THE IMPACT OF CHANGES IN VEHICLE MANUFACTURING ON EMPLOYMENT AND SKILLS

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COMPÉTENCES INDUSTRIES

A CONTINUED DECREASE IN EMPLOYMENT SINCE 2008

Every year since the start of the "*subprime*" crisis, the number of employees in the vehicle manufacturing industry has declined, with the exception of a brief plateau in 2011. In total, 76,500 jobs were lost in the 2010 decade, representing a decrease of 28.7% between 2008 and 2019.
This decline is not specific to the vehicle manufacturing industry: industry in general experienced a contraction in the workforce and by the end of 2019, half of the 306 French employment zones had not recovered the number of jobs recorded at the end of 2008. However, the drop in the vehicle manufacturing industry was twice as high as national industry.
Productivity gains (growth of added value per employee) only played a role in this negative development between 2015 and 2018, and much more so among vehicle manufacturers than among equipment manufacturers; vehicle manufacturing destroyed jobs because industrial sites closed or drastically reduced their workforce and the volumes produced.

AN INDUSTRY THAT IS GRADUALLY BUILDING ITSELF UP AGAIN

Technological competition, in particular efforts in favour of electromobility (electric and hybrid vehicles) and vehicle autonomy (driving assistance – ADAS) are giving suppliers of electronic and electrical components an increasingly important role. Electronics and digital technology now carry greater weight in the sector's supply value than traditional suppliers of components such as plastics and rubber.

HIGHLY DIFFERENTIATED REGIONAL AND LOCAL SITUATIONS

Within the context of economic difficulties and the weakening of manufacturers and therefore their suppliers, different regions are not all on the same path. Brittany, Centre-Val de Loire, Grand Est and Nouvelle-Aquitaine are the regions most affected by job losses, while Pays de la Loire (-8%) and Auvergne-Rhône-Alpes (-20%) are more resistant.
Employment zones which are the historical leaders in the vehicle manufacturing industry have suffered greatly from this crisis, including those that stood out with head office and research & development functions: Paris, Montbéliard, Rennes, Mulhouse, etc. There are 150 employment zones which have lost 10 or more jobs from among those that had at least 200 vehicle manufacturing jobs in 2008.

THE IMPACT OF 2020

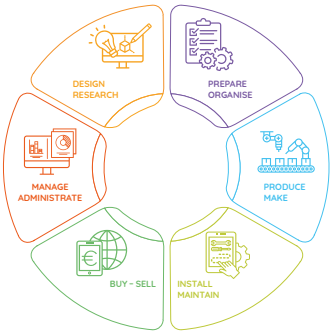
The economic slowdown at the end of 2019, environmental pressure against combustion engines, but also company mergers have led to a succession of negative announcements since January 2020. In total and based only on press and internet monitoring, 13,000 net job losses have been recorded (including tyre makers), despite installation or business development projects (ACC in Douvrin, Renault factory plant project, development of Toyota, etc.).

A TRANSFORMATION OF PROFESSIONS IN THE INDUSTRY

The study identified and described the most essential skills, now and in the medium-term, for manufacturers. They are mainly linked to the development of digital technology (software, artificial intelligence, IT security, etc.) but also electrification (power electronics, embedded electronics, electro-chemistry, production technologies) and the reduced environmental impact of the industry (decontamination, filtration, CO_2 sequestration, circular economy).

Development prospects for the professions are changing and becoming clearer compared to previous studies. In particular, the reconsideration of combustion engines is leading to heavy employment losses in mechanical engineering; on the other hand, the acceleration of investment in electrical engines and the ambition to make battery production local is boosting demand for electro-chemical or thermodynamic engineers, for example.

Professions in development and in demand for the 2020-2025 period



- **Design – Research**
  Electro-chemical engineer, Thermodynamics engineer, Materials formulator, Artificial Intelligence engineer, Mechatronics engineer, Operating safety engineer, Plastic injection moulding engineer, Automation engineer, Software architect and development engineer, UX/UI Engineer, Simulation, calculus expert, Data analyst, Data scientist, Marketing data expert, Power electronic engineer, On-board electronic engineer, Systems engineer
- **Prepare – Organis**
  Metrology engineer, Methods technician
- **Produce – Make**
  Cable fitter, Electrical controller, High-Voltage electricians, Automated production system pilotLogistics agent (internal)
- **Install-Maintain**
  Technicien maintenance
- **Manage-Administrate**
  IT security manager
- **Across-the-board professions**
  Industrial project manager
  Supply Chain engineer

STRATEGIC CHOICES TO DETERMINE THE FUTURE OF A KEY SECTOR OF FRENCH INDUSTRY

Recent developments cannot be sustained in the long-term. Vehicle manufacturing and its footprint on the national economy are lessening due to reasons that go beyond the skills' policy, which is the raison d'être of the professional branches. These reasons are multiple: fragile strategic positioning, poor cooperation between companies, difficulty to access technological resources despite competitive clusters, tax pressure and social pressure. The disadvantage of the national territory can be observed in the considerable imbalance between France and Germany in projects to install battery plants for electrified vehicles.
The study has distinguished two scenarios: the pursuit of recent trends, without any profound correction of these drawbacks, and the very fast implementation of an ambitious mobilisation and recovery strategy. This strategy would aim to relocate production volumes on the national territory and increase the flow of productive investments in the industry to France. In the first scenario, 32,000 jobs would be lost between 2020 and 2025; in the second, this decrease would be reduced to 25,000 jobs, with the workforce becoming stable and France able to envisage job creation investments (not accounted for in this scenario).
The issue at stake in the difference between these two scenarios is the long-term existence of the vehicle manufacturing industry in France as a pivotal industry in the national industrial economy. It is also, more generally, the technological future, the competitiveness and the sustainability of the other large industry sectors which share critical skills with it.

RECOMMENDATIONS

The study confirms the recommendations of the 2017 and 2018 editions and widens the scope of professional mobility to be promoted.
All of the analyses and conclusions highlight a high risk that the French vehicle industry is now at a tipping point. Consequently, the recommendations it puts forward are more about collective strategy (State, companies, social partners and branches, scientific and technological resources) than branch politics.

► Support the development of electromobility

- Development, organisation and European promotion of French R&D capacity in electro-chemistry, industrialisation of the production of lithium-ion battery cells;
- Contractualisation between the industry and French and European electronic component manufacturers;
- Coherent support for the development of a hydrogen branch (from the production of green hydrogen to its use in vehicle manufacturing and beyond), with the ambition to become a European leader.

► Reinforce the potential for skills in the medium term

- Effective promotion of training courses and vehicle industry professions, in particular in association with engineering professions;
- Large-scale reinforcement of the teaching of mathematics from primary school to develop the future pool of technical specialists.

► Consolidate and develop the industrial base of the sector

- Scaling up and targeted prospecting by research centres for SMEs, in a service offering logic;
- Forward-looking and long-term mobilisation, by equipment manufacturers and vehicle manufacturers, of SMEs with the skills and technologies required for electromobility;
- Targeted prospecting of national and foreign investments in the national territory to increase France's share in the production of specific electromobility components (batteries, power electronic components, semi-conductors);
- Reduction of tax pressure and social pressure on the sector for the same level of protection to reduce pressure on companies' competitiveness and on employment.

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