



Battery Safety Throughout its Life Cycle

Labor Re-Imagined

For the Manufacturing
Transition into Electrification,
Hybridization and Autonomy

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The Problem

The imminent arrival of electric, hybrid and autonomous vehicles (hereto referred to as xEV's) will cause distinct changes in supply networks. Changes of particular importance will be to the labor workforce, particularly organized labor, as a direct result of a significant reduction of parts used in an xEV versus traditional cars. The fewer number of parts required results in lowered build complexity. By extension, the labor force required for the production of components, and ultimately, vehicle assembly, will be reduced as well.

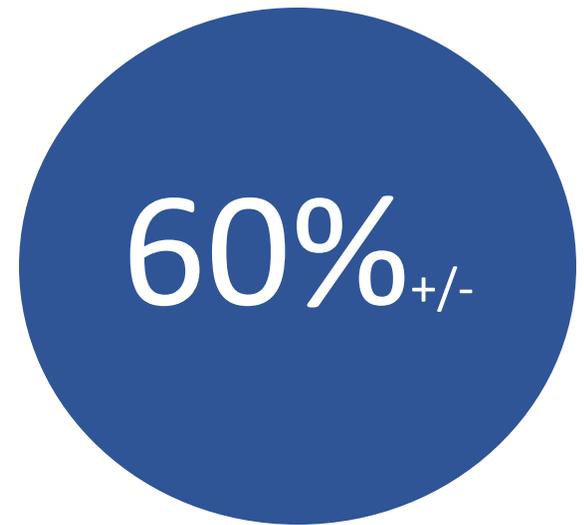
Background

As we examine the potential impact of xEV's on supply networks, organized labor and management, pain points relating to contraction in the wider manufacturing process should be considered. As hurtful as change can sometimes be, the wise tend to focus more on potential areas of opportunity; those that open new doors for the affected, versus lamenting loss. This can be considered an act of "re-imagining" labor in the xEV landscape to meet new realities. As part of this effort, we can highlight team member work characteristics that might serve as areas of improvement for both management and organized labor. These include:

Experience In the modern manufacturing environment, team members are becoming more accustomed to working with dynamic manufacturing processes. They are often immersed in material movement, quality specs and criteria, safety controls, co-working activities, and more. Multi-tasking has become a hallmark of today's workforce. Increasingly, new hires are entering the jobs space with stronger skill sets and existing hires are becoming more open to improving theirs. Ultimately, the anticipated result is a more capable, and flexible, team. The days of singularity in job roles is coming to an end. Of course, this limits the number of *jobs* in assembly processes. However, if the focus switches from lamenting perceived loss of *jobs* to re-imagining *job roles*, the opportunities to maintain labor's position in the xEV landscape begin to clarify.

Technology Tools Few assembly processes require constant interaction of team members with automatic hand tools, semi-automated robotics and fully automated equipment. As a result, team members have "freedom" and the ability to trained, or re-trained to operate, maintain, and repair the

Potential parts reduction from
traditional ICE to electric



"Yes, excessive automation at Tesla was a mistake. To be precise, my mistake. Humans are underrated..."

Elon Musk



Conclusion

The reduction of labor requirements in the era of xEV's seems inevitable. However, all is not lost on the labor front. With the xEV sea change comes the opportunity to create a highly-agile and well-trained industrial workforce. Understanding this and shaping a labor strategy to effectively meet these changes can have great benefits. The responsibility of realizing these benefits should be shared by all partners. Re-imagining labor in the era of xEV's can be positive for both organized labor or management.

impact multiple assembly processes as part of a single job. This offers great flexibility for using training and job role redesign to create efficiencies in assembly processes. The central question becomes, "Who is best prepared to meet the job requirements of the xEV landscape?" Team members can be trained to do more complex and multi-functioned tasks, thus providing an opportunity to meet the requirements of current jobs and create new ones.

Added Responsibilities As team members take on additional tasks, they increase their contribution to the complete process. As they assume responsibilities, they, by default, become more valuable. The expectation, at least in a perfect world, is that they will be compensated for their new expertise. This might be reflected in higher pay and increased job security.

Labor Re-Imagined: A Novel Approach

Traditional labor is organized around current vehicle manufacturing processes and they do a great job in these challenging environments. However, what if we imagined a re-boot, a re-launch, a re-imagining of organized labor to meet current and future challenges and opportunities presented by the xEV manufacturing landscape? We could create an environment in which the team member is properly trained, prepared, and yes, compensated, to meet the requirements of the new space.



Please forgive all errors, omissions, and mistakes. I like writing, but I'd much rather talk with you!