



Why choose S+C?

**"Because you know what matters
in the petrochemical industry"**

Schmidt + Clemens Group



Page **4** **Full concentration**

on the specific customer requirements
and processes in the petrochemical industry

Page **6** **Technological
advantage**

as the basis for the economic
success of our customers

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that generate added value

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and steam reformers**

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S+C products and services for the petrochemical industry

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A man in a blue work shirt, white hard hat, and safety glasses is looking up and to the right while holding a large roll of white blueprints. The background is a blurred industrial setting with yellow lights.

an eye on your advantages

Your requirements fashion our motivation

Providing solutions to the petrochemical industry is the core business of Schmidt + Clemens. For you, our customer, this means that the focus of our development expertise and investments is on petrochemical issues. We continuously question the “Industry Standards” and address the operating parameters of your production processes.

Ongoing data exchange with many of our customers helps S+C to find customer-tailored process optimisations or solutions to process problems. With such specific design of our products and services we contribute towards our customers increased production volumes, improved system availability and longer service life.

S+C is also happy to “look beyond the horizon” with you to create innovative opportunities. Our supply capabilities extend beyond radiant sections, from convection boxes to transfer lines and can include installation as well.

So it comes as no surprise that S+C is a preferred supplier and partner for many global engineering companies within petrochemical business areas. However, operators of refineries, ethylene and fertiliser plants or steel mills also benefit from our extensive experience and know-how gained from many years of successful supply to the petrochemical industry.



Our principle: Listen & Resolve

- Metallurgical services
- Innovative, proven Centralloy® materials
- Project and emergency situation management
- Design support
- Welding and installation services
- Operating assistance, consulting and analysis
- Performance and benefit projections



Full concentration



The table provides a general overview of materials commonly used within the petrochemical industry and regularly manufactured by S+C. It includes those that S+C has themselves developed in addition to the industry “standards”. We will be happy to provide you with more detailed technical information - just call or send us an E-mail.

Trade Mark Centralloy®	ASTM Type	Chemical Composition Approximate Values in wt.-%								Max. Appl. Temp. recommended for the Petrochemical Industry, °C	Max. Appl. Temp. in Air**, °C
		C	Si	Mn	Cr	Ni	Nb	W	Other		
G 4826	HF	0.40	1.5	1.2	22	10	–	–	–	–	950
G 4837	HH	0.40	1.5	1.0	25	12	–	–	–	–	1,050
G 4848	HK 40	0.40	1.5	1.5	25	20	–	–	–	1,000	1,100
G 4848 Micro	–	0.40	1.0	–	25	20	+ Add	–	+ Add	1,050	–
G 4852	HP + Nb	0.40	1.5	1.5	25	35	1.5	–	–	1,100	1,100
G 4852 W	HP + NbW	0.40	1.5	1.5	25	35	1.5	1.5	–	1,100	–
G 4852 Micro	HP + Nb (MA)	0.45	1.5	1.0	25	35	1.5	–	+ Add	1,130	–
G 4852 Micro R	HP + Nb (MA)	0.45	0.8	1.5	25	35	1.0	–	+ Add	1,050	–
G 4855	IN 519*	0.35	1.5	1.5	24	24	1.5	–	–	1,000	1,050
G 4857	HP	0.45	1.5	0.7	25	35	–	+ Add	–	1,130	1,150
G 4857 W	HP + W	0.45	1.6	1.2	25	35	–	4.0	–	1,130	–
G 4857 M	HP + Mo	0.45	1.6	1.5	25	37	–	–	Mo 1.5	1,100	–
G 4859	CT 15C	0.10	1.0	1.5	20	32	1.0	–	–	1,000	1,050
G 4868	–	0.50	2.0	1.5	30	30	–	–	–	1,100	1,100
G 4868 Micro	–	0.55	2.0	0.5	30	30	1.0	–	+ Add	1,130	–
G 4879	–	0.45	1.5	1.5	28	48	–	5.0	–	1,150	1,150
G 4879 Micro	–	0.50	1.0	0.75	28	48	–	5.0	+ Add	1,150	–
ET 45 Micro	–	0.45	1.6	1.0	35	45	1.0	–	+ Add	1,150	1,160
ET 45 LC	–	0.13	0.8	1.5	35	45	0.8	–	+ Add	1,100	–
HT E	–	0.45	–	–	30	45	0.5	–	+ Add, Al, Fe	> 1,150	–
H 101	–	0.13	1.3	1.5	25	37	0.6	–	–	1,000	–
H 101 Micro	–	0.13	0.5	0.5	25	37	0.5	–	+ Add	1,050	–
ET 35 Co	–	0.50	1.2	1.2	29	35	–	5.0	Co 15	1,175	1,200
ET 50 N	(A560) IN 657*	0.10	0.5	0.5	50	Bal.	1.5	–	–	950 ***	1,050

* Trade mark INCO family of companies ** In acc. to SEW 595 and EN 10295 *** In fuel ash corrosion environments

Technological advantage

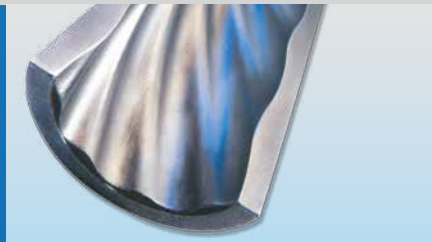
Innovative materials that generate added value

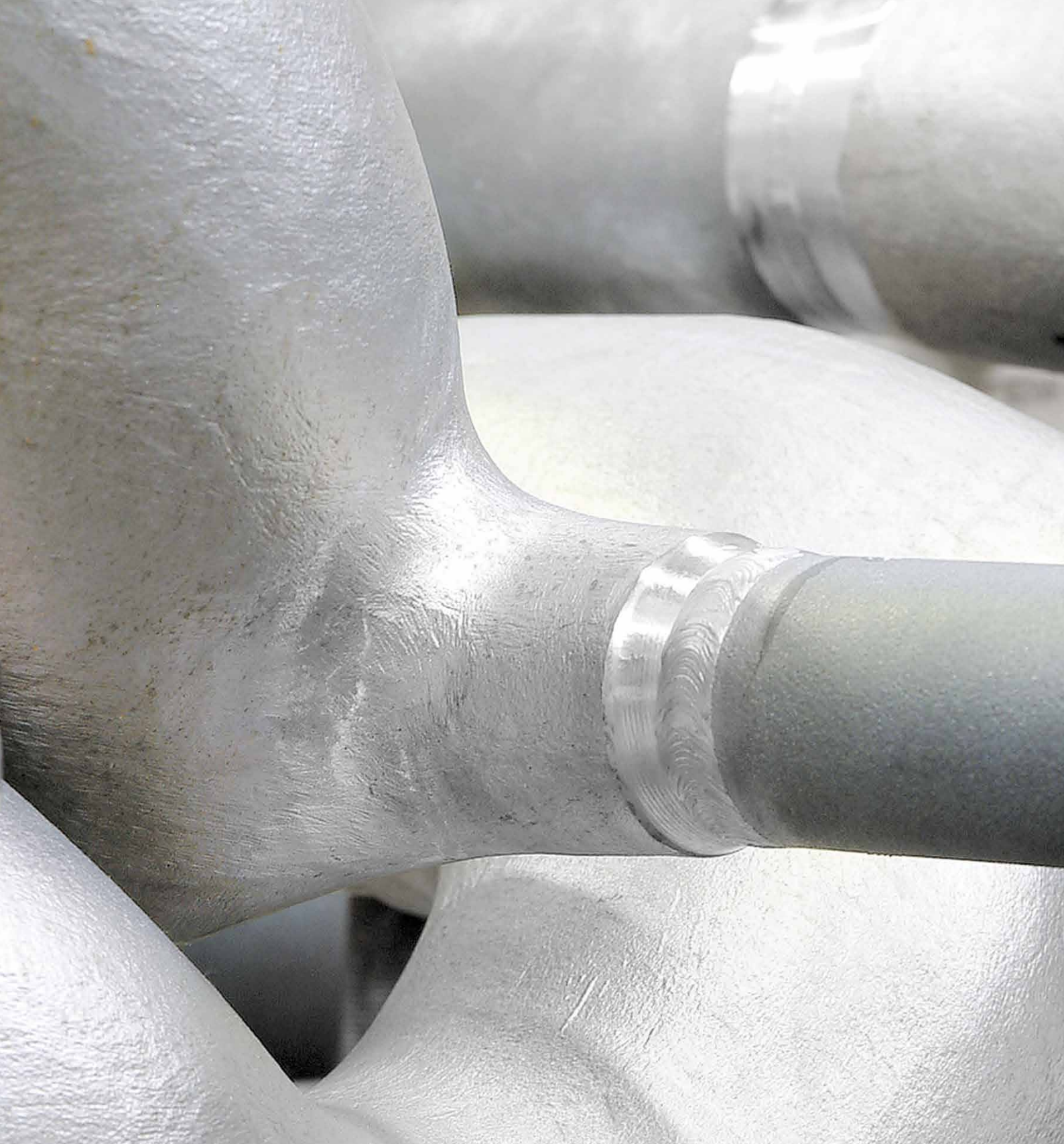
S+C operates one of the industry's largest research and development departments and has unrivalled and unique technical equipment and expertise.

We use this department to continually improve our materials and products and their performance. This is particularly relevant for the two principal materials of our Centralloy® family: Centralloy® HT E for steam crackers and Centralloy® G 4852 Micro R for steam reformers.

Further product innovations are SCOPE® and SuperBent®. SCOPE® tubes feature inside profiling which enables considerable higher heat conductivity (heat transfer), thus increasing furnace productivity. The SuperBent® technology enables extremely tight bending radii on centrifugally cast tubes, which replaces traditional cast fitting technology.

Furnace Types			
Steam-cracker	Steam-reformer	Outlet-Systems	Furnace Support Components
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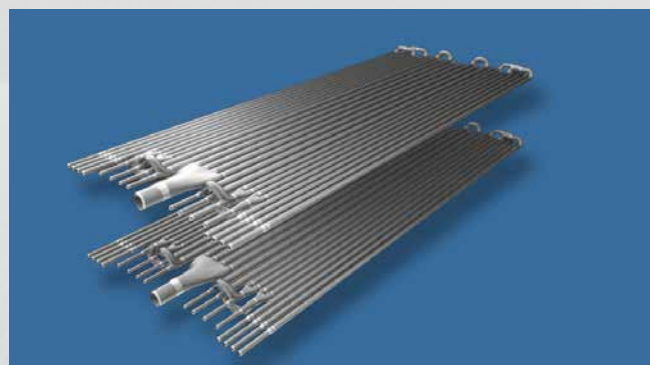
Solutions for steam

Coke formation under control

In a typical steam cracker process environment, the formation of coke in the radiant section is a complex and significant problem. Our solution: Centralloy® HT E. Thanks to the precisely controlled composition of this alloy it forms a tightly sealed, “self-healing”, oxide layer which acts effectively to limit the formation of coke and subsequent carburisation.

S+C Products for steam crackers

- Radiant section coils
- Gas leakage collectors
- Burner tips
- Transfer lines
- Thermowells

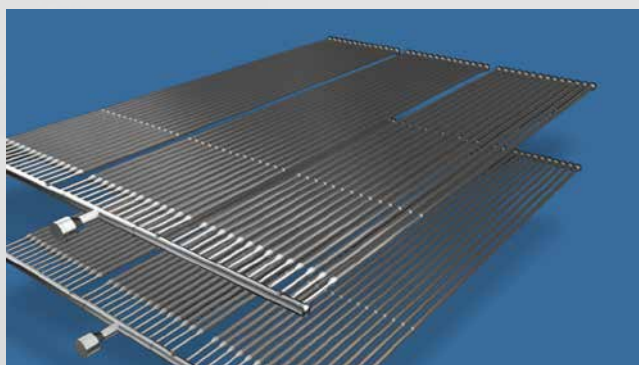


Recipes against creep

Whilst there are several different types of primary reformer furnace, in all cases the radiant sections contain large numbers of vertically suspended centrifugally cast tubes. It is exactly here that Schmidt + Clemens becomes prominent. Our centrifugally cast tubes manufactured from heat-resistant materials withstand the ever more demanding operational conditions in primary reformer furnaces. This is primarily a result of our continually improved tube materials which repeatedly set new standards. One example of this is our Centralloy® G 4852 Micro R material. Introduced in 2005 as a material innovation, today it has become a standard in many plants.

S+C Products for steam reformer

- Reformer harps
- Collection systems
- Thermowells
- Reformer tubes
- Pigtails



crackers and steam reformers

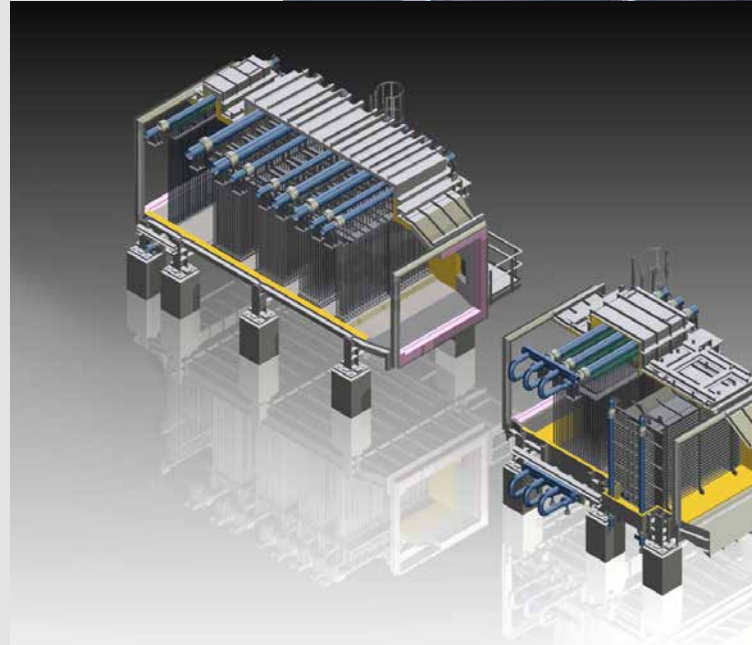
S+C products and services for the petrochemical industry

S+C supports you when designing convection boxes. Based on your specifications we can determine both the technology and geometry of your system. Our project management team will ensure that all required components are available on schedule. Highly qualified welders and technicians assemble the individual components to complete the convection boxes local to your plant site. Conclusion: “made by S+C” ensures that you receive top quality products, from a single source anywhere in the world.

However, our service does not stop there. We support you around the world when welding demanding material combinations or aged materials and offer you the complete exchange of plant modules. From shutting down to starting up your plant, we assume responsibility for all necessary activities and supply the required equipment. Removal and re-installation of radiant sections or convection boxes, fireproof work and catalyst replacement for reformer tubes is carried out on time and under strict adherence to local and national safety requirements.

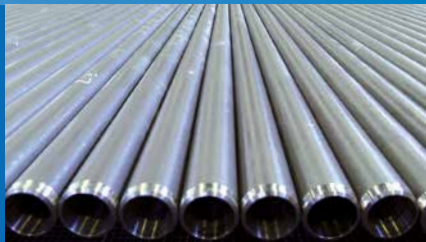
S+C products and services for the convection boxes

- Engineering
- Project management and construction site management
- Tube sheets
- Tube bundles incl. finning
- Tube connections
- Steelwork construction
- Fireproof materials





Service provider





With an international network of production plants and sales offices we are a global top player in our business field.

S+C products are exported to over 85 countries for use in ethylene plants, refineries, ammonia, methanol and direct reduction plants worldwide. Our customers benefit from one of the most comprehensive supplier networks in the petrochemical business.

Known as a consistently reliable business partner, we ensure fast and customer focused solutions to your changing requirements.

At S+C service starts way ahead of any order or production steps: it ranges from in depth advice on materials through to different casting technologies. For decades S+C products have been providing value in plants around the world. We also have a long history of assisting customers to effectively manage their emergency situations whenever and wherever these occur.

-  Production sites
-  Sales offices

Global presence

We keep our word

S+C is well aware of the increasing demands on product quality and reliability.

We combine high quality products with efficient and reliable services to satisfy these demands right from the very beginning. Our customers can enjoy the service of a dedicated account manager, who supports the complete manufacture and delivery processes so that you can be sure to get personal and corporate satisfaction.

Ongoing investments in Research & Development as well as our employees training, ensure that we work according to the latest technical standards.

Accordingly we are well equipped to identify the critical points in your plants and processes and offer the best possible solutions. Whatever the task, working together, we can find the best possible solution for your application.





Partnership activities





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It is now up to you

Schmidt + Clemens meets and satisfies the growing challenges in the petrochemical industry. Work with us and experience how satisfying, cost effective, and reliable a cooperating partner can be. Let yourself be convinced by our technologically advanced product alternatives.

Hotline: +49 2266 92-258

We are ready