

Seraph.

**North America
Automotive Market
Update**

H i g h l i g h t s

The automotive industry has gone through volume reductions and difficult times before, but this time is different.

Industry

Current (IHS) projection of 14.7 Mio vehicles is causing suppliers, who budgeted for 16.7 Mio to delay or stop capital and employee investments; thereby **creating risk for OEM launches**. Seraph estimates 13.5 Mio for 2022.

Competition and technology are driving industry transformation. The transition to EVs creates a portfolio planning challenge and brings more complexity for automotive OEMs. By 2030 approximately 35% of NA production will be EVs - 6X the growth forecast of the number of BEV models within 5 years.

Planning and preparing the workforce for an **increasingly automated future** is key for success.

OEMs report a **4-5x increase of critical suppliers** within their overall supply base and unpredictable drops in volume will continue to cause strain on the industry.

Suppliers' main problem revolves around profitability . The lack of price increases allowed by the OEMs and the complexities associated with achieving operational efficiency make profitability extremely difficult. Intuitively, **cost cutting and improving efficiency tend to be focal points**. Still, efficiency is at its lowest levels and purely cost cutting to profitability is not going to be enough.

Seraph

Seraph has assessed over 50 suppliers in 18 months. Our team has gathered a **deep, data driven understanding of the current condition of the Tier market**. Additional data, which further solidified our perspective, was derived from multiple suppliers with the deployment of Production Net, which allowed maximum daily transparency.

Leadership and lack of qualified resources are the main factors impacting efficiency and program launch readiness.

Seraph has developed structured, robust processes to **create sustainable value, operational performance improvement, and improved capacity and utilization**. We understand that project clarity is supported by developing a clear scope of work so that parties can align on KPIs, and **Payback**.

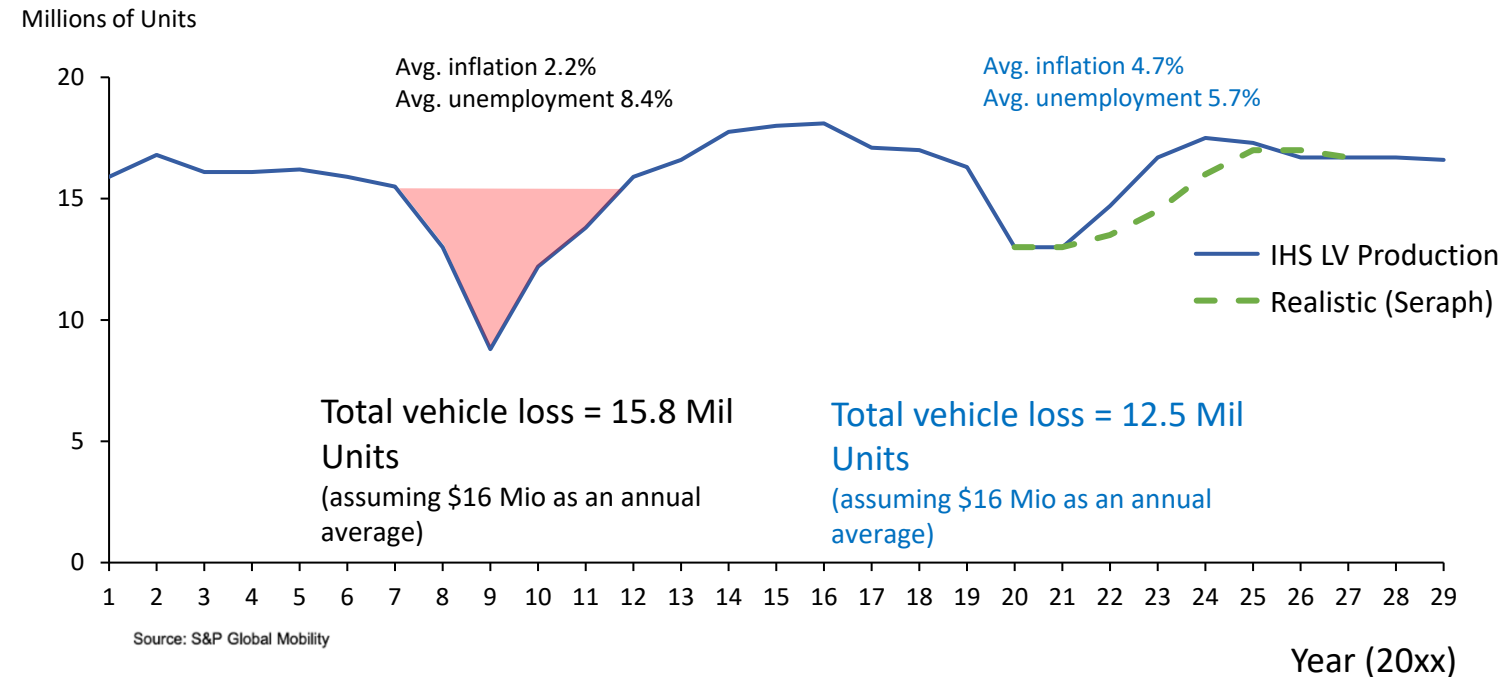
Our teams can quickly assess and implement the changes required for success. Typical projects run from 3 to 6 months depending upon the severity of the supplier's situation.

Our record of disruption mitigation and cost avoidance has saved our customers millions and achieved accelerated ROI. For example, in the case of 8-Plant assessments, average **ROI is expected to be 6 months or less** with a current accumulated savings of \$150M. Still, we are aware that ending projects prior to final phases prevent long term or sustainable project success.

NA Production Outlook

Delaying resolving supply chain bottlenecks will lead to substantial disruptions of operations in the future.

- Supply chain, labor and logistics issues continue to impact production resulting in continuous volatility.
- **Suppliers are struggling to regain and retain their workforce.** Even if staff can be hired, it takes a minimum of 1 year for the new hire to become fully productive.
- Demand outpaces supply.
- The long-term outlook for EVs is strong.
- The significant shift in expected volume of EVs is by 2030.
- Main factors driving the growth of EVs are consumer sentiment, policy and regulation, and OEM strategy.



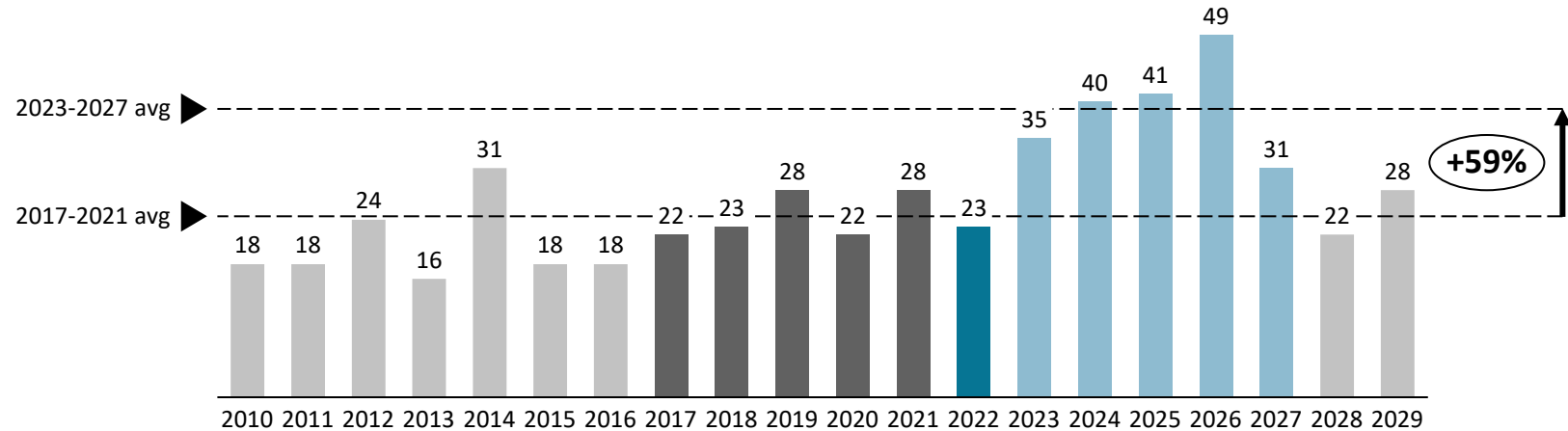
Currently IHS projects 14.7 Mio vehicles causing suppliers who budgeted for 16.7 Mio to delay or stop capital and employee investments; thereby creating risk for OEM launches.

NA Production Outlook

Significant growth in the number of models and OEMs being developed and launched concurrently.

- Launches remain vulnerable to delay reprioritization, reviews or even cancellation.
- Worldwide OEMs investing **US\$515 billion⁽¹⁾ (25-35% in NA)** in EV-related technologies over the next 5-10 years.
- In 2025 the number of **new launches will exceed 40**. The development of those programs are commencing now.
- The five-year average of the number of program launches will increase by 59%, with consequent increase of complexity.
- Many new “EV-only” OEM market entrants contribute to the model launch volume increase.
- Electrical Vehicles (EV) will represent 35% of North American production by 2030.

OEM Program launches 2010-29
(ICE, PHEV, BEV)



Source: S&P Global Mobility

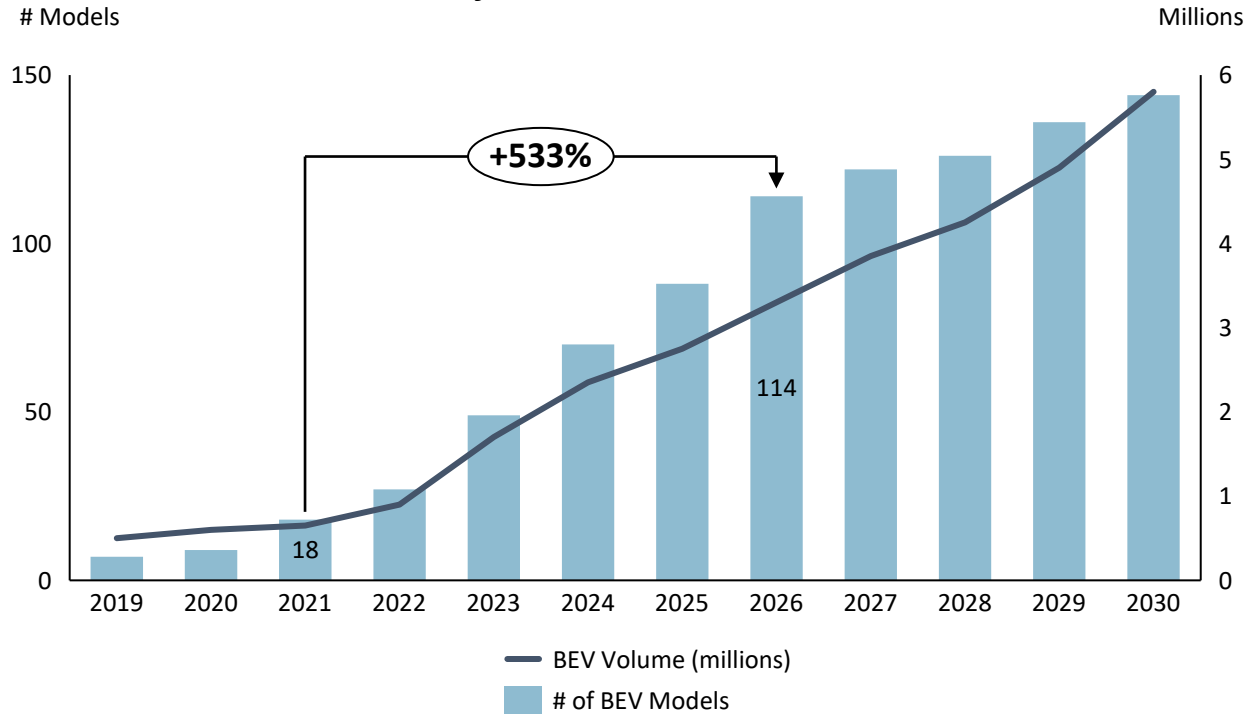


(1) Source: <https://europe.autonews.com>

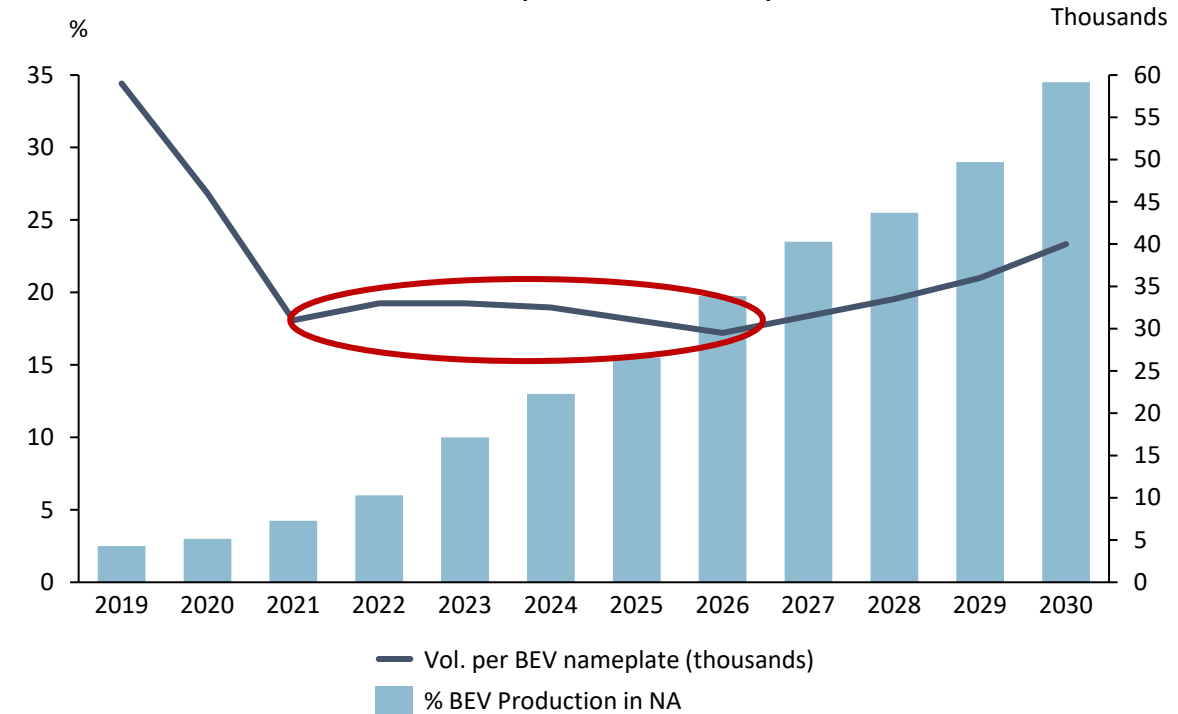
NA Production Outlook

The transition to electric vehicles (EVs) creates a portfolio planning challenge for automotive OEMs. By 2030 approximately 35% of NA production will be EVs.

Number of BEV model launches in NA



Volume per BEV nameplate



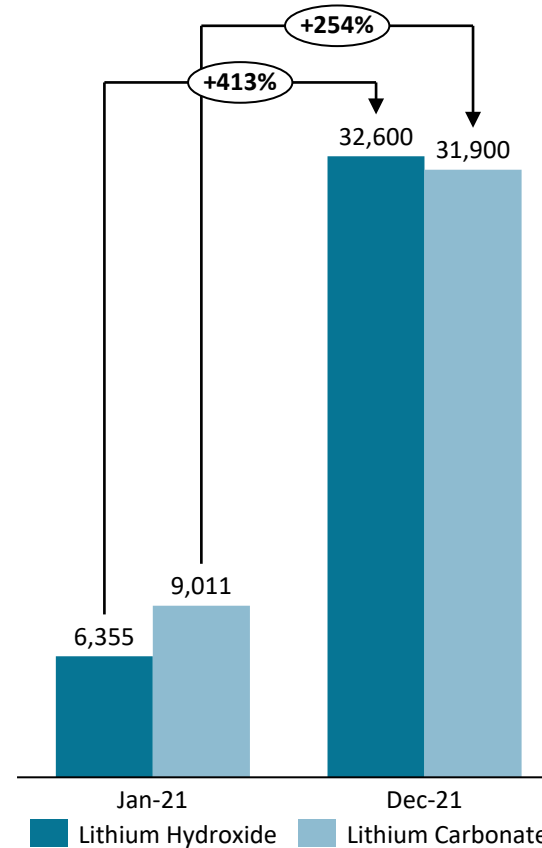
The rate of BEV model increase in 5 years, 6X, is higher than the rate of forecasted volume growth.

EV Production Outlook

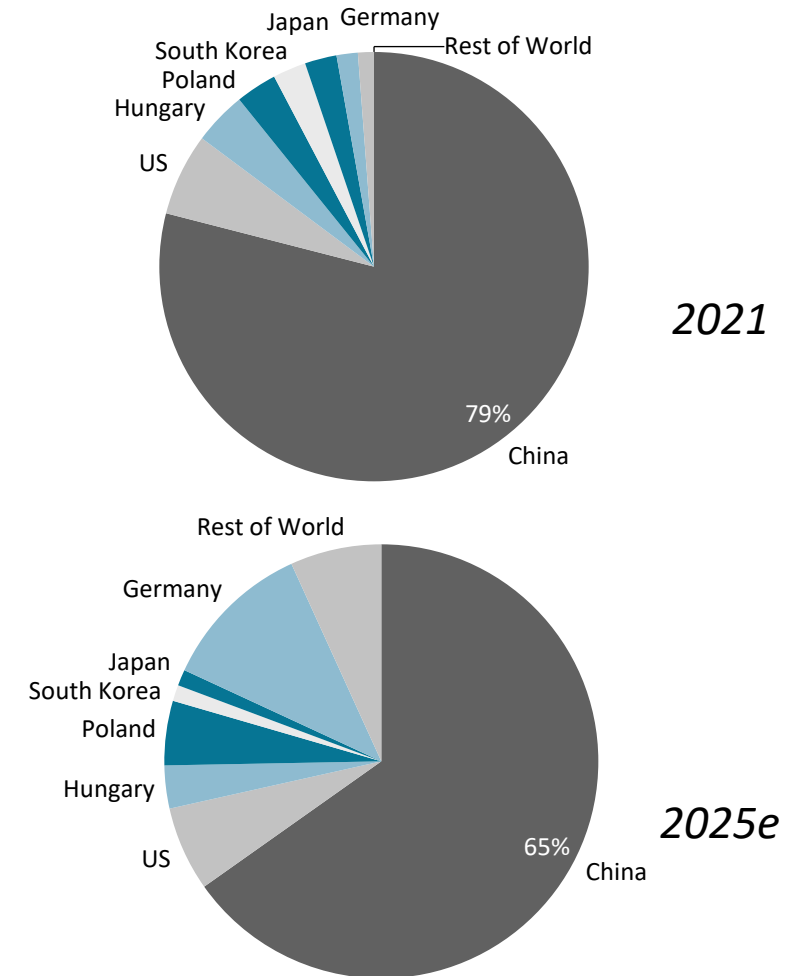
OEMs and Suppliers are already starting to experience heightened issues relating to EV production.

- The influx of new players has put significant strain on an already tight supply chain.
- Domination of Japanese, Korean, and Chinese suppliers in the battery space add geographical trade challenges.
- Baseline prices are set by well-established players with best-in-class OEE and utilization and can often prove unattainable for new entrants.
- OEMs are hesitant to give business to unproven new players due to output and quality capability concerns.

2021 Lithium prices



Lithium-Ion battery production market share



Bar graph: <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/121421-commodities-2022-global-lithium-market-to-remain-tight-into-2022>

Pie chart: <https://www.statista.com/statistics/1249871/share-of-the-global-lithium-ion-battery-manufacturing-capacity-by-country/>

Profitability of EVs is fluctuating as critical material pricing and production competition increases.

Growth of Automation

- After the COVID-19 pandemic shocked the automotive industry, **manufacturing leaders**, now more than ever, are **striving for ways to improve their processes to drive greater throughput and reduce costs.**
- **Suppliers are looking to adapt more automation technology** in their processes for successful outcomes.
- It is essential for OEMs to reassess and increase the capex forecasting of buy-parts for new vehicle launches, recalibrating the business cases with the new requirements of automation.
- Seraph observed during a supplier engagement the implementation of a new assembly line for a new generation of product reducing the required direct labor from 19 to 3. The positions have been reallocated to other activities.

We are seeing an automation increase for both US based OEMs and Tier 1 suppliers.

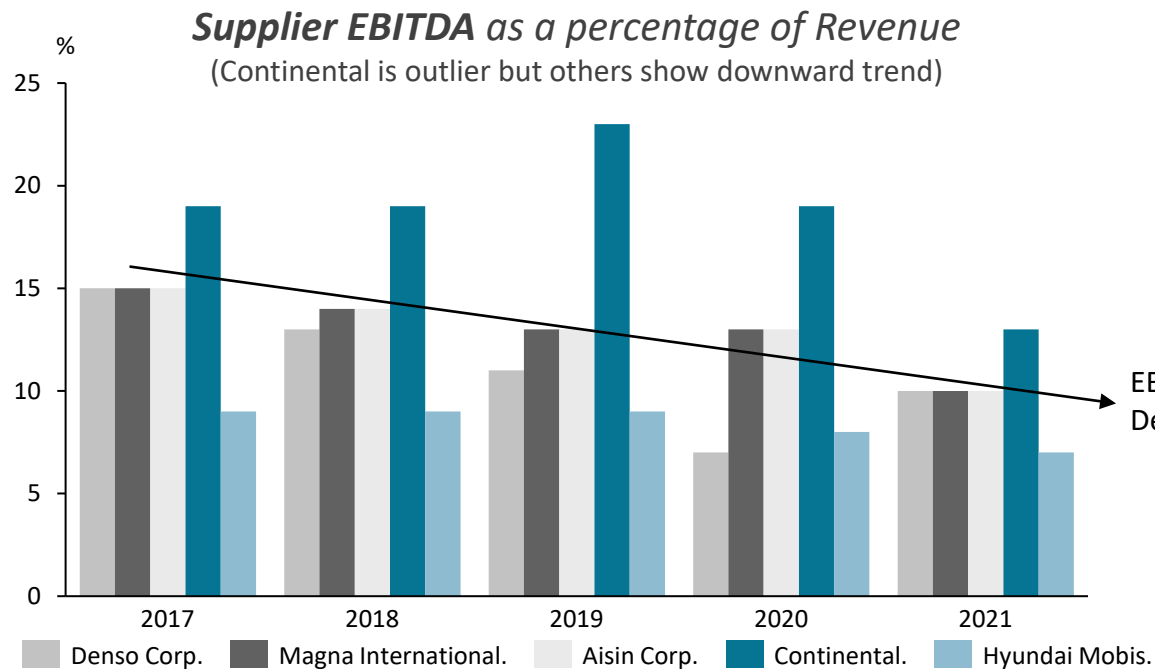


Planning and preparing the workforce for an increasingly automated future is key for success.

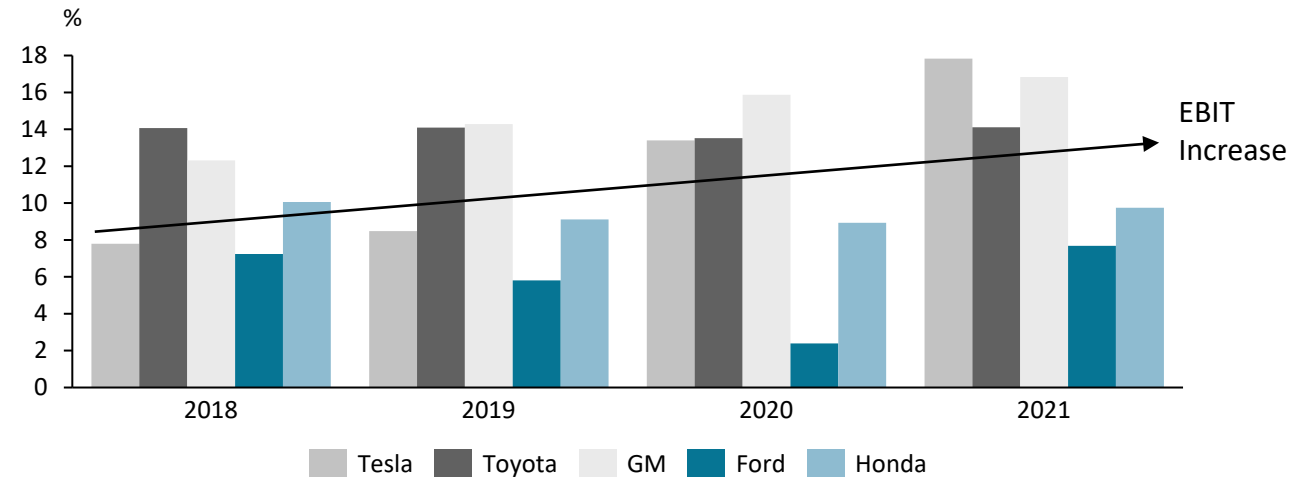
Industry Financial Data

Traditional suppliers have had stronger EBITDA than OEMs over the last 10 years. Now they face increasing price pressure from the OEMs.

- EBITDA recoveries following 2008 and 2020 suggest that the overall health and outlook of OEMs is positive, and the issues are cyclical in nature. However, short term struggles will cause strains for OEMs and many suppliers. In response we will see restructuring and significant supplier base changes or shifts over time.



OEM EBITDA as a percentage of Revenue
(Tesla and GM are up, others flat)



- We have observed that suppliers continue to be in a unique position of strength as it relates to responsiveness to the OEMs. This position continues to be bolstered by current supply chain struggles as well as the suppliers' own need to "survive."
- Seraph has spent the last 2 years preparing for the exact situation that we collectively find ourselves in.

Suppliers are currently reducing capital & employee investments to maintain profitability.

Recent Engagements

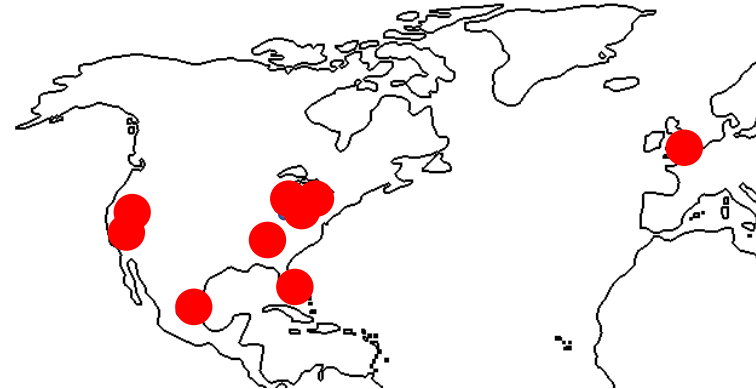
Seraph has quadrupled its customer base and increased service offerings in the last 2 years, while investing in the team and its process.

Project Tier 1 Total Plant Launch Responsibility
Scope Implement all operational processes, hire salary and hourly staff
Result **Under budget by 36% requested to launch 2 additional plants**

Project New EV OEM Tier 1 Crisis Management
Scope Ramp up supplier
 Stop airfreights from EU
Result **Cost avoidance of \$23 Mil achieved**

Project OEM First EV Launch
Scope Assess 15 worst suppliers and develop plans to mitigate risks
Result **Project ongoing**

Project EV OEM Crisis Management
Scope Maintain production through supplier bankruptcy
 Stop airfreights from Mexico
Result **Cost avoidance of \$6 Mil achieved**
Project ongoing



Project New EV OEM Supplier Assessments
Scope Assess 20 worst suppliers and send in Tiger teams where required
Result **Assessments completed**
7 Tiger teams deployed and ramp up achieved
Project Ongoing

Project Tier 1 Crisis Management
Scope Improve OEE and reduce backlog
Result **61% reduced OEM backlog**
+2.7 Million Return

Project Launch Of Autonomous Driving Technology
Scope Industrialize new technology
Result **Project ongoing**
Passed OEM Audit with compliments

Project PE M&A Operational Footprint Optimization
Scope Reduce 11 plants to 8
Result **Project ongoing**

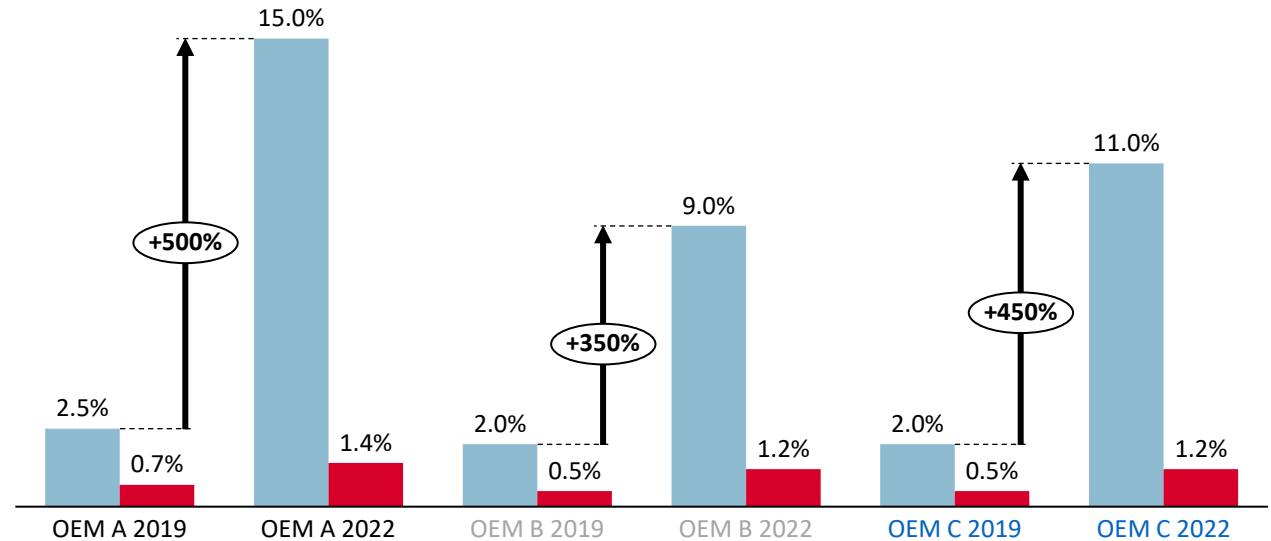
Our record of disruption mitigation and cost avoidance has saved our customers millions / quick ROI.

Current Supply Base

The number of critical suppliers will continue to increase.

- OEMs and suppliers are not well resourced to manage the increased number of at-risk suppliers; high personnel turnover has eroded experience from key positions.
- Non-automotive suppliers entering the automotive space as the industry migrates to EV. This is creating significant issues for the EV projects.
- Seraph expects the number of at-risk or critical suppliers to continue to increase and to spike again once volumes return.

Percentage of Critical Suppliers 2019 vs 2022




Seraph market analysis shows an increase in focus on critical suppliers by OEMs since 2019

- Q:Help 1 Critical – needs monitoring
- Q:Help 3 Very critical – on new business hold / stopping production

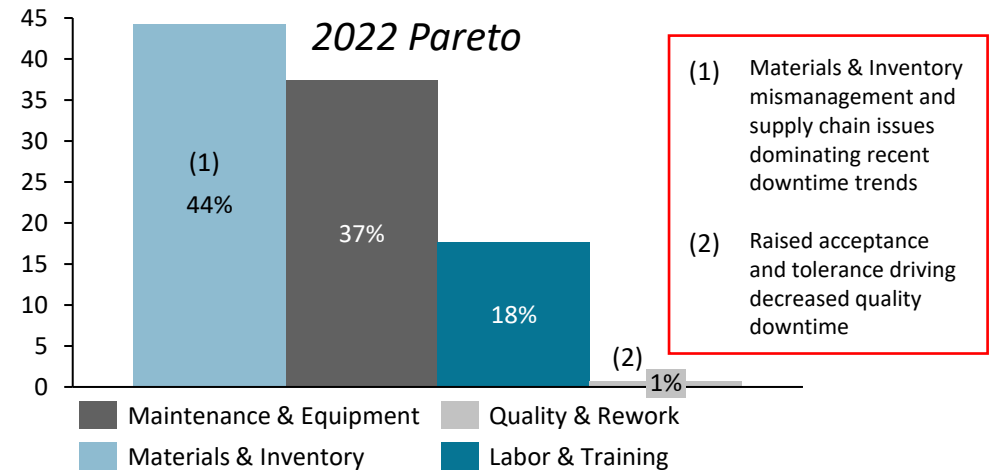
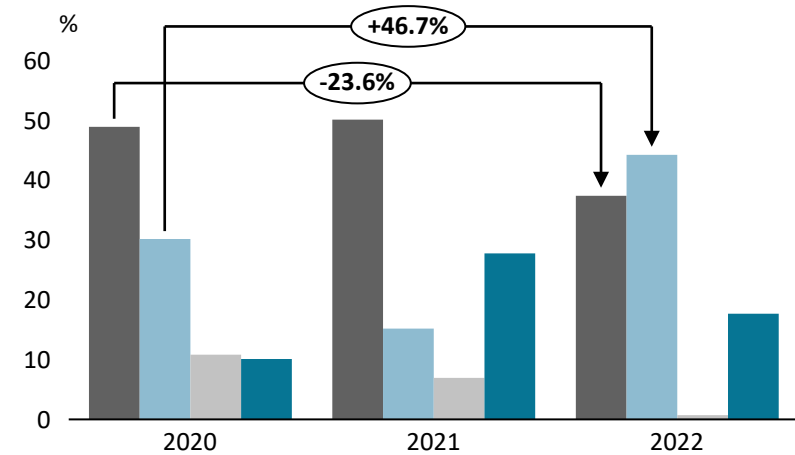
OEMs report a 4-5x increase of critical suppliers within their overall supply base.

Downtime Trends

Through  **ProductionNet**, Seraph has aggregated the causes of unplanned downtime at suppliers over the past few years.

- Equipment issues are primary cause in 2020 driven by startups from unplanned shutdowns and missing highly skilled labor.
- Material shortages improved in 2021 but deepen in 2022 due to exhausted inventories, labor shortages, and an inability to manage supply chains/operations outside of the “normal.” Continued worsening is expected.
- Labor shortages appeared to improve in 2021, however, no return to pre-Covid numbers is expected. The new normal increases the need for process optimization, engineering solutions, and strategic hiring/retention planning.
- **Suppliers are approximately 35% less efficient compared to 2019 with the biggest contributing factor being an inability to manage material and inventory which causes labor inefficiencies, wait time, loss of morale, distrust of management, overtime (taking time away from family), and ultimately operator turn over.**

Downtime Trends



Efficiency is at its lowest levels and purely cost cutting to profitability is not going to be enough.

Interviews with suppliers

"Volumes will come back, and we want to be part of the upswing, but we need to survive the short term."

PROBLEM

1. ICE volume will come down = loss of revenue
2. Turn over of OEMs purchasing/engineering etc. similar at Tiers = **industry burn out "is real"**
3. OEMs breakdowns "doesn't allow for overhead inflation coverage" as it only focuses on hourly employees
4. Profitability (**OEMs are only paying some coverage and normally 6-9 months late = cash impact**)
5. OEM releases are unreliable

Supplier Problem: Profitability
(lack of OEM price increases & operational efficiency)

SOLUTION / ACTIONS

1. **Re-use capital, transfer to LCC (Mexico)**, gain market share as supply base shrinks from i.e. 5 to 2, dismantle engineering teams
2. Retraining, investing in people and stability. This can be seen at some OEMs and Suppliers, but most can't afford it (or are focusing on short term profit to keep their jobs)
3. OEMs "have no solution", so suppliers are **threatening to stop attending client change management meetings etc.**
4. Make vs. Buy – however, analysis shows that at times the PPAP costs are higher than the savings
5. **The cost of filling the pipeline and carrying the inventory is too high = so some suppliers take risk**

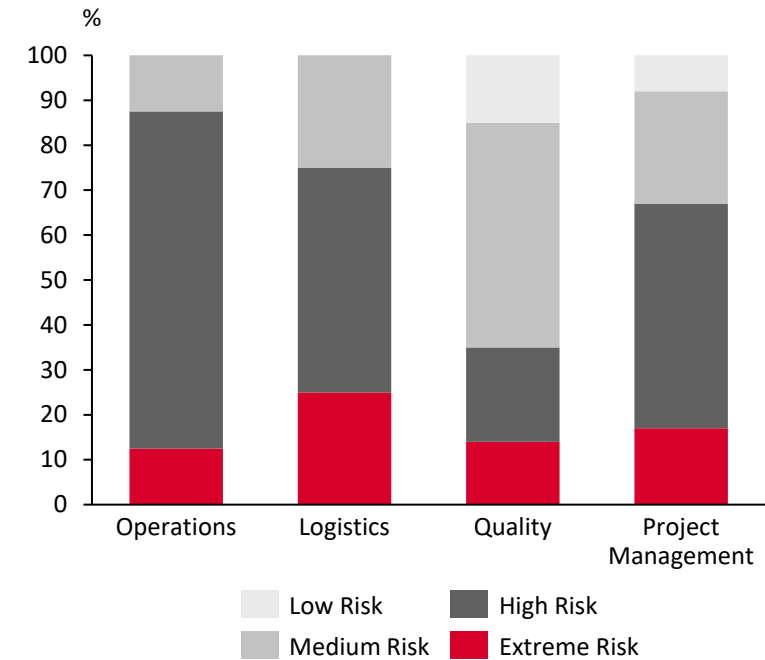
Solution: Cost cutting and focus on improved efficiency

Recent Engagements

Qualified labor required to launch and run new programs is in short supply, already overloaded and stretched thin.

- Strong Operational Leadership, in general, is absent in most operations – **there is a disconnect between “management” and the floor.** However, operators in general, have had great energy, great attitudes, and desire to be engaged - **Leadership needs to LEAD → Set Vision, Define Expectation, Provide Tools, Coach and Train, Hold Accountable.**
- **Operational Fundamentals or Operational Discipline not at the right level:** Daily Management, Visual Management, KPI Deployment, Leader Standard Work, and 5S.
- PFEP – Plan for Every Part – not properly designed and in some cases not developed.
- Capacity Planning – **wrong assumptions regarding performance expectations (OEE)** and not properly comprehending logistics requirements.
- Lack of humility (overconfidence) and respect for leading challenging and complex manufacturing operations.
- Process capability not designed to recover from significant downtime events when they occur.
- Seraph has assessed over 50 suppliers in 18 months.

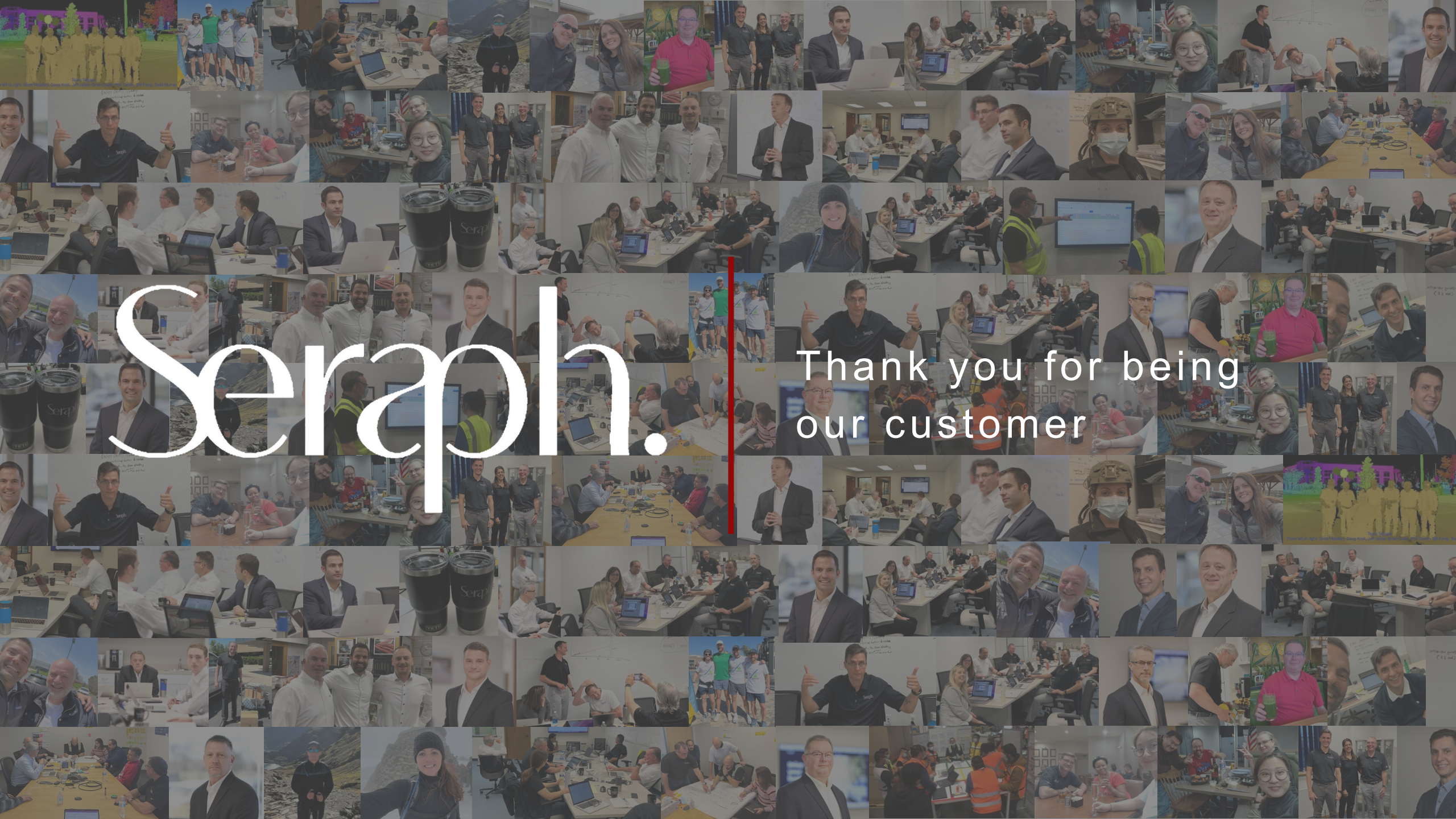
Result of Seraph's RPA



Summary

Inflation has made the normal purchasing metrics the worst enemy of most companies, as even the strongest suppliers require higher volumes to survive.

- Changes in the automotive industry are accelerating, affecting market landscape, product portfolios and skillsets required.
- The **slowdown in the world's largest market, China**, is creating challenges for the global suppliers.
- Globally, suppliers are dealing with **declining margins**.
- For suppliers, the **risks in the market are high**. **On one hand they are failing to improve their processes to drive greater throughput and reduce costs**, and on the other, they face increasing price pressure from the OEM side, who must deal with increasing capital requirements and declining profit.
- The cost of capital is expected to become higher given a shrinking relative attractiveness of the automotive sector.
- The human resources required to launch new programs are in short supply and are already overloaded and stretched thin. **Options for expanding component parts program capacity include: 1) additional staffing; 2) process re-engineering; and 3) process automation.**
- Seraph estimates that over the next 5 years, volume of component parts programs will increase by 63%, leading to a record of complexity increase.
- **Performance-improvement programs and accelerated capacity adjustments are recommended countermeasures for most suppliers! These are drivers that Seraph can create value and steer.**
- Supplier issues compounded by the increasing pressure from OEMs to onshore components.



Seraph.

Thank you for being
our customer