INTRODUCTION OF MODERN PAINTING AND STRAIGHTENING TECHNOLOGIES DURING BODY REPAIR

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In modern automotive service, body repair is one of the leading services in terms of volume of work, technical complexity and quality requirements. The reasons for this are not only the high accident rate in urban areas, but also the growing number of vehicles, the reduced safety margin of body elements due to lightweight materials, and stringent safety and appearance standards for cars. Modern car bodies are manufactured using high-tech materials such as high-strength steels, aluminium and composites. Accordingly, repair methods should take into account the specifics of processing such materials, including temperature control, restoration of anti-corrosion protection and preservation of geometric characteristics. Under these conditions, the introduction of modern painting and straightening technologies during body repair should take into account not only the technological process, but also the logistics of moving the car, safety, environment and comfort of the personnel.

The introduction of modern painting and straightening technologies requires a comprehensive solution to a number of problems, including optimising the layout of the production space, selecting equipment in accordance with modern repair standards and ensuring technological compatibility of all processing stages, and complying with labour protection, fire safety and environmental standards.

The straightening area is the most technically challenging area, which is equipped with benches with 3D body geometry measurement systems, spot welders, pneumatic jacks, vacuum extractors, and induction heating systems for straightening aluminium parts. The use of laser or optical technology minimises alignment errors. The appearance and durability of the coating depends on the painting and drying complex. The chambers are equipped with a laminar air supply system, temperature control, an F9 class filtration system, and automatic humidity control systems. A constant temperature and fast drying are ensured by means of infrared panels or convection drying. In the polishing and quality control area, the paintwork is finished, minor defects are removed, polished, gloss, colour matching and coating thickness are checked. We use non-contact instruments (spectrophotometers, glossometers, thickness gauges) and LED lighting with a light temperature of 5000K to detect micro-defects.

Calculations show that the introduction of a modern technological scheme can reduce the duration of body repairs by 25-30%, improve the quality of paintwork, reduce the number of rework, and increase the level of occupational safety. Thus, an efficiently designed body repair area using the latest straightening and painting technologies is not only a technically sound solution, but also an important competitive advantage for a car service company.