

Carbon Revolution CEO on the EV Revolution and Carbon Fiber Wheels; Going Public



Carbon Revolution CEO Jake Dingle.

Carbon fiber wheel maker Carbon Revolution announced in November 2022 that it plans to list in North America through a merger with Twin Ridge Acquisition Corp. (NYSE: TCRA).

Carbon Revolution is a global technology company and Tier 1 OEM supplier that has successfully innovated, commercialized and industrialized high-performance, technically advanced lightweight carbon fiber wheels for the global automotive industry.

IPO Edge sat down last month with Carbon Revolution CEO Jake Dingle during a panel on the EV Revolution to find out more. See the replay [here](#).

How is Carbon Revolution's technology applicable to the global shift to EVs?

Carbon Revolution is a tier one supplier to the global automotive industry. We've brought to market a single piece carbon fiber wheel which saves up to 50% of the weight of conventional aluminum wheels without compromising durability. We already have supply contracts in the market with Ford, Ferrari and General Motors, and there are others that are coming.

We've already put almost 70,000 wheels on the road. Wheels are part of the rotating unsprung mass of a vehicle that's considered to be the most important place to reduce weight, because of the impact it has on the efficiency and the performance of a vehicle. So, saving up to 50% of the weight of wheels is really significant.

The first adoption of this technology has really been in the performance sector, where you've seen it on vehicles like the Corvette Z06 to improve performance. But as an efficiency technology, it has a real home in the EV space.

And that's where we are now starting to see the most interest. A high proportion of our upcoming programs are now for EVs and for larger vehicles, because of the range extension it can deliver and other benefits for EVs.

We have a large backlog of projected sales from awarded OEM programs. It recently moved from about USD\$330 million to over \$460 million, and that will continue to climb. So that really indicates the demand for what we're producing and underpins the scale-up that we have underway.

What are some of the tailwinds driving adoption of your wheels for EVs?

EVs are a lot heavier than ICE vehicles, and wheel sizes are getting a lot larger. We've gone from 15-inch wheels to some which are 23 or 24 inches. We can shave over 100 pounds of weight across a vehicle in these larger wheel sizes, and in an EV that can translate into 5-10% range extension.

With carbon fiber wheels you can provide much more efficient aerodynamic designs without weight penalty, which adds to the range extension because it enables greater efficiency at high speeds.

We can also make quieter wheels. Composite materials are more dampened than metals. In an EV, there's no engine noise, so road noise becomes a lot more obvious. OEMs are reducing road noise by putting things inside tires or inside the body of EVs, which adds cost and weight. But our carbon fiber wheels can reduce road noise and weight.

There are also regulatory drivers. Some EVs are getting so heavy that they're really pushing beyond regulatory weight limits that constrain the ability of OEMs to derive CAFE Credits for selling an EV. These Credits are very important for an OEM's profitability. If we can save 100 lbs. from an EV that can be the difference between the OEM getting a credit or missing out, and it means saving weight from an EV without removing features or battery capacity.



Carbon Revolution has been a Tier 1 supplier of Ford single piece carbon fiber wheels since 2014, for the Shelby GT350R, Ford GT Shelby GT500 (pictured) and the upcoming Ford Mustang Dark Horse.

Can you provide some details on the advantages of your manufacturing process and your scale?

We developed the manufacturing process and the product in parallel, and the process has been developed with high-volume in mind. This has been a very powerful way of developing and protecting intellectual property, and we've sold nearly 70,000 wheels from it.

The wheel market is enormous. There's over 400 million wheels produced and put on new cars each year, and so we're still scratching the surface of that.

Our wheels are a classic trickle-down technology: they started at a very premium performance level and they're now making their way into less premium applications. We've continued to automate and industrialize our manufacturing processes, driving efficiency and ensuring that we bring our costs down as we grow and demand increases.

Our first Mega-line, which fully integrates our proprietary manufacturing processes with a state-of-the-art transportation system, is already producing wheels very successfully for our customers and is being filled out progressively in our Australian plant.

That forms a template for manufacturing in more strategic locations, in North America for example to supply larger contracts to our major North American customers. That enables us to further reduce costs, reduce the logistics costs and variable costs.

Who are your competitors and how do you distinguish yourselves from them?

This is a very large market with a lot of tailwinds for weight-saving technology, but there are significant barriers to entry. Other companies are working to do this, but currently our competitors are nowhere near us in scale. We've established a significant lead, and our aim is to sustain that into the future.

Our product and process technologies have been developed in parallel. We have over 90 granted and pending patents that protect our technology. We've invested well over \$250 million to get us to this stage. So that's a very significant amount of capital invested in this IP.

One key distinction is the relationships that we've developed through manufacturing a product for our OEM customers, at a level of quality that they're comfortable with. It's not easy to get these major global OEMs to switch to something completely new in a safety critical area of the vehicle. We have to pass the same validation requirements that aluminum wheels pass, and there's strict quality and process requirements. Establishing those relationships is important and then provides us with a good position to grow. You'll see with our customers there is a great deal of repeat business.

We do work on the basis that others are seriously working on trying to do this, so having the best products, delivering the most value to our end customers and having the most competitive cost base gives us a very strong and sustainable future competitive advantage.



2023 Corvette Z06 with Carbon Revolution wheels at Carbon Revolution's headquarters.

Can you explain the reasoning behind the proposed merger with Twin Ridge and the plan to go public in the US? How is it playing out?

Over the last 12 to 24 months we've heard very clearly from our customers that they love this technology. They're very comfortable with the technology and with our manufacturing processes. Now they have thrown out the challenge to expand from premium and very high-profile vehicles, that more niche part of the market, into more mainstream and disruptive applications.

They want to understand how a company that's been founded and developed in Australia can then transition to a real-scale provider of a disruptive technology. We established processes to look for the right forms and the right sources of capital that's ultimately led us to a US capital market strategy.

That explains the merger with Twin Ridge. They are moving our listing into North America to access the sort of markets that enable us to grow as quickly as our customers are really demanding to see us grow this technology, and to drive it further and further into a higher volume and more disruptive state.

North America is a very early and rapid adopter of our technology. Broadly speaking, providers of capital and related elements of the industry in the US really understand what we're doing. We didn't come into the process with a preconceived notion of how we were going to do it. By entering that process, it took us to ultimately looking at this merger. Twin Ridge is a very, very strong and credible partner to merge with and really understand what we are doing. And jointly, I think we've got very much a shared vision for what we aspire to do with the business. And what we've established now from our Australian base is just a fantastic springboard.

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Information about Proposed Business Combination

As previously announced, Carbon Revolution Limited (“CBR”, “Carbon Revolution” or the “Company”) (ASX: CBR) and Twin Ridge Capital Acquisition Corp. (“Twin Ridge” or “TRCA”) (NYSE: TRCA) have entered into a definitive business combination agreement and accompanying scheme implementation deed (“SID”) that is expected to result in Carbon Revolution becoming publicly listed in the U.S. via a series of transactions, including a scheme of arrangement. Upon closing of the transactions, the ordinary shares and warrants of the merged company, Carbon Revolution Limited (formerly known as Poppetell Limited), a private limited company incorporated in Ireland with registered number 607450 (“MergeCo”), that will become the parent company of the Company and Twin Ridge, are expected to trade on a national exchange in the United States, and Carbon Revolution’s shares shall be delisted from the ASX.

Additional Information about the Proposed Business Combination and Where to Find It

This communication relates to the proposed business combination involving CBR, TRCA, MergeCo, and Poppettell Merger Sub, a Cayman Islands exempted company and wholly-owned subsidiary of MergeCo (“Merger Sub”). In connection with the proposed business combination, MergeCo has filed with the U.S. Securities and Exchange Commission (the “SEC”) a Registration Statement on Form F-4 (the “Registration Statement”) and Amendment No. 1 thereto, including a preliminary proxy statement of TRCA and a preliminary prospectus of MergeCo relating to the MergeCo Shares to be issued in connection with the proposed business combination. The Registration Statement, as amended, is subject to SEC review and further revision and is not yet effective. This communication is not a substitute for the Registration Statement, the definitive proxy statement/final prospectus, when available, or any other document that MergeCo or TRCA has filed or will file with the SEC or send to its shareholders in connection with the proposed business combination. This communication does not contain all the information that should be considered concerning the proposed business combination and other matters and is not intended to form the basis for any investment decision or any other decision in respect of such matters.

BEFORE MAKING ANY VOTING OR INVESTMENT DECISION, TRCA’S SHAREHOLDERS AND OTHER INTERESTED PARTIES ARE URGED TO READ THE PRELIMINARY PROXY STATEMENT/PROSPECTUS AND THE DEFINITIVE PROXY STATEMENT/ PROSPECTUS, WHEN IT BECOMES AVAILABLE, AND ANY AMENDMENTS THERETO AND ANY OTHER DOCUMENTS FILED BY TRCA OR MERGECO WITH THE SEC IN CONNECTION WITH THE PROPOSED BUSINESS COMBINATION OR INCORPORATED BY REFERENCE THEREIN IN THEIR ENTIRETY BEFORE MAKING ANY VOTING OR INVESTMENT DECISION WITH RESPECT TO THE PROPOSED BUSINESS COMBINATION BECAUSE THEY CONTAIN IMPORTANT INFORMATION ABOUT THE PROPOSED BUSINESS COMBINATION AND THE PARTIES TO THE PROPOSED BUSINESS COMBINATION.

After the Registration Statement, as amended, is declared effective, the definitive proxy statement will be mailed to shareholders of TRCA as of a record date to be established for voting on the proposed business combination. Additionally, TRCA and MergeCo will file other relevant materials with the SEC in connection with the proposed business combination. Copies of the Registration Statement, as amended, the definitive proxy statement/ prospectus and all other relevant materials for the proposed business combination filed or that will be filed with the SEC may be obtained, when available, free of charge at the SEC’s website at www.sec.gov. In addition, the documents filed by TRCA or MergeCo may be obtained, when available, free of charge from TRCA at www.twinridgecapitalac.com. TRCA’s shareholders may also obtain copies of the definitive proxy statement/prospectus, when available, without charge, by directing a request to Twin Ridge Capital Acquisition Corp., 999 Vanderbilt Beach Road, Suite 200, Naples, Florida 60654.

No Offer or Solicitation

This communication is for information purposes only and is not intended to and does not constitute, or form part of, an offer, invitation or the solicitation of an offer or invitation to purchase, otherwise acquire, subscribe for, sell or otherwise dispose of any securities, or the solicitation of any vote or approval in any jurisdiction, pursuant to the proposed business combination or otherwise, nor shall there be any sale, issuance or transfer of securities in any jurisdiction in contravention of applicable law. The proposed business combination will be implemented solely pursuant to the Business Combination Agreement and Scheme Implementation Deed, in each case, filed as exhibits to the Current Report on Form 8-K filed by TRCA with the SEC on November 30, 2022, which contains the full terms and conditions of the proposed business combination. No offer of securities shall be made except by means of a prospectus meeting the requirements of the Securities Act.

Participants in the Solicitation of Proxies

This communication may be deemed solicitation material in respect of the proposed business combination. TRCA, CBR, MergeCo, Merger Sub and their respective directors and executive officers, under SEC rules, may be deemed to be participants in the solicitation of proxies from TRCA's shareholders in connection with the proposed business combination. Investors and security holders may obtain more detailed information regarding the names and interests in the proposed business combination of TRCA's directors and officers in the Registration Statement, TRCA's filings with the SEC, including TRCA's initial public offering prospectus, which was filed with the SEC on March 5, 2021, TRCA's subsequent annual reports on Form 10-K and quarterly reports on Form 10-Q. To the extent that holdings of TRCA's securities by insiders have changed from the amounts reported therein, any such changes have been or will be reflected on Statements of Change in Ownership on Form 4 filed with the SEC. Information regarding the persons who may, under SEC rules, be deemed participants in the solicitation of proxies to TRCA's shareholders in connection with the business combination will be included in the definitive proxy statement/prospectus relating to the proposed business combination, when it becomes available. You may obtain free copies of these documents, when available, as described in the preceding paragraphs.

Forward-Looking Statements

All statements other than statements of historical facts contained in this communication are forward-looking statements. Forward-looking statements may generally be identified by the use of words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect," "should," "would," "plan," "project," "forecast," "predict," "potential," "seem," "seek," "future," "outlook," "target" or other similar expressions (or the negative versions of such words or expressions) that predict or indicate future events or trends or that are not statements of historical matters. These forward-looking statements include, but are not limited to, statements regarding the financial position, business strategy and the plans and objectives of management for future operations including as they relate to the proposed business combination and related transactions, pricing and market opportunity, the satisfaction of closing conditions to the proposed business combination and related transactions, the level of redemptions by TRCA's public shareholders and the timing of the completion of the proposed business combination, including the anticipated closing date of the proposed business combination and the use of the cash proceeds therefrom. These statements are based on various assumptions, whether or not identified in this communication, and on the current expectations of CBR's and TRCA's management and are not predictions of actual performance. These forward-looking statements are provided for illustrative purposes only and are not intended to serve as, and must not be relied on by any investor as a guarantee, an assurance, a prediction or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and may differ from such assumptions, and such differences may be material. Many actual events and circumstances are beyond the control of CBR and TRCA.

These forward-looking statements are subject to a number of risks and uncertainties, including (i) changes in domestic and foreign business, market, financial, political and legal conditions; (ii) the inability of the parties to successfully or timely consummate the proposed business combination, including the risks that we will not secure sufficient funding to proceed through to completion of the Transaction, any required regulatory approvals are not obtained, are delayed or are subject to unanticipated conditions that could adversely affect the combined company or the expected benefits of the proposed business combination, or that the approval of the shareholders of TRCA or CBR is not obtained; (iii) the ability to maintain the listing of MergeCo's securities on the stock exchange; (iv) the inability to complete any private placement financing, the amount of any private placement financing or the completion of any private placement financing on favorable terms; (v) the risk that the proposed business combination disrupts current plans and operations CBR or TRCA as a result of the announcement and consummation of the proposed business combination and related transactions; (vi) the risk that any of the conditions to closing of the business combination are not satisfied in the anticipated manner or on the anticipated timeline or are waived by any of the parties thereto; (vii) the failure to realize the anticipated benefits of the proposed business combination and related transactions; (viii) risks relating to the uncertainty of the costs related to the proposed business combination; (ix) risks related to the rollout of CBR's business strategy and the timing of expected business milestones; (x) the effects of competition on CBR's future business and the ability of the combined company to grow and manage growth, establish and maintain relationships with customers and healthcare professionals and retain its management and key employees; (xi) risks related to domestic and international political and macroeconomic uncertainty, including the Russia-Ukraine conflict; (xii) the outcome of any legal proceedings that may be instituted against TRCA, CBR or any of their respective directors or officers; (xiii) the amount of redemption requests made by TRCA's public shareholders; (xiv) the ability of TRCA to issue equity, if any, in connection with the proposed business combination or to otherwise obtain financing in the future; (xv) the impact of the global COVID-19 pandemic and governmental responses on any of the foregoing risks; (xvi) risks related to CBR's industry; (xvii) changes in laws and regulations; and (xviii) those factors discussed in TRCA's Annual Report on Form 10-K for the year ended December 31, 2022 under the heading "Risk Factors," and other documents of TRCA or MergeCo to be filed with the SEC, including the proxy statement / prospectus. If any of these risks materialize or TRCA's or CBR's assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements. There may be additional risks that neither TRCA nor CBR presently know or that TRCA and CBR currently believe are immaterial that could also cause actual results to differ from those contained in the forward-looking statements. In addition, forward-looking statements reflect TRCA's and CBR's expectations, plans or forecasts of future events and views as of the date of this communication. TRCA and CBR anticipate that subsequent events and developments will cause TRCA's and CBR's assessments to change. However, while TRCA and CBR may elect to update these forward-looking statements at some point in the future, each of TRCA, CBR, MergeCo and Merger Sub specifically disclaim any obligation to do so, unless required by applicable law. These forward-looking statements should not be relied upon as representing TRCA's and CBR's assessments as of any date subsequent to the date of this communication. Accordingly, undue reliance should not be placed upon the forward-looking statements.
