Filed Pursuant to Rule 424(b)(5)
Registration No. 333-294938

Amendment No.2 Dated September 22, 2026
To PROSPECTUS SUPPLEMENT dated May 8, 2026
(TO PROSPECTUS DATED, APRIL 16, 2026)

Up to $6,076,872

Stardust Power Inc.

Common Stock

This Amendment No. 2 (the "Amendment") to the prospectus supplement and the accompanying prospectus amends and supplements the information in the prospectus, dated April 16, 2026 (the "Prospectus"), filed with the Securities and Exchange Commission as part of our registration statement on Form S-3 (File No. 333-294938) (the "Registration Statement"), as previously supplemented by our prospectus supplement, dated May 8, 2026, and as amended by Amendment No. 1, dated September 17, 2026 (the "Prospectus Supplement," and, together with the Prospectus, the "Prior Prospectus"), relating to the offer and sale of shares of our common stock having an aggregate offering price of up to $13,990,537 through B. Riley Securities, Inc. (the "Agent") pursuant to the terms of the At Market Issuance Sales Agreement dated May 8, 2026 between us and the Agent (the "Sales Agreement"). This Amendment should be read in conjunction with the Prior Prospectus, and is qualified by reference thereto, except to the extent that the information herein amends or supersedes the information contained in the Prior Prospectus. This Amendment is not complete without, and may only be delivered or utilized in connection with, the Prior Prospectus and any future amendments or supplements thereto.

We are filing this Amendment to amend the Prior Prospectus to update the maximum amount of shares that we are eligible to sell under our Registration Statement pursuant to the Sales Agreement under General Instruction I.B.6 of Form S-3. As a result of these limitations and the current public float of our common stock, and in accordance with the terms of the Sales Agreement, we may offer and sell additional shares of our common stock having an aggregate offering price of up to $6,076,872 from time to time through the Agent. In the event that we may sell additional amounts under the Sales Agreement in accordance with General Instruction I.B.6, we will file another prospectus supplement or amendment prior to making such additional sales.

Our common stock trades on the Nasdaq Capital Market (the "Nasdaq") under the symbol "SDST." On September 21, 2026, the last reported sale price of our common stock on Nasdaq was $0.127 per share.

As of September 22, 2026, the aggregate market value of the voting and non-voting common equity held by non-affiliates, computed by reference to the price at which the common equity was last sold on July 24, 2026, of $1.58, was $20,067,410, based on 40,577,021 shares of outstanding common stock as of such date, of which 38,102,677 shares were held by non-affiliates. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below $75.0 million. During the 12 calendar months prior to and including the date of this Amendment, we have sold $5,793,011 of our securities pursuant to General Instruction I.B.6 of Form S-3.

Investing in the common stock involves risks that are described in the "Risk Factors" section beginning on page S-3 of this prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

B. Riley Securities

Prospectus Supplement dated September 22, 2026