TRIGO
Global Quality Solutions

THE QUALITY CHALLENGES OF SAFE LAUNCH CONTROL IN THE AUTOMOTIVE INDUSTRY:

Overcoming Obstacles to Ensure Safe Deployment of Innovation

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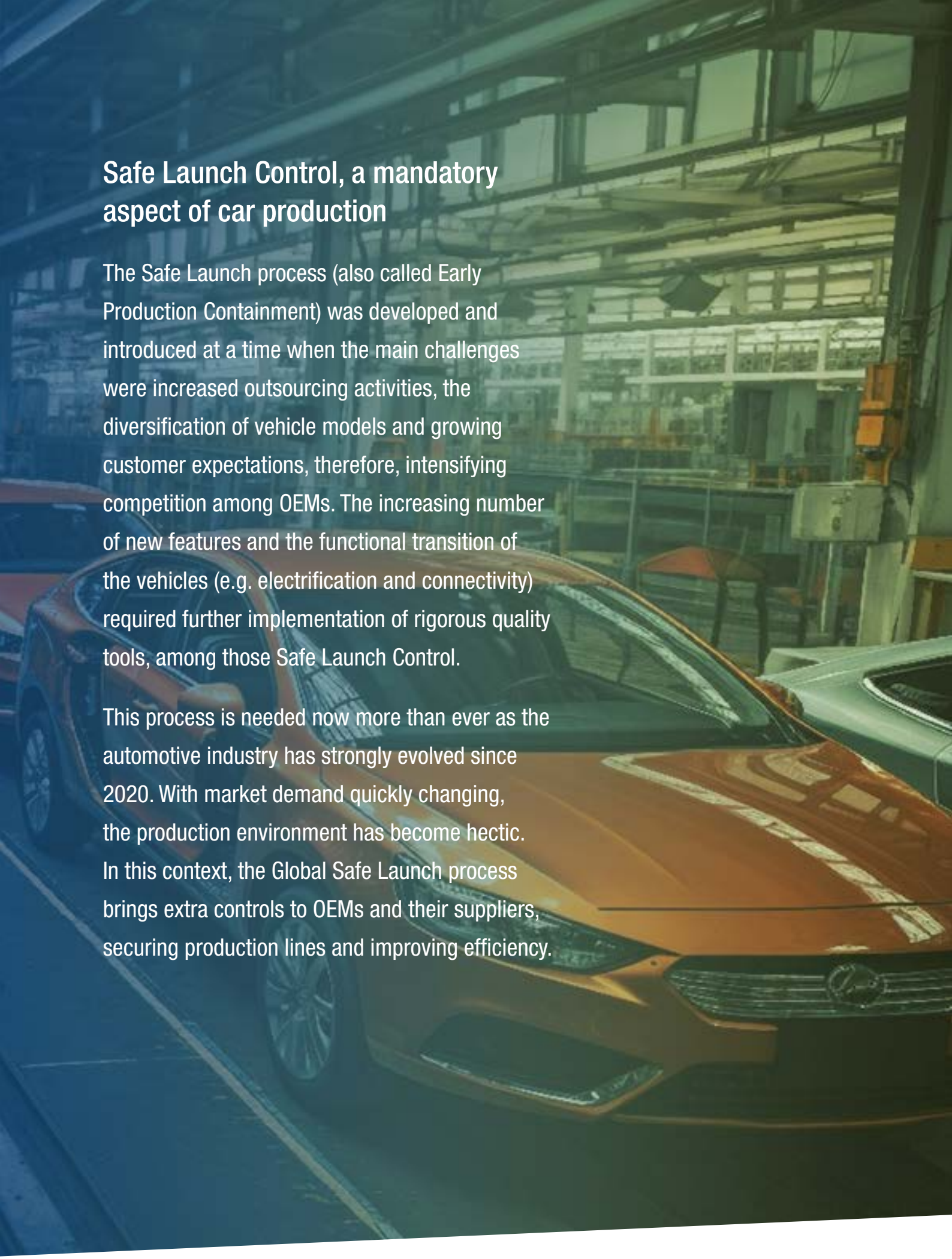


Safe Launch Control, a mandatory aspect of car production

The Safe Launch process (also called Early Production Containment) was developed and introduced at a time when the main challenges were increased outsourcing activities, the diversification of vehicle models and growing customer expectations, therefore, intensifying competition among OEMs. The increasing number of new features and the functional transition of the vehicles (e.g. electrification and connectivity) required further implementation of rigorous quality tools, among those Safe Launch Control.

This process is needed now more than ever as the automotive industry has strongly evolved since 2020. With market demand quickly changing, the production environment has become hectic. In this context, the Global Safe Launch process brings extra controls to OEMs and their suppliers, securing production lines and improving efficiency.

WHY SAFE LAUNCH CONTROL?

Safe Launch Control (SLC) consists of product and process controls, inspections, etc. that are over and above the standard production controls defined in the normal Control Plan. Deploying a Global Safe Launch serves two main purposes: avoid potential mistakes in the assembly lines and secure the processes in place at the suppliers.

Protect the customer from potential supplier mistakes

During a new model introduction, the customer plants are overloaded with potential issues and challenges, especially when all suppliers start delivering new components and the OEMs start assembling a new car. Therefore, flawless deliveries are a must and receiving only good and compliant components is essential. One reason for this is that OEMs usually have no incoming inspection at this stage and cannot afford to inspect each received component one by one.

Verify the approved process and make sure that all controls are robust enough on the supplier's side

The Safe Launch Control process validates the supplier's normal controls. It documents the supplier's efforts to control its processes by ensuring that any potential quality issues are quickly identified, contained, and corrected at the supplier's location. This requires the involvement of the supplier's top management. In addition, the Safe Launch Control process validates the component packaging and dunnage, as well as the shipping method and labeling so that it reaches the OEM facility in proper condition.

WHY IMPLEMENT SAFE LAUNCH CONTROL?

In addition to achieving specific goals and objectives, there are many reasons why Safe Launch Control is implemented. Miscommunication and inappropriate resources are often the causes of mistakes and failures in the suppliers' Safe Launch Control, examples include:

- The Pre-Launch Control Plan is not adequate and not detailed enough, letting **non-conforming parts slip out and reach the customer plant.**
- Failures might be identified but **no robust countermeasures** have been implemented to fix them.
- Countermeasures put in place are not properly verified and **the exit criteria are not reached** before stopping the Safe Launch process.
- In most cases, suppliers replace the final control point with the Safe launch containment station. This means that **no extra control is performed**. The final control is just replaced but, in this way, the entire process is not verified.

WHEN IS SAFE LAUNCH CONTROL NEEDED?

The Global Safe Launch is applicable in various cases and situations.

- Typically, it should be established **after new production parts and processes are approved**. This way the supplier gets a green light to start delivering saleable products before Start of Production (SOP) as pilot parts or even after the ramp-up phase.
- It is also relevant **when modifications are made to parts**, such as post-launch Engineering Changes.
- Additionally, it is applicable **when there are changes in resources**, such as supplier changes, or when there is a need for a sub-supplier or raw material change.
- Lastly, it serves its purpose **during significant quality issues or spills**, acting as both a containment measure and for the verification of corrective actions

PART 2: HOW TO OPERATE A SAFE LAUNCH CONTROL?

THE KEY CONDITIONS TO OPERATE A SLC

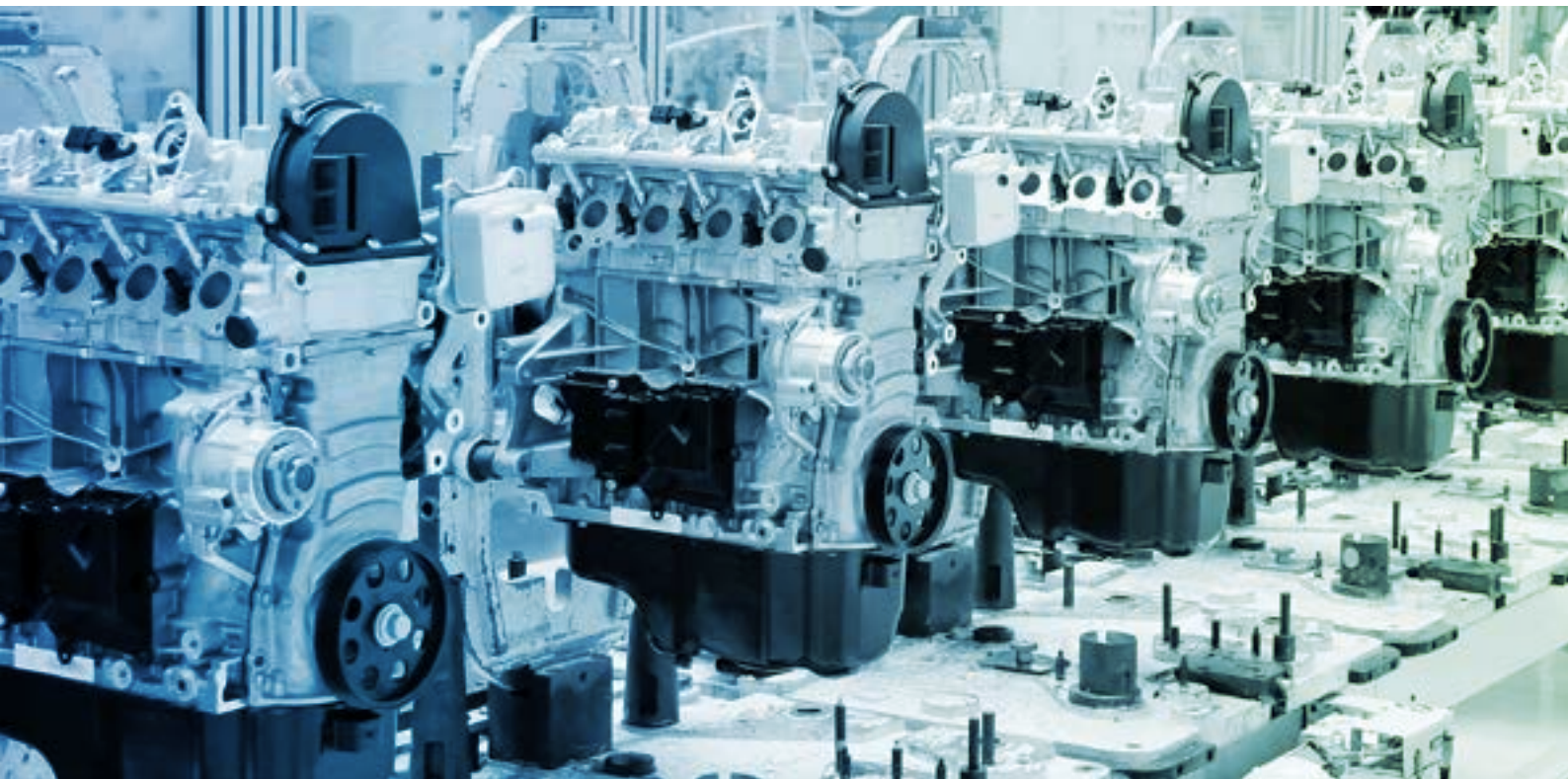
First, it is important to mention that the focus of the process should be on specific characteristics that are either regulatory, functional, important, or otherwise deemed “special”. OEMs may also specify additional requirements.

The controls used in this process fall under two categories: “reinforced” or “supplementary”. Certain controls are established during the manufacturing process, while others are added at an additional containment station before shipping (either before or after packaging).

If an additional containment station is established, it must meet certain requirements, such as proper lighting, boundary samples, evidence of trained inspectors deployed and reaction plans. Suppliers must develop a Pre-Launch Control Plan that includes all reinforced and supplementary controls, which may involve increased control frequencies, additional product audits, visual checks, traceability verifications, and increased verifications, among other measures.

The containment station must be established with extra care and under trained supervision. All executed controls are above and beyond the normal process controls and perceived as customer observation since without this extra control the nonconforming parts would reach the customer and cause dissatisfaction. Therefore, rigorous auditing of the containment station is a must.

The established containment is not a static state process. During the Safe Launch process, the controls must be permanently amended and updated based on the findings on the station and in the process. Hence, ongoing communication and feedback is necessary.



HOW THIRD-PARTY SERVICE PROVIDERS CAN MAKE YOUR SAFE LAUNCH EFFECTIVE

Some key features explain why third-party service providers help you ensure the most effective and secure way to launch your new vehicles. Thanks to their dedicated expertise and their unique perspective of the market, they give you access to a wide range of tools, processes and resources that guarantee the quality of the Safe Launch. Among them, here are the most impactful ones:

A specialized expertise

Third-party service providers often have specialized expertise in specific areas of the automotive industry, such as software development, testing, and validation. By involving these providers, suppliers can leverage their expertise and ensure that all aspects of the launch are thoroughly tested and validated to meet industry standards.

An independent perspective

They offer an independent perspective, which can be beneficial in identifying potential issues or risks that may have been overlooked by the supplier or their internal teams. This can help to improve the quality and safety of the launch, while reducing the risk of recalls or other costly issues down the line.

Resource optimization

Third-party service providers can help suppliers optimize their resources by providing additional support and expertise during the launch process. This ensures that the launch is completed on time and within budget, while minimizing the risk of delays or cost overruns.

Regulatory compliance

Third parties help suppliers ensure regulatory compliance, particularly when launching products in multiple regions or countries. Because they benefit from a deep understanding of local regulations and standards, they enable suppliers to navigate complex regulatory environments and ensure that their products meet all relevant requirements.

Overall, involving third-party service providers during a global Safe Launch in the automotive industry is a guarantee of getting access to the expertise, extra resources, accountability, a reporting system, templates, documentation, etc. to take over this extra step from the suppliers. It is important that all the tasks, actions, etc., are done in an integrated way, so that after exit criteria are met, suppliers can use it as lessons learned and continue the production in a smooth and flawless way. All the takeaways must be guaranteed and all corrections, document updates, process modifications must be understood, accepted, and integrated by the suppliers.

BUSINESS CASE: HOW VINFAST SECURED THE LAUNCH OF ITS NEW MODEL THANKS TO TRIGO

In 2021, TRIGO intervened to support the production of the new VinFast car models VF8 and VF9.

TRIGO identified and deployed capable engineers at VinFast's Tier 1 suppliers' site.

Originally, TRIGO was supposed to manage the Safe Launch (GP-12) containment stations as the suppliers opted to do it themselves. However, the suppliers had no knowledge of identifying the proper characteristics and developing appropriate Pre-Launch Control Plans. Therefore, TRIGO engineers helped to prepare them and continuously audited the proper usage.

Why is the VinFast business case so successful?

Many aspects can explain the success of the program. Among those was the key role played by TRIGO engineers.

Thanks to TRIGO's help, major supplier issues for this new model were cut by 70% from the previous models. In the model launch prior to TRIGO's involvement, there were 758 major supplier issues. On the VF8 model launch with TRIGO managing the Quality Firewall Process, major supplier issues were reduced to 27.

The team worked closely with customers and their suppliers to provide support in problem identification, robust problem solving, corrective action implementation, and verification.

They conducted process audits to ensure that suppliers were using normal and enhanced control methods to identify all potential failures. They also audited the containment station to ensure that the suppliers' operators were following the control instructions developed according to the Pre-Launch Control Plan.

Additionally, the team conducted Layered Process Audits to ensure that operators were following their instructions, thereby reducing variations. They reported all identified problems and communicated with VinFast engineers to obtain support in special cases.