13. Carburising and carbonitriding
Our CARBOFLEX® technology is designed to improve the quality and uniformity of your carburising and carbonitriding furnace atmospheres. CARBOJET® offers additional speed and quality gains by increasing the diffusion of carbon to the substrate.

14. Nitriding and nitrocarburising
We offer reliable gas supply solutions for operations involving nitriding and nitrocarburising processes.

15. Sintering
Our new SINTERFLEX® technology controls the carbon potential of your sintering furnace atmosphere to produce body parts with complicated geometries at the right carbon concentration. Continuous monitoring optimises your sintering results. This energy-efficient solution also supports the hardening step with impingement cooling.

16. Thermal spraying
Thermal spraying is used to improve wear, heat or corrosion resistance. To structure surfaces with fine- to medium-sized properties. Under our LINSPRAY® brand, we offer the full range of equipment, gas mixtures and supply systems for all spraying needs, also supporting body manufacturers with application know-how and consulting.

17. Neutral hardening
We can help you improve the quality of your neutral hardening atmosphere with our CARBOFLEX technology. To increase your efficiency even further, you can rely on our CARBOJET solution to circulate your furnace atmosphere more uniformly.

18. Annealing
Our experts can help you improve the quality of your annealed body parts and reduce running costs with our HYDROFLEX and CARBOFLEX technologies. And our CARBOJET solution can improve productivity and efficiency and further enhance both your atmosphere composition and its distribution.

19. Sub-zero treatment
Our CARBOFLEX® furnaces and technologies are ideal for sub-zero treatments. Using the effective cooling power of liquid nitrogen, we offer standardised solutions combined with mechanical engineering.

20. Pre- and post-weld cleaning
A non-abrasive cleaning procedure, carbon dioxide blown by liquid nitrogen, reduces cooling costs compared with mechanical freezing equipment.

21. Pre- and post-bond cleaning
Although bonding is a faster, more effective way of joining different materials such as metals and plastics, it presents more complex cleaning challenges. Carbon dioxide cleaning is the best way to remove bonding oil in a clean, efficient and all-around contact.

22. Infrastructure cleaning
Dry ice blasting with carbon dioxide pellets or snow is the ideal way to maintain your production infrastructure such as ventilation systems. Our CRYOCLEAN® solution is non-toxic, non-abrasive and easy to automate so that you can accelerate and simplify regular maintenance.

Getting ahead through innovation.

With its innovative concepts, Linde is playing a pioneering role in the global market. As a technology leader, it is our task to constantly press the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde offers more; the create added value, clearly discernible competitive advantages and greater profitability. Each concept is tailored specifically to meet our customer's requirements – offering standardised as well as customer-specific solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow's competition, you need a partner by your side for whom top quality, process optimisation and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

Linde – ideas become solutions.
Supporting car body manufacturing processes.

Defining driving dynamics

The car body, including the chassis, plays a defining role in vehicle dynamics, safety performance, general comfort and fuel efficiency. These demands can often be best met through the tailored application of different new materials – often in combination of designs conditioning high strength steels and lightweight alloys, for instance. In general, these materials come with new manufacturing processes and technologies, they also present new challenges for various metal fabrication and heat treatment steps, including cutting and joining.

Putting our expertise to work for you

At Linde, we have seen, tested, and applied expertise to the various gas enabled production steps involved in fabricating car bodies. What’s a book without understanding of the latest methodologies and processing challenges, our application engineers are committed to serving you with a broad range of know-how and support. Our broad portfolio of gases, gas mixtures, supply solutions and gas management services covers everything from welding, cutting and heading through brazing and tempering to thermal spraying and heat treatment. We also offer effective cleaning solutions before and after processing. Since we have a comprehensive know-how in all these technologies, they also present new challenges for various metal fabrication and heat treatment steps, including cutting and joining.

Partner of choice for the automotive industry.

Car body manufacturing

1. Laser cutting

Most of the flat-sheet, high-strength materials in a car such as steel, brass and plastics are processed with lasers. Using LINAB® lasers, we offer everything from cutting to joining with INNOVAGON® welding systems. Laser beam technology is the perfect fit for high-precision tasks with high flexibility and quality benefits of laser cutting.

2. Oxygen cutting

Oxygen cutting using proper gas – in some cases – actually enables improved metalworking of the material in the car body. The key advantages of oxygen cutting are that it is a clean and flexible process. With our oxygen cutting head and the world’s leading cutting matrix, we can deliver a high material quality within the process. This makes oxygen cutting a suitable choice for a range of cutting applications.

3. Plasma arc cutting

Plasma arc cutting is a cost-effective and versatile option for customizing body-in-white cuts, trimming pillars and panels, and welding all sorts of carbon steel. Our plasma arc cutting system is a perfect choice for your vehicle manufacturer. It can help you optimise productivity and cost efficiency.

4. Arc welding – carbon steels

Carbon steel is used to make various body parts. Arc welding is a reliable and versatile process for joining all sorts of carbon steel. To ensure that the welding process is successful, we can advise you on the process technologies best suited for your car body.

5. Arc welding – aluminium

Our NVENG® series is the perfect choice for direct spot gas (DSG) and tangent electronic gas (TEG) welding of high and extreme strength aluminium alloy profiles. We can advise you on the process technologies best suited for your car body.

6. Arc welding – stainless steel

As far as stainless steel welding and joining is concerned, we offer a wide range of INNOVAGON® welding solutions and INNOVAGON® welding gases. Our experts can advise you on the quality of your car body by enhancing welding and joining.

7. Laser welding

The speed, quality and precision advantages of laser welding make it an extremely attractive option for weld assembly, tailored blanks and body joints. The SMARTWAVE® series of laser processes was designed specifically to improve welding speed and quality.

8. Skiving fitting

Skiving is a cost-effective and versatile option for customizing body-in-white cuts, trimming pillars and panels, and welding all sorts of carbon steel. Our plasma arc cutting system is a perfect choice for your vehicle manufacturer. It can help you optimise productivity and cost efficiency.

9. Furnace brazing

Our MILKING® furnace brazing solution optimizes your furnace throughput to achieve and maintain high throughput with optimum gas composition and consumption, thus reducing costs and improving the quality of your furnace brazing process.

10. Arc brazing

We can advise you on the arc welding through to brazing, filler wires and process parameters guaranteed to maximize your benefits from arc brazing. These include information on different cleaning processes and the right shielding gas for your specific application. Our experts can advise you on the process technologies best suited for your car body.

11. Laser brazing

Laser brazing is used for joints in the visible area of the body such as the bonnet lid. Laser brazing with coated steel plates does not require a gas, but aluminium and alloyed steel require the use of gases. We can support all laser brazing needs.

12. Tempering

Tempering involves heating hardened or martensitically transformed parts of the car body to a predetermined temperature in order to soften them and enhance residual stress. We can support all your tempering needs.