

Welding & The Automobile Sector



ADOR - GTAW inverter ChampTig 300AD
And Champ Pulse 500



The Automotive Industry is one of the largest in the world and accounts for 7.1 per cent of the Indian GDP. At around USD 93 billion it amounts to approx. 30% of the turnover of the manufacturing sector and is a very important component of India's growth story. India manufactured more than 25 million automobiles in FY17 and is a prominent auto exporter with strong export growth expectations for the near future.

Around 47000 crores have been pumped into the auto industry in the last year alone and that is nearly a third of the current Indian automotive market. Car makers, both domestic and foreign, have lined up investments of almost \$10 billion or nearly Rs. 60,000 crore over the next few years.

Several initiatives by the Government of India and the major automobile players in the Indian market are expected to make India a leader in the two and four Wheeler market in the world by 2020.

The Government plans to promote eco-friendly cars in the country i.e. CNG based vehicle, hybrid vehicle, and electric vehicle and also made mandatory of 5 per cent ethanol blending in petrol.

Reductions in the workforce over the last several years have left the industry with fewer employees to monitor welding operations and the overall shortage of skilled welders has compounded the challenge. Whereas 10 years ago a large automotive supplier may have had one welding technician for 20 robots, today that ratio has increased to as few as one welding technician for every 50 robots – or more.

The most commonly used welding methods for automotive applications include resistance spot welding, resistance seam welding, metal inert gas (GMAW) welding, tungsten inert gas (GTAW) welding as also laser beam welding (LBW), friction welding (FW), and plasma arc welding (PAW).

Ador Welding Offers a plethora of solutions through its wide range of Welding consumables, Welding equipment, Welding Automation, Plasma and Gas CNC based cutting systems encompassing most of these processes:

Auto- Exhaust applications:

The use of stainless steels in automobiles started when automobiles came to be equipped with 3 way catalytic converters to meet intensifying regulations over exhaust gas emissions. The requirement to have longer service life accelerated the switchover from hot dip aluminized carbon steel to stainless steel in this application. Today, stainless steel is used in almost all exhaust system parts from the cylinder head gasket to the tail pipe. The consumption of stainless steel in the exhaust system per passenger car varies from model to model but averages about 15kg per car. The stainless steel consumption is expected to increase in the exhaust system of diesel powered automobiles, mainly trucks, to meet the growing social demand for stricter exhaust gas emission regulations.

Exhaust system materials are exposed to a variety of harsh conditions, and must be resistant to such degradation mechanisms as high temperature oxidation, condensate and salt corrosion, elevated temperature mechanical failure, stress corrosion cracking, and inter-granular corrosion.

The exhaust gas emitted from automobiles is one cause of air pollution, and various efforts have been made to prevent this problem. One of the preventive measures is the system shown in the figure.

The components downstream from the muffler of an exhaust system must have sufficient corrosion resistance to withstand the internal attack of condensed water containing these corrosive ions and external attack of these salts. The materials mainly used for these components are low-carbon ferritic stainless steel incorporating not less than 11% chromium. The components nearer to the engine in front of the muffler need high oxidation resistance, because they are heated to about 773K (500 °C) during operation. The exhaust manifold, which is heated to the highest temperature, must possess both high-temperature strength and resistance to thermal fatigue. High-chromium stainless steel is now used mainly for these upstream components. As a result, the life of the exhaust system

