

Combilift - Lifting Innovation

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The Success Story of Combilift

Combilift, a global leader in the manufacturing of multi-directional forklifts and long-load handling equipment, is a testament to the power of innovation and perseverance.

Founded in 1998 in Monaghan, Ireland, by Martin McVicar and Robert Moffett, Combilift started with a vision to revolutionize the way companies handle and store goods. They identified a niche in the market for a forklift that could maneuver long loads in tight spaces. These two passionate, experienced and driven engineers pooled their expertise and their shared vision to design the world's first internal combustion engine powered, all wheel drive, multi-directional forklift – and the Combilift was born.



Despite starting in a challenging economic climate, Combilift quickly gained traction. Their innovative product design, which combined the features of a counterbalance forklift, side loader, and very narrow aisle truck, offered a unique solution to the material handling industry.

Over the years, Combilift has continued to innovate, expanding its product range to include straddle carriers, pedestrian stackers, and reach trucks. Today, Combilift products are used in over 85 countries, and the company has grown to employ over 800 people. There exist more than 80,000 Combilift vehicles in use worldwide today.



A debt-free company, Combilift is an award-winning a major local employer and offers the most extensive range of specialist multidirectional and customised handling solutions available from any one single manufacturer in the world.



Lifting Innovation - Design and R&D at the Core

A major success factor in the businesses ambitious trajectory, is the core technical expertise of undertaking research, development and design. The Combilift technical engineering and R&D team are structured optimally, to deliver on different application areas for their material handling solutions (seen below). Every day, week, month and year, the cross-functional and experienced engineering teams in Combilift are coming together to design the next generation of material handling solutions.



Multi Directional



Side Loader



Pedestrian Stackers



Straddle Carriers



Container Loaders



Aisle Master



Poultry Products



Load Carriers

By way of example, Combilift's Autonomous Guided Truck (Combi-AGT), designed specifically for the automated handling of long loads, boasts dual-control capability, enabling manual operation when necessary, which is an industry first, Combilift noted. The Combi-AGT's design is based on the electric manually operated Combi-GTE model which has long been a very popular choice for service centers due to its ability to work efficiently in rail guided narrow aisles. The first Combi-AGT unit was supplied to Kansas based Steel and Pipe Supply 18 months ago, and since then Combilift have collaborated with multiple leading metal service centers across North America during the development process. The autonomous truck uses natural feature navigation, as well as a newly developed load dimension detection system which operates by performing a laser scan of the load to check that its length matches the task sent to the machine, Combilift added. Similarly, when unloading, it checks that the rack in front has sufficient free space to accept the load. See the unit in action in [this video](#).

Simple, Safe, Smart, Sustainable, and Saving Space

As Combilift builds the next generation of material handling solutions, advancing its own Core Technologies, the team are fully aligned with the recipe to Combilift's success: solutions need to be Simple, Safe, Smart, Sustainable, and Saving Space.

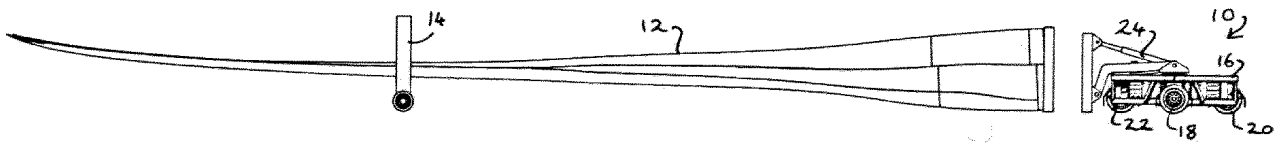
A great profile of this ethos lies in the design, R&D and Intellectual property at the core of Combilift's new collaboration with Siemens Gamesa, which has enabled Combilift to enter the offshore wind sector. Combilift's range of straddle carriers and mobile gantry provide safe, efficient solutions for the Green Energy Industry. - There's no load too large or heavy for these workhorses.



Design Excellence - Lifting Wind Turbines

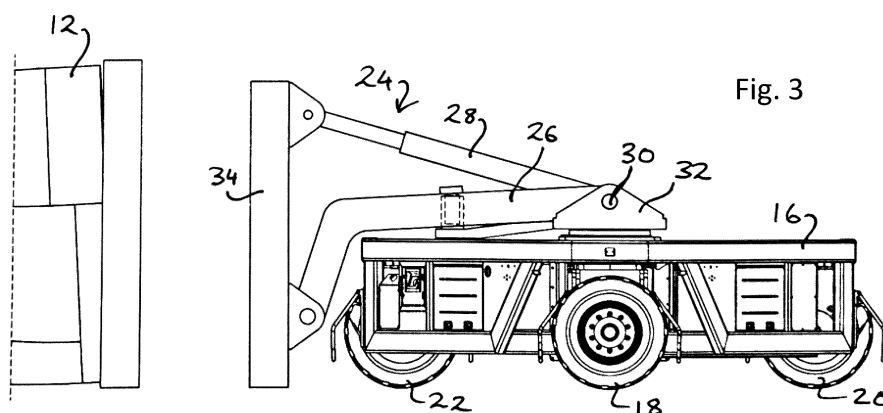
Wind turbine elements can be problematic, time consuming and expensive to move around manufacturing facilities and to load for transportation.

In 2023, Comblift filed a patent portfolio, relating to a load engagement mechanism for transporting elongated loads.



Above, in this design (REF: US20220105860A1-20220407-D00000) demonstrates the sheer size and scale (and tonnage!) that needs to be lifted and maneuvered for Wind Turbine Blades. Wind turbine blades need to be manufactured on land, and transported from the port-based factory to their offshore location. This poses a huge problem to be solved.

Comblift's technical prowess and design skillset is demonstrated beautifully in this patent filing. Looking at the closer image below, we can understand the design of the Comblift vehicle designed to solve for this problem.



If a Forklift (as we know them today) was used to lift the end of this huge load, the Forklift would need a huge counterbalance, creating inefficiencies. Comblift invented a vehicle with a mechanism that would attach to the end of the turbine (point 34), however, as the turbine load gets lifted upwards, all of the weight in the load would be directed towards the middle of the vehicle (point 30 on the design above), and distributed across the wheels (22,

18, 20). As the hydraulic cylinder (28) extends, lifting the turbine, the vehicle can handle this huge load, and still boasts all the benefits of Combilift's novel maneuverability and agility.

To create such a simple design solution, to such a large problem, takes the years of experience that the R&D team in Combilift have. This patent is one of many, showcasing a fantastic engineering and design skillset.

Excellence in R&D and Innovation supported by ReaDI-Watch

Key Successes to Date

"Rapid Innovation and minimal time-to-market is a major driver for Combilift's commercial success as the world's fastest-growing forklift vehicle manufacturer. In partnership with Dave, Gerry & the team, we are continuing to build an excellent, internationally leading Research, Development, and Innovation (RDI) culture in Combilift to further revolutionise the way companies handle and store goods.

We are now managing our R&D portfolio using efficient and best-practice principals as integrated into the new ReaDI-Watch digital platform for connected and lean R&D Management. In this way we are enhancing our capabilities and advancing the core technologies central to the company's future development." - Martin McVicar, CEO, Combilift

Key Learnings

Combilift has been a pivotal and foundational customer, the learnings from whom ReaDI-Watch have taken and applied in many other companies.

The learnings gained include:

- Design and R&D - how does design fit into an R&D programme?
- Rapid innovation to market and commercial success - what are the right cultures and attitudes for success?
- Intellectual Property - how can one create an IP portfolio (which includes patents) to achieve sustained competitive advantage?

What's next for Combilift and ReaDI-Watch?

In partnership, ReaDI-Watch and Combilift are bringing the culture, processes, structures and controls needed for successful implementation of an R&D and Innovation programme to the next level. As the company's core technologies involve the latest trends, for example in software controls, electrification and energy management, autonomous control and more, there is a continued drive to push forward the "Lifting Innovation" ethos in the business.

Combi Ventilate - Covid-19 Innovation

During Covid-19, Combilift leveraged their innovation skillset, to help solve critical challenges in a non-for profit invention they called the Combi-Ventilate.

Martin McVicar, CEO and co-founder Combilift said: "Certain countries and cities are struggling to get enough ventilators and many governments and health authorities are encouraging manufacturers to come up with a solution, as did the HSE in Ireland. Instead of actually developing ventilators we analysed what is really required, as we do in our usual business models."

"We have made Combi-Ventilate under the same ethos and with the same objective as we do with all our the

Combilift products – which is all about doing more with less,” said McVicar.



“We have undertaken this non-profit endeavour in order to meet and facilitate the demands of the global crisis for health services around the world, the lack or shortage of ventilators. The medical device sector is not our core business but making critical equipment which keeps people safe and alive has always been our focus and this latest project, driven by our desire to help during these difficult times, mirrors what our research and development has done for the last 20 years. If our product can save lives, if we can make a difference during these hard times then we are making the world a better place for everyone.”

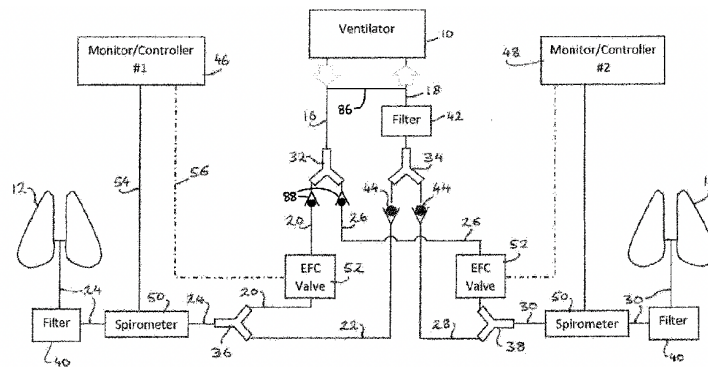


Fig. 15

Combi-Ventilate is a splitter device which turns one ventilator into multiple ventilation stations. The Combi-Ventilate uses standard pipes and fittings for easy assembly and its individual patient filters prevent cross contamination. Each patient has a dedicated screen which allows medical professionals to individually monitor their vital information. This includes live values, data on patient history and statistics and adjustable alarm settings. Features include non-return valves, HEPA filters, flow sensors and an automatic flow control valve. Any abnormalities that occur are detected and will only trigger that specific patient’s alarm. The Combi-Ventilate has automatically adjustable flow control valves which allow the health service professional control the tidal volume to each patient electronically without having to make manual adjustments.

Going for Growth

Combilift’s success story is a shining example of how a focus on innovation, a commitment to solving customer problems, and the courage to disrupt traditional markets can lead to global success.

The company has large growth ambitions into the future, and has made a considerable and positive impact globally.

