mail.

## Heat-resistant stainless steel centrifugal casting

Centralloy®	Material no.	Abbreviation	Analysis/reference values in %						≈ ASTM
			C	Cr	Ni	Si	Mn	Miscellaneous	
<b>G 4832</b>	1.4823	GX40CrNiSi27-4	0.40	27.0	4.0	2.5	1.5	-	HD
<b>G 4825</b>	1.4825	GX25CrNiSi18-9	0.25	18.0	9.0	2.5	1.5	-	HF
<b>G 4826</b>	1.4826	GX40CrNiSi22-9	0.40	22.0	9.0	2.5	1.5	-	HF
<b>G 4827</b>	1.4827	GX8CrNiNb19-10	0.08	19.0	10.0	1.5	1.4	Nb	-
<b>G 4828</b>	1.4828	GX15CrNiSi20-12	0.15	20.0	12.0	2	1.3	-	-
<b>G 4837</b>	1.4837	GX40CrNiSi25-12	0.40	25.0	12.0	2.5	1.5	-	HH
<b>G 4848</b>	1.4848	GX40CrNiSi25-20	0.40	25.0	20.0	2.5	1.5	-	HK
<b>G 4849</b>	1.4849	GX40NiCrSiNb38-18	0.40	18.0	38.0	2	1.5	Nb 1.3	-
<b>G 4852</b>	1.4852	GX40NiCrSiNb35-25	0.40	25.0	35.0	2	1.5	Nb 1.5	HP + Nb
<b>G 4852 Micro</b>	(1.4852)	GX40CrNiSiNb35-26	0.40	35.0	26.0	1.5	1	Nb	-
<b>G 4855</b>	1.4855	GX30CrNiSiNb24-24	0.30	24.0	24.0	2	1.5	Nb 1.5	(In 519)
<b>G 4857</b>	1.4857	GX40NiCrSi35-25	0.40	25.0	35.0	2.5	1.5	-	HP
<b>G 4859</b>	1.4859	GX10NiCrSiNb32-20	0.10	20.0	32.0	1.5	1.5	Nb 1.0	CT 15 C
<b>G 4868</b>	1.4868	GX50CrNi30-30	0.50	30.0	30.0	2.5	1.5	-	-
<b>G 4879</b>	2.4879	G-NiCr28W	0.50	28.0	48.0	2	1.5	W 5.0	-
<b>G 4879 Co</b>	-	G-NiCr28WCo	0.50	28.0	48.0	1.5	1.5	Co 3.0	-
<b>G 4879 W 16</b>	-	G-NiCr28W16	0.25	28.0	48.0	0.5	0.5	W 16.0	-
<b>ET 35 Co</b>	-	G-NiCrCoW	0.50	28.5	35.0	1.5	1.5	W 6.0 / Co 15.0	-
<b>ET 45 Micro</b>	-	GX45NiCrSiNb4535	0.45	35.0	45.0	1.6	1	Nb + Add	-
<b>G 4816</b>	2.4816	G-NiCr15Fe	0.10	15.0	Rest	0.5	1	Nb, Fe	-
<b>G 4779</b>	2.4779	G-CoCr28Nb	0.30	28.0	-	2	1.5	Co 48.0 / Nb 1.5	(Umco 51)
<b>H 101</b>	-	GX12NiCrNb35-25	0.13	25.0	37.0	1.3	1.5	Nb	-
Centralloy®									
<b>60 HT®</b>	-	-	0.45	27.00	Rest	-	-	Nb, W, Al	-



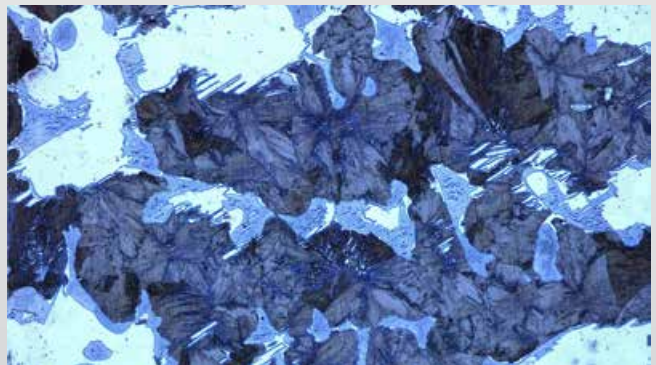
# You have the requirements, we have the solution

Our many years of experience in the field of industrial furnaces have seen us develop an extensive range of materials. This enables us to offer you at least one optimum solution for your actual plant and production situation.

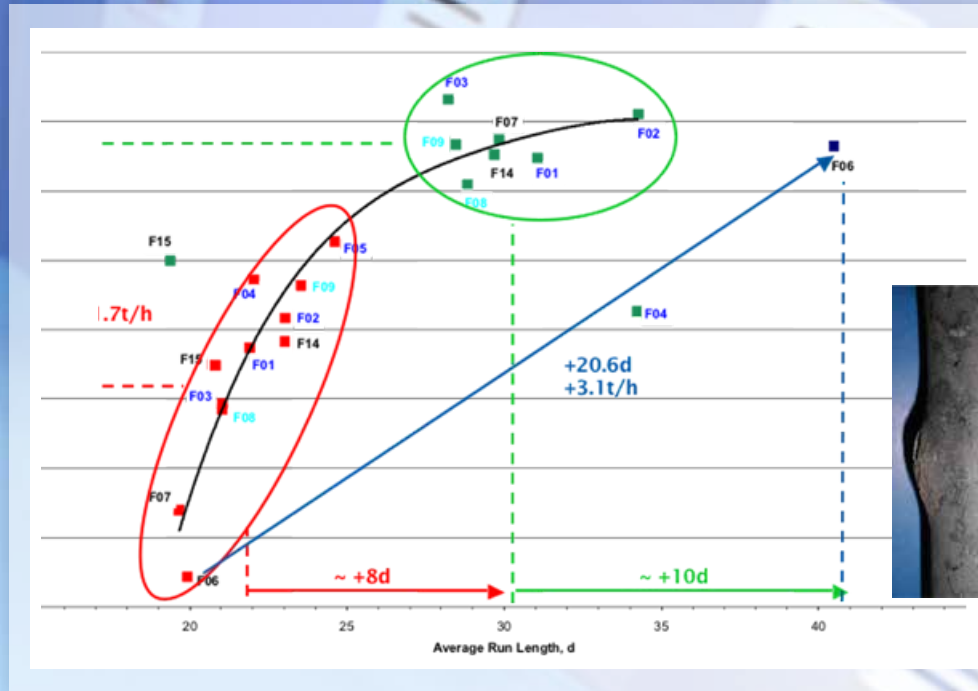
At the same time we are working on expanding our range in a practical way. This is very often done through close contact with our customers: When a challenge emerges

that cannot be optimally overcome using the existing material, we develop a new one.

This can result in a material that is like a fingerprint of a specific application. However, new findings and experiences are also incorporated into our "series production" and ensure that the S+C range of materials is not just extensive but also always up-to-date.



# The appropriate material



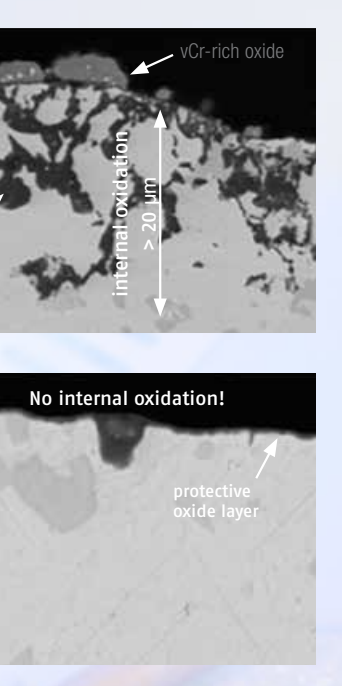
# Innovative concepts

## So that you “stay ahead”

Basically, our materials laboratory has just one task: Discovering added values to provide advantages for you in all aspects relating to materials, designs and applications.

These include damaged materials examinations that uncovers much more than just the precise cause of the damage. You also get concrete suggestions about how similar problems caused by another material or a modified design can be prevented in future.

At the same time our materials laboratory – incidentally the industry’s largest and most modern – is a hotbed of material innovations. This gives you the assurance that everything will be in line with the state of the art at all times and enable you to follow new paths at an early stage.





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## How can we assist you?

Schmidt + Clemens meets the multi-faceted challenges in industrial furnace construction. Put us to the test and experience how mutually satisfying, cost effective, and reliable collaboration with us can be. See for yourself our intelligent product alternatives.

**Hotline: +49 2266 92-507**

**We are ready**