



A DIVERSE RANGE OF PURE QUALITY





Jacobi Carbons has continuously evolved in recent years. But one thing has remained constant: We always offer the highest quality products and services in the business. That is also why the past decade has been the most successful in our long history. At Jacobi we take great pride in knowing that we have the best professionals in the industry – people who strive, in close co-operation with our customers to resolve the challenges they face both in research and out in the field.

Our company has grown, and will continue to do so. In 2011 we acquired PICA, thus expanding our product offering, manufacturing and R&D capability.

With our significant production facilities in France, Germany, Italy, USA, Vietnam, Sri Lanka, India and China, Jacobi has increased its supply capacity and gained better access to new exciting carbon products and raw materials. Today we are the largest coconut shell activated carbon manufacturer in the world and as a Swedish company, environmental responsibilities are taken very seriously. Our heritage is important: the head office is still located in Kalmar, Sweden, but today we are local and global. Further, it is by listening to customers, suppliers and other business partners that new ideas for improvement constantly emerge. Ideas that you can be sure will help us to keep our promise of delivering the best products available. Anywhere.

YESTERDAY

Jacobi is now a major global player. The secret of our success has been to constantly keep an eye open for new business opportunities. But it all started in 1916, when Ferdinand Adolf Wilhelm Jacobi established a company in Sweden.

The business idea of the newly arrived German immigrant was simple. He should act as the distributor within the Nordic region for products manufactured by German chemical companies. One of these companies, produced a versatile adsorbent based on natural raw materials, known globally as activated carbon. This material was quickly adopted in a wide range of applications: from production of potable water to the control of solvent emissions to the atmosphere. In 1965, the Jacobi company became the distribution partner for this material and established a dominant position in the region. Then, when the manufacturer stopped production in the mid-1980s, the company seized the opportunity and started to manufacture and distribute the product itself. An ambitious expansion programme has helped the company go from strength to strength ever since.



Our founder Ferdinand Adolf Wilhelm Jacobi.

By listening carefully to our customers, our suppliers and other business partners, we constantly get new ideas for improvement. As we employ the best professionals in the business we always trust their insights: we have our ear to the ground.





TODAY

The last 10 years have been a period of dramatic expansion of our international business. The company has concentrated on improving the production, development and distribution of activated carbon, based on a wide range of raw materials, in multiple sites around the world.

Carbon is the most common element on the planet. And it is by building up a global network of processing plants close to our raw materials, that we can now ensure efficient delivery to all our customers. Jacobi has primary production (activation) facilities in key manufacturing locations around the world; in Sri Lanka, India and Vietnam (all coconut shell based products) and in China (bituminous and anthracite coal and soft wood products). The location of these facilities close to the raw material source, optimises production and logistics operations and ensures that we can serve the market directly or through our network of local distributors.

In our main operating regions of Americas and EMEA (Europe, Middle East, Africa), the primary manufacturing sites are complemented by activated carbon processing facilities in the USA, Germany, France, UK and Italy. These operations produce customer-specific, highly technical materials consisting of blends, impregnated or further refined activated carbons to meet the most rigorous quality standards and application demands. These facilities also serve as an extension of the unique R&D activities of the Jacobi Carbons Group: to generate innovative solutions for new and envisaged applications for activated carbon.

One of the distinctive characteristics of activated carbon is its capacity to be reactivated many times. This potential has important environmental implications. Firstly, wasteful depletion of precious natural resources is avoided. Secondly, much less carbon dioxide is produced during the reactivation process. The effective reprocessing of used activated carbon minimises greenhouse gases, and reduces pollution. In recent years, Jacobi Carbons has invested substantial capital and effort in establishing reactivation facilities in the key market of North America (Louisiana) and Europe (France and Germany).

By anticipating new opportunities before they exist and by sensing future problems, we constantly increase the value to our customers, helping them enjoy the sweet smell of success.

TOMORROW

Safeguarding the planet's future is one of the great challenges of our time and one that our company is committed to. Our innovative products, created through the active involvement of our customers and stakeholders, have a major role to play.

The opportunities for the application of activated carbon continue to evolve. This is not least due to increased awareness of our ecological footprint and the need to preserve natural resources such as water and minerals. Environmentally and socially conscious manufacturing methods and sustainable raw materials are high on the agenda, and the Jacobi Carbons Group continues to invest in this area. Manufacture of products based on a well-managed supply chain and sustainably derived feedstock in developing economies means that this can be achieved at an economically viable level to allow the implementation of activated carbon systems worldwide.

In conjunction with our partners, stakeholders, employees and downstream providers, Jacobi Carbons continues to provide a socially responsible and ethically sensitive approach to its business activities.

As more applications for the recovery of resources unfold, the R&D efforts of the company are focussed on this activity to provide the consumer, businesses and governmental organisations with the tools to protect our world.



The use of coconut shell represents a net reduction in atmospheric carbon dioxide (CO₂) levels.

The preservation of natural resources such as water will be increasingly important in the future and activated carbon has a critical role in this.





QUALITY

Rigorous quality control is the cornerstone of our success. We pride ourselves on our precision, accuracy and adherence to recognised international standards. Our skilled staff and state-of-the-art facilities ensure customer satisfaction.

Activated carbon requires precise parameters to be achieved and maintained in the manufacturing process. This can only be achieved by the use of efficient quality control systems. These systems utilise on-site laboratories for quality control. Using internationally recognised standards and test procedures developed specifically with customers, we ensure that the product delivered is according to specifications at all times. These systems are supported by advanced use of Statistical Process Control (SPC) and state-of-the-art, modern manufacturing equipment, installed and maintained by our own staff. Furthermore, these facilities are routinely calibrated by 'round robin' testing from both in-house and third-party laboratories.

The Jacobi Carbons Group is ISO-certified for both quality and environmental standards.

A MANUFACTURER ALIGNED TO THE MARKET

Our in-depth knowledge means that a broad range of applications for carbon are catered for by our products. And thanks to our customer feedback, exciting new business possibilities are constantly emerging. This two-way process leads to continuous improvement and an enhanced customer experience.

Jacobi Carbons has established a unique position in the activated carbon market. Our broad product range covers every known application. What is more, our network of manufacturing sites ensures complete control over specification parameters.

We conduct our operations with an eye for detail. From the visual impression given by our documentation through to the attention taken over the packaging of our goods, Jacobi Carbons ensure that every customer transaction is completed with the maximum care possible. By supporting our products with a global IT platform, and fully integrated manufacturing, sales, logistics and quality procedures, we are the leaders in our approach to the activated carbon business.

Nothing escapes our attention. That is how we constantly succeed in offering the highest quality products at the lowest cost in the business. Seeing is believing.

WHAT IS ACTIVATED CARBON?

A complex manufacturing route to produce a highly efficient and versatile product.

Carefully selected raw materials are processed at low temperatures (200–300°C) to remove natural volatile components and residual moisture levels. This is the initial carbonisation step. The resulting carbonised product is then subjected to one of two manufacturing routes; either chemical activation or steam activation.

In the chemical activation route, the feedstock material is intimately mixed with an acidic activating agent which assists in forming the porous structure of the activated carbon. This mixture is heated to a temperature of 400–600°C, then washed to remove and recover the activating agent. The resulting material is then sized according to customer requirements.

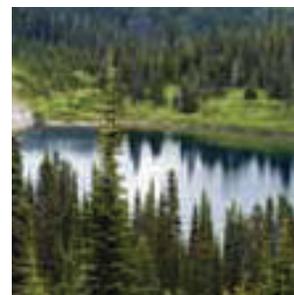
In the steam activation route, the carbonised product is heated to high temperature (800–900°C) in a carefully controlled atmosphere, and the presence of strictly measured levels of steam. This process develops the porous structure of the activated carbon. Material is then sized for supply to customer's requirements.

The product is a powerful adsorbent with a range of pores of molecular dimensions. Under a scanning electron microscope the pore development is clearly visible. This high concentration of pores within a relatively small volume produces a material with a phenomenal internal surface area (800–1600 m²/g BET N₂).

It is this vast internal surface area that gives activated carbon its unique ability to adsorb a wide range of compounds from both the gas and liquid phases. The target compound is contacted with the activated carbon and subsequently diffuses into the internal pore structure. The internal surface area of the activated carbon exhibits forces which lock the compound into the pore structure. The process of transferring molecules from the gas or liquid phase on to a solid surface is defined as adsorption.

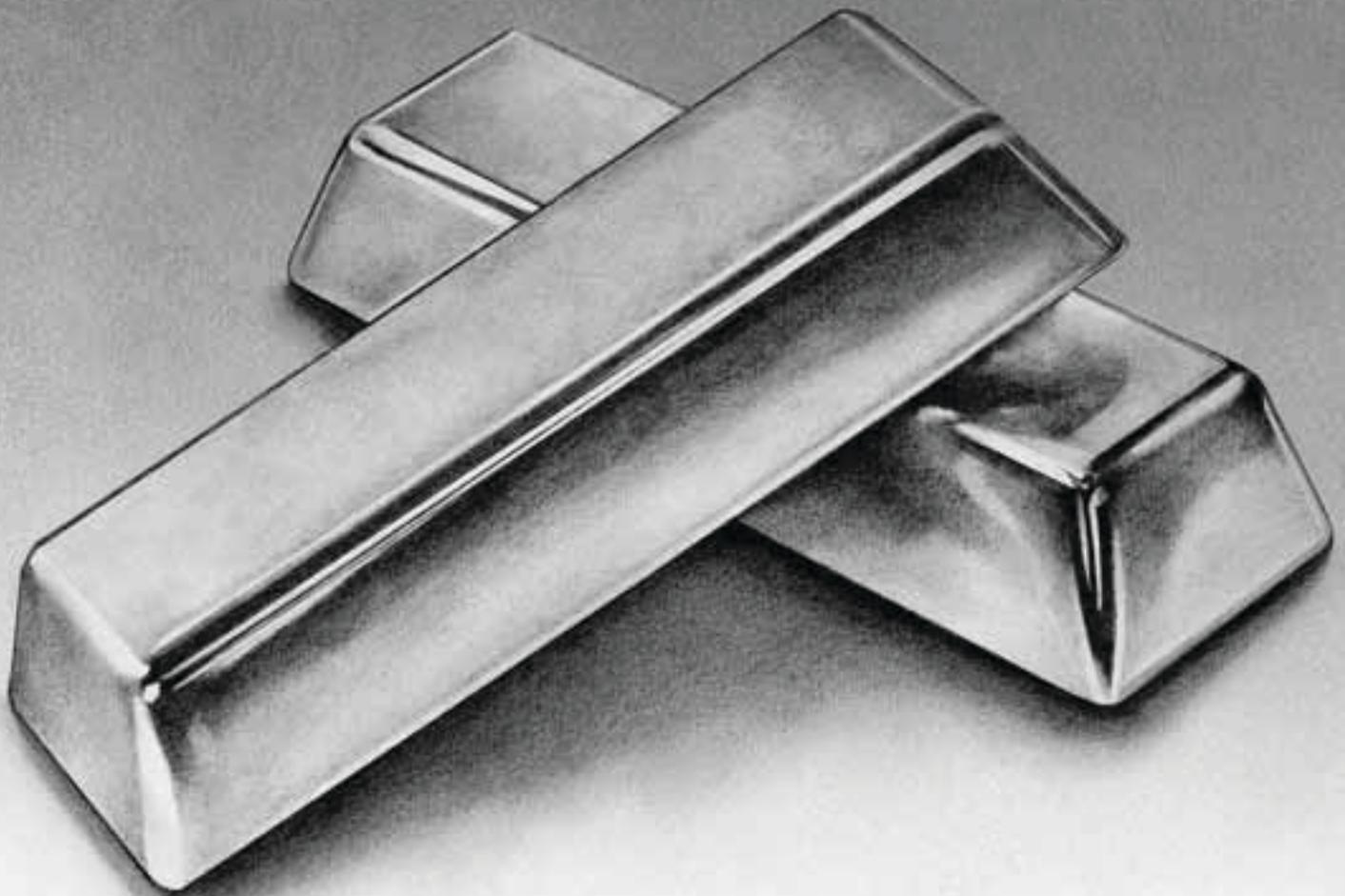


Lignite, bituminous and anthracite coals offer a versatile product for the treatment of gases and liquids.



Other renewable sources such as by-products from wood processing are used to produce specialised activated carbons for the food, beverage and pharmaceutical markets.

The highly versatile nature of activated carbon allows its use in a multitude of applications, from water treatment to the recovery of precious metals, such as gold.



PRODUCTS

The versatility of activated carbon is endless. From gold-mining to water purification: they cover a whole variety of functions and each is customised for a specific need. There are no exact figures on the total number of global uses for activated carbon. There are however over 1000 known applications in use today. These range from the cleaning of water and gases, to the recovery of precious metals, the production of foodstuffs and personnel protection. Jacobi Carbons classifies its products according to the applications for which they are intended, and within each family of products there are different grades for specific tasks. The six families of product are:

AQUASORB

Granular, powdered and extruded activated carbons for the primary treatment of water, recovery and recirculation of process liquids, and treatment of waste liquid streams.



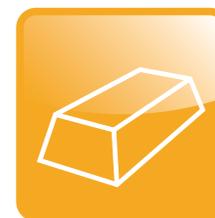
DIOXSORB

The specific treatment of off-gas streams associated with the incineration of domestic, municipal, clinical and industrial waste streams. The generation of dioxins, furans and heavy metals from these processes demands rigorous cleaning before emission to the atmosphere, and this is achieved by the addition of activated carbons to the gas cleaning system.



GOLDSORB / PICAGOLD

The reclamation of precious metals from low-grade or waste ores that cannot be processed using conventional extraction methods. Gold, silver and platinum can be reclaimed efficiently and cost-effectively using activated carbons which are themselves recovered and re-used in the process.



ADDSORB / PICATOX

A range of premium activated carbon products with enhanced capacity, retentivity or selectivity for pollutants that are difficult to remove using conventional activated carbon products. Compounds that are difficult to adsorb are combined with reagents placed on the carbon surface, and mixed in a chemical complex which fixes them to the carbon surface. The extensive surface area provided by the activated carbon allows this to be achieved at very high capacities.



ECOSORB / PICTACTIF

Granular and extruded activated carbons for the purification of process gases, vapour phase pollution abatement, and industrial gas production applications.



COLORSORB

In addition to the specific removal of colour from foodstuffs, chemicals and pharmaceuticals, this range of activated carbons reduces undesirable or toxic by-products from the manufacturing process.





The ability to recycle spent activated carbon has an important ecological and economic benefit.

REACTIVATION

We take our ecological responsibilities very seriously. However recycling is not only environmentally friendly – it's also a very cost-effective option for our customers.

The unique characteristic of activated carbon is that it can be easily recycled and recovered, allowing the reuse of an otherwise expensive resource. Jacobi Carbons operates modern purpose-built facilities in Europe and North America for the recycling of activated carbons in granular or extruded forms.

In the reactivation process, the activated carbon passes through a furnace with carefully controlled temperature zones, to effectively liberate and destroy the adsorbed compounds present. The system is highly efficient as it uses these compounds as a fuel source. The resulting product can often recover almost its entire original adsorption capacity and can therefore be then returned to the process from which it originated.

This reactivation process uses existing material and the client has therefore only the cost of the processing operation, and transportation to and from the regeneration facility to consider. This makes it a very attractive option.

By taking spent activated carbon and subjecting it to a process of reactivation, the product can be recycled numerous times, repeatedly renewing the resource once again.



SERVICES

Flexibility and cost-effectiveness characterise our service packages.

ADSORPTION FILTERS

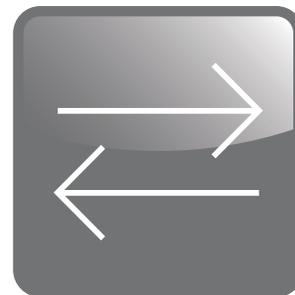
Supplying activated carbon products is only part of the service package we offer our customers. In certain applications, it is common for the adsorbent to be used in filtration equipment specially designed for that specific application. In other cases, modular filtration devices can be utilised to improve flexibility of operation and reduce capital costs. Jacobi Carbons provides the following units on either a purchase or rental basis.

AQUAFLOW

Modularised liquid filtration devices for treating flows from 1–50 m³/h per hour, utilising granular or extruded activated carbons in fixed beds. Such equipment can be rapidly deployed to the client's premises. Typical applications include the treatment of process effluents, contaminated groundwater and in-process liquors.

ECOFLOW

Mobile adsorption systems for the purification of air and gases, providing a flexible solution to a variety of abatement problems. The modular design allows multiple units to be used in parallel to increase flow handling and reduce pressure drop, resulting in low energy consumption. Units are available for the treatment of flows up to 60,000 m³/h per module and 25 m³ of activated carbon per module.



A versatile range of modular filter units and customer specific service packages assist our clients to achieve their treatment objectives.



Spent activated carbon is transported to the reactivation centre in bulk, UN approved container or in the treatment vessel itself.

VESSEL EXCHANGE PROGRAM

Our on-site replenishment service ensures minimum disruption. This gives our customers the advantage of knowing that their operation will always continue to run smoothly.

Activated carbon is often used in treatment processes where the frequency of media replacement does not coincide with maintenance periods, or where staff reductions make in-house maintenance difficult. In such cases, the installation of a completely replenished unit is an attractive option. To assist our clients, Jacobi has developed an exchange service where the spent filtration device is substituted for one containing fresh activated carbon. The old unit is replenished on- or off-site, providing minimal process disruption.





A full equipment range permits the efficient management of site operations.

Handling spent activated carbon requires extreme care and attention to the potential risks arising from the pollutants it has treated. Jacobi Carbons operate teams of highly skilled operatives to undertake this service for our clients.

MEDIA HANDLING

We are proud to employ the best professionals in the business. And our highly trained staff together with modern equipment guarantee effective maintenance and replacement options.

While in service, activated carbon media will require periodic maintenance; be this full replacement or reactivation. This process may be required at set intervals, or be dependent on the performance of the system and the application in which it is used.

Jacobi Carbons is able to provide ongoing after-sales support to conduct regular product analysis, assess the condition of the activated carbon in service, and assist in a decision on the most cost-effective regeneration option.

In addition, we provide a comprehensive package of equipment and staff, skilled in the removal of spent activated carbon from all types of filtration systems. With minimal input from the client, our service team can undertake rapid, efficient removal and refilling of adsorbers, thus causing as little disruption to the operation as possible. Our activities are self-contained and the spent product is transferred to closed containers for transportation off-site. The new or reactivated product is quickly transferred to the filter and prepared for service using efficient and purpose-built equipment. Suitable for all granular and extruded activated carbons, this operation can be successfully implemented on a range of systems, including municipal water works, VOC abatement systems, process water treatment facilities and wastewater plants.

MANUFACTURING OPERATIONS

Jacobi Carbons is the world's largest manufacturer of coconut shell based activated carbon. The broadest range of products in the industry is provided with products produced from coal and wood raw materials. This diversity allows us to serve the multitude of applications that exist for activated carbon today and in the future.

As a manufacturer we fully understand our products. By selecting the type of activated carbon that is right for the application, and utilising our highly flexible production platform, we provide an optimised solution to our customers. With a complex permutation of product characteristics to choose from, Jacobi Carbons has the capability to manufacture the defined activated carbon for the application intended.

In Jacobi Carbons facilities we secure the supply chain by integrating raw material processing with our product manufacturing operations. This is a unique position that ensures our supply pipeline is always open.

We operate manufacturing facilities using a wide geographical footprint. Jacobi Carbons has twelve, wholly-owned production facilities on three continents. This provides unparalleled security of supply to our customers mitigating risk and managing fluctuations in our client's production demands. Further, our proximity to market allows the use of fully optimised logistics routes and 'just-in-time' delivery programs.

Whatever our client's product demands are; Jacobi Carbons is both flexible and versatile to meet them.

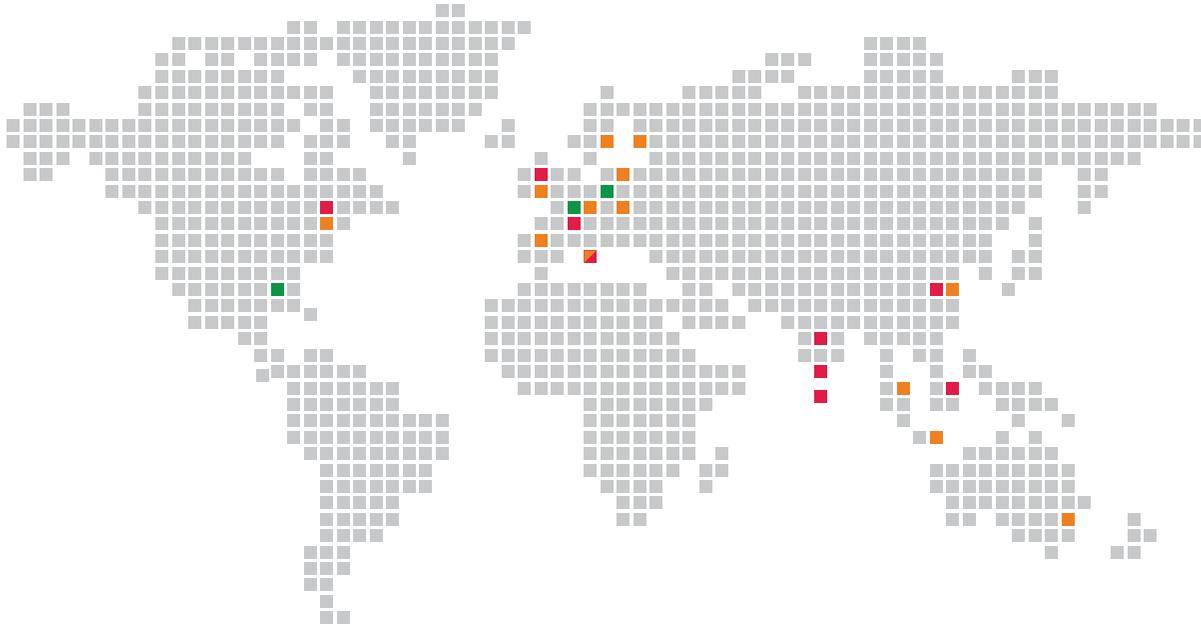


With twelve wholly-owned manufacturing sites on three continents, Jacobi Carbons uniquely provides secure, high quality and precise activated carbons on a global scale.



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MANUFACTURING PLANTS

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SALES OFFICES

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REACTIVATION PLANTS

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