Future of VEHICLE COMPOUNDS
The future of vehicles compounds

Finished vehicle compound management is changing dramatically, driven by new markets, technology and customer expectations.

From facilities historically based around storage and onward transport, vehicle compounds and distribution centres today carry out value-added post-manufacturing and inspection services, serving a large variety of brands, models and vehicle requirements.

Now, with the rise of electrification, shared mobility and e-commerce platforms, the role of vehicle compounds is evolving further, presenting new opportunities and risks to logistics providers and operators.

While complexity is increasing, so too is the potential to leverage advanced IT, software and in-vehicle technology to optimise vehicle distribution centres, with vehicle manufacturers showing a growing interest in vehicle telematics as a means to locate and monitor vehicles, for example. The road to autonomous vehicles will present even more opportunities.

So how are manufacturers and compound operators responding? Which trends are driving the biggest changes, and where are they hitting manufacturers and logistics providers hardest? How can technology help compound operators to rise to the challenges?
New technology

FINISHED VEHICLE COMPOUND MANAGEMENT HAS BEEN UNDERGOING SIGNIFICANT CHANGES. AN OPERATION HISTORICALLY BASED AROUND VEHICLE STORAGE AND ONWARD TRANSPORT, AND MANAGED ACCORDING TO MOSTLY MANUAL PROCESSES, IS TURNING QUICKLY INTO VALUE-ADDED, HIGH-TECH SERVICES.

Vehicle compounds, whether in plants, transport yards or seaports, have until recently been labour-intensive, characterised by spreadsheet-based planning and individual barcode scans. Today, new software systems are bringing powerful optimisation to everything:
- locating and assigning intelligent parking locations
- anticipating and scheduling work
- building smart transport loads
- monitoring via collaborative Business Intelligence

New vehicle technology is also impacting compound management.
- On-board vehicle telematics provides a means for vehicles not only to ‘self-announce’ their whereabouts within the compound – and within the broader finished vehicle supply chain – but also gives automatic diagnostic information on vehicle conditions, including tyre pressure, fuel and battery charge levels. Rather than assign manpower to check each vehicle on a fixed rota, compound operators can deal with vehicles on an exception basis, remedying only those vehicles that report faults.

- Autonomous vehicles: a future in which many more vehicles attain level-4 and level-5 autonomy presents revolutionary changes to vehicle compounds and distribution centres. The vehicle will self-announce its whereabouts and status, but also drive itself to the correct parking locations and service bays. The physical requirements for such yards could also change dramatically. For vehicles that don’t require a driver, for example, there’s no need to allow an 80cm clearance gap between vehicles, so that drivers can open vehicles’ doors. Put another way, at a stroke, the result is that compounds’ holding capacity increases without the need to add space.

- Managing vehicle and brand diversity is increasingly critical to such facilities. Bettina Ringsdorf, head of vehicle distribution and vehicle distribution centres (VDCs) at BMW, for example, points to unprecedented model and powertrain variety, including nine electrified models.
INCREASINGLY, OPERATORS’ CENTRAL ‘CORE’ MISSION ALSO INCLUDES VALUE-ADDED SERVICES SUCH AS ACCESSORISATION, LOCAL MARKET CUSTOMISATION, MAINTENANCE, REPAIRS AND PDI. WITH THE INCREASE IN ELECTRONICS IN VEHICLES AND ALTERNATIVE POWERTRAINS, THE TECHNICAL AND LEGAL REQUIREMENTS OF HANDLING AND MODIFYING VEHICLES ARE BECOMING MORE COMPLEX, REQUIRING NEW WORKSHOP CAPABILITIES AND INFRASTRUCTURE.

For logistics providers, such operations add cost and complexity, and may pose challenges in terms of scheduling and efficient utilisation. Wholly new markets and business models are meanwhile creeping into the activity mix, such as the handling and servicing of car-sharing services and online used vehicle sales, making some facilities selling and distribution points for end customers and requiring more business-to-consumer processes.

These developments, along with core operations across plant, multimodal and port yards, present opportunities for logistics providers to capitalise on changing business models. Providers offering the most efficient, technologically advanced and competitive services stand to gain, especially as vehicle manufacturers concentrate resources on developing new vehicles and technology, and away from non-core areas.

This change is already evident in BMW’s global VDC network, where storage is just one part of the process, and post-production activities such as accessorisation and PDI are carried out. It could also be a future where deviating customer behaviour and regulations impose a variety of requirements across regional and national markets. Bettina Ringsdorf at BMW points to sharp national variations in accessorisation that exists today: the United States, where accessorisation is widespread among the company’s operations; and China, where it doesn’t feature at all because of legal restrictions.

The response of compound operators to such an environment is vital to the viability of the added-value model, especially in the adaption of IT and automation. Identification technology, for instance, will help match the right accessory kits with the right cars. Scheduling technology helps to plan accessorisation, PDI, and repair activities efficiently, with appropriate recognition of delivery dates and vehicle locations.
The way that we have to communicate with the customer is very different, and the customer can have very different requirements: we might be asked to pick up a car in Germany and transport it to Portugal.

The new owner might want us to carry out a service, or do some dent repairs – and then, instead of us delivering the vehicle to them, the new owner might want to pick it up from the compound.

Either way, it’s very different from the business of cars flowing in small batches to a vehicle dealership or rental fleet.

Arnaud LEVILAIN, Engineering & Optimisation Group Manager, GEFCO

New business models raise the game

VEHICLE COMPOUND SERVICES ARE EVOLVING EVEN FURTHER THAN POST-PRODUCTION MODIFICATIONS. THEY ARE SET TO PLAY GREATER ROLES IN THE ‘SHARING ECONOMY’, WHERE CONSUMERS ESCHEW DIRECTLY OWNING CARS, IN FAVOUR OF SHORT-TERM RENTAL BY THE HOUR.

The role model has been Zipcar, although a number of competitors have sprung up. Behind Zipcar’s success lies skilful compound management, where cars are valeted, refuelled, repaired, and maintained.

There are important distinctions for service providers operating vehicle compounds for rental and fleet firms, and those for new vehicle distribution. In the commercial world, for instance, de-fleeting is an important and sensitive activity, including things like stripping away corporate logos and company-specific equipment, and returning the vehicle to a standard configuration.

E-commerce platforms, including for used car sales, are also increasing and require more specific services in vehicle compounds. Here, the business model is not the business-to-business paradigm that normally characterises the operations of automotive logistics providers like GEFCO, but business-to-consumer, with the e-commerce platform acting as an introductory intermediary.

The growth of such platforms could be a forerunner to an automotive and mobility market in which shared fleets and e-commerce play a bigger role. “Such business models depend on greater flexibility,” adds Arnaud Levilain, Optimisation and Engineering Manager at GEFCO.

The more that the mission of compound management deviates from the core activities of storage and post-production processes, the greater the requirement for breadth of vision, agility, and processes that can be rapidly reconfigured and repurposed.
Tomorrow is today: new IT and software possibilities

Experts point to both a faster pace in meeting changing customer demands, and more complexity and variable processes. Within a finished vehicle supply chain, two almost identical vehicles arriving at a given compound may experience very different durations of stay, and undergo widely different processes.

This increasing pace and complexity increasingly requires the kind of clever routing and scheduling IT systems that orchestrate automotive inbound logistics operations. But while there are exceptions, the reality is still that many compounds and distribution centres rely on manual processes and antiquated systems. “To be sure, while finished vehicle logistics systems have evolved over the past decade, these systems still aren’t as sophisticated as those on the inbound side,” says BMW’s Bettina Ringsdorf. “Neither do the systems of many of the service providers in the finished vehicle supply chain nor those of OEMs yet have the sophistication that we want.”

The unspoken fear is that service providers’ systems are already behind the curve, and they will struggle to catch up, let alone to stay ahead. Compound management systems already call for a complex mix of capabilities found elsewhere in the supply chain.

These could include the scheduling capabilities of a manufacturing system within compound workshops, for example; the smart location technology of a warehouse system to provide parking slot optimisation and minimise in-compound travel distances; and the flexibility of a capacity planning system to smooth out wildly varying workload and vehicle arrival and dispatch rates.

GEFCO is one of the providers ahead of the curve in terms of compound optimisation thanks to an investment spanning 15 years in its NOMAD compound management system. NOMAD underpins the company’s day-to-day delivery of compound management capabilities.
Telematics for compound management: coming sooner than you think

WHEN IT COMES TO IT, PERHAPS THE TECHNOLOGY THAT WILL BRING THE MOST CHANGE FOR VEHICLE DISTRIBUTION CENTRE AND COMPOUND MANAGEMENT WILL BE THE USE OF VEHICLE TELEMATICS.

Wolfgang Goebel, president of The Association of European Vehicle Logistics (ECG), which represents vehicle logistics service providers across Europe and disciplines, recently told Finished Vehicle Logistics that the use of on-board telematics ticks a lot of boxes for compound operators.

Real-time location information could transform how the vehicle logistics industry carries out scheduling, for example.

Status information can provide timely warnings in the case of such things as windows left open in transit, flat batteries and deflating tyres.

Volume manufacturers such as PSA Group, GM, Ford, Volkswagen, the Renault-Nissan-Mitsubishi alliance and Fiat Chrysler are actively working towards just such a capability in using on-board telematics.

At high-end marques Tesla, Jaguar Land Rover and BMW, leveraging such technology is already happening. BMW’s on-board telematics capability, for example, dubbed ‘Connected Distribution’, moved into an operational mode in March 2018.

With the use of on-board telematics, there’s a huge potential gain in efficiency.

As an industry, we can be faster at what we do, more efficient at what we do, and achieve higher levels of quality: if a vehicle has a quality issue such as a deflated tyre or open window, that information is known immediately, rather than at the next physical inspection of the vehicle.

Everybody sees these benefits, which is why there’s so much effort being put into trying to achieve them.

Wolfgang GOEBEL, President of the Association of European vehicle logistics (ECG)

Telematics are OEM on-board technology. At GEFCO, we are open to partner with them in two collaborative ways: be part of the physical ecosystem (such as compound IT facilities) but also the blockchain ecosystem.

Amar SEHAD, Compound and workshop Business Line Manager, GEFCO
There is strong evidence that the rollout of on-board telematics will be faster than seemed possible even a few years back, which means that compound operators must respond sooner to the changes wrought by on-board telematics.

- Firstly, using on-board telematics for logistics purposes is essentially piggybacking on technologies that are, or will soon be, present in almost all new cars, including GPS capability, Bluetooth and mobile phone integration, and sensors. With the hardware built in, the main additional investment will be writing software that temporarily re-purposes it while vehicles are in manufacturers’ finished vehicle supply chains.

- Furthermore, initiatives such as ecall in the EU – which mandates that new cars are equipped with an automated system to summon help in the case of a vehicle collision – and similar requirements elsewhere, will expand the rollout of on-board telematics across model ranges.

- Finally, on-board telematics is that the technology is arguably a better vehicle logistics solution than either traditional barcode labels, or costly RFID – which is still struggling for traction in vehicle logistics decades after it was first used. “Unlike the heavy fixed investment in tags and readers that RFID requires, telematics provides connectivity and GPS positioning without extra equipment,” said Hervé Moulin, project leader for telematics in finished vehicle logistics across the Renault-Nissan-Mitsubishi Alliance, in a recent interview with finished vehicle logistics. While RFID readings are only picked up when a vehicle crosses into or out of a specific zone, telematics can provide positioning information everywhere in the zone.

Contrary to barcodes, with telematics you don’t have to go to a vehicle to read a label at close range in order to know about the existence of the vehicle in your system.

“Hervé MOULIN, Project leader for telematics in Finished Vehicle Logistics, Renault-Nissan-Mitsubishi Alliance

On-board telematics offers efficiency opportunities in often unlooked-for areas. Manufacturers generally specify 30-day checks for vehicles in long-term storage, for instance, calling for every applicable vehicle to be located and checked – a complicated task in compounds that could be holding 20,000 or so vehicles.

But the status reporting carried out by vehicles’ on-board telematics usefully overlaps with manufacturers’ checklists, meaning that far fewer vehicles will need to be physically touched.

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While post-production processes and new technology bring new potential and risks, experts tend to agree that the core mission of the finished vehicle supply chain is and will remain managing the journey from assembly line to the final customer, and with that the requisite central skills and services will always be important.

Nevertheless, vehicle distribution and compound management is evolving along with the wider automotive industry, including new customer requirements. As vehicles integrate new technologies, including more electronics, sensors, new propulsion or autonomous systems, compound providers need to be prepared to handle changing requirements. Some providers might well need to increase expertise in software and digital systems, as well as lithium-battery handling, for example.

Perhaps most important is that stakeholders grasp the opportunities and potential for new business models. Already, those who embed their operations further in the vehicle distribution processes, including late stage customisation or accessory installation, have benefitted by providing specialised post-manufacturing services.

Vehicle logistics providers are also getting closer to a variety of mobility systems, from car-sharing and fleet management, to online used vehicles. If the foreseeable future of the automotive industry is one in which many business models exist side by side – vehicle ownership, fleet subscription, car sharing, online and offline customer sales and service, a range of powertrains and, later, different levels of autonomous driving – then the vehicle compound needs to serve all of them.

And that means vehicle logistics providers need to start now to develop the flexibility, IT systems and skills if they are to survive and thrive with the customers of tomorrow...

**Conclusion:** always put the customer first
GEFCO, Partners, unlimited.

At GEFCO, we are convinced that long-term cooperation is the key to shared growth with our partners. Thanks to our strong expertise and heritage in the automotive sector, we design innovative and flexible solutions to meet the most complex challenges of the supply chain.

GEFCO is the world leader in complex supply-chain solutions and the European leader in automotive logistics. Building on 70 years of expertise and a 15,000-strong workforce, GEFCO designs smart, flexible solutions to meet the most complex supply chain challenges in all industry sectors. Present in 47 countries, with a strong global network of partners, GEFCO serves 300 destinations worldwide. In 2018, the Group generated revenues of €4.6 billion.

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