

SPECTRASITE HOLDINGS INC  
 Form 424B3  
 March 15, 2001

PROSPECTUS SUPPLEMENT NO. 3  
 (To Prospectus dated February 9, 2001)

SPECTRASITE HOLDINGS, INC.  
 6 3/4% SENIOR CONVERTIBLE NOTES DUE 2010

This prospectus supplement no. 3 supplements and amends the prospectus dated February 9, 2001, as supplemented by prospectus supplement no. 1 dated February 20, 2001 and prospectus no. 2 dated March 7, 2001, relating to the resale of SpectraSite's 6 3/4% senior convertible notes due 2010 and the shares of SpectraSite common stock, par value \$.001, issuable upon conversion of the notes.

The table and footnotes on pages 35 through 38 of the prospectus set forth information with respect to the selling holders and the respective amounts of convertible notes held and shares of common stock beneficially owned by each selling holder that may be offered pursuant to the prospectus, as supplemented and amended. This prospectus supplement amends the table in the prospectus by (i) adding Spear, Leeds & Kellogg, First Union International Capital Markets, Alta Partners Holdings, LDC, KBC Cayman and Quattro Fund, LLC, (ii) removing CIBC World Markets Corp. and Fidelity Advisor Aggressive Growth Fund and (iii) replacing the information contained in the table for Morgan Stanley & Co. Incorporated and for the category "Any other holder of notes or future transferee, pledgee, donee or successor of any holder" with the corresponding information set forth below.

| Selling Securityholders  | Principal<br>Amount<br>of Notes<br>Owned and<br>Offered | Principal<br>Amount of<br>Notes Owned<br>After the<br>Offering | Shares of<br>Common<br>Stock<br>Beneficially<br>Owned<br>Prior to<br>Offering | Shares of<br>Common<br>Stock<br>Offered<br>Hereby |
|--|---|--|---|---|
| Alta Partners Holdings, LDC(1) .....   | \$ 8,000,000  | none   | 371,015   | 371,015   |
| First Union International Capital Markets  | 10,000,000  | none   | 463,769   | 463,769   |
| KBC Cayman.....  | 1,500,000   | none   | 69,566  | 69,566  |
| Morgan Stanley & Co. Incorporated.....   | 10,251,000  | none   | 8,022,794   | 475,409   |
| Quattro Fund, LLC.....   | 3,500,000   | none   | 162,319   | 162,319   |
| Spear, Leeds & Kellogg.....  | 1,500,000   | none   | 69,566  | 69,566  |
| Any other holder of notes or future<br>transferee, pledgee, donee or<br>successor of any holder..... | 12,159,000  | none   | 563,896   | 563,896   |

(1) Alta Partners Holdings, LDC sold 284,100 shares of SpectraSite common stock short.

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The prospectus, together with this prospectus supplement no. 3, prospectus supplement no. 2 and prospectus supplement no. 1, constitutes the prospectus required to be delivered by Section 5(b) of the Securities Act of 1933, as amended, with respect to offers and sales of the convertible notes and the common stock issuable upon conversion of the convertible notes.

Prospective investors should carefully review "Risk Factors" beginning on page 5 of the prospectus for a discussion of risks that should be considered when investing in the notes or our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus or any accompanying prospectus supplement. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is March 15, 2001.

The following table sets forth, as of March 15, 2001, information regarding the beneficial ownership of the notes and our common stock by the selling holders. The information is based on information provided by or on behalf of the selling holders through March 15, 2001.

| Selling Securityholders                               | Principal<br>Amount<br>of Notes<br>Owned and<br>Offered(1) | Principal<br>Amount of<br>Notes Owned<br>After the<br>Offering(2) | Shares of<br>Common<br>Stock<br>Beneficially<br>Owned<br>Prior to<br>Offering | Shares of<br>Common<br>Stock<br>Offered<br>Hereby(3) (4) t |
|---|--|---|---|--|
| AIG SoundShore Opportunity Holding Fund Ltd. (5)..... | \$ 5,000,000   | none  | 231,885   | 231,885  |
| AIG SoundShore Strategic Holding Fund Ltd. (6).....   | 5,000,000  | none  | 231,885   | 231,885  |
| Allstate Insurance Company.....                       | 625,000  | none  | 28,986  | 28,986   |
| Allstate Life Insurance Company.....                  | 75,000   | none  | 3,479   | 3,479  |
| Alpine Associates.....                                | 5,600,000  | none  | 259,711   | 259,711  |
| Alpine Partners, L.P.....                             | 900,000  | none  | 41,740  | 41,740   |
| Alta Partners Holdings, LDC (7).....                  | 8,000,000  | none  | 655,115   | 371,015  |
| Amaranth Securities L.L.C.....                        | 7,700,000  | none  | 357,102   | 357,102  |
| Arpeggio Fund, LP.....                                | 400,000  | none  | 18,551  | 18,551   |
| BTESC.....  | 1,500,000  | none  | 69,566  | 69,566   |
| BTOPO Growth vs Value.....                            | 3,000,000  | none  | 139,131   | 139,131  |
| Bank America Pension Plan.....                        | 4,000,000  | none  | 185,508   | 185,508  |
| Castle Convertibles Fund, Inc.....                    | 1,250,000  | none  | 57,972  | 57,972   |
| DEAM Convertible Arbitrage Fund .....                 | 2,000,000  | none  | 92,754  | 92,754   |
| Deephaven Domestic Convertible Trading Ltd. (8).....  | 3,000,000  | none  | 139,131   | 139,131  |
| Deeprook & Co.....                                    | 2,500,000  | none  | 115,943   | 115,943  |
| Deutsche Banc Alex.Brown (9).....                     | 12,867,000   | none  | 2,683,863   | 596,731  |
| DIA High Yield Bond Fund (10).....                    | 250,000  | none  | 11,595  | 11,595   |
| Duckbill & Co.....                                    | 2,000,000  | none  | 92,754  | 92,754   |
| Eaton Vance High Income Portfolio                     |  |   |   |  |

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|   |            |      |           |         |
|---|------------|------|-----------|---------|
| (11).....                                 | 2,860,000  | none | 132,638   | 132,638 |
| Eaton Vance Income Fund of Boston         |            |      |           |         |
| (12).....                                 | 1,540,000  | none | 71,421    | 71,421  |
| First Union International Capital Markets | 10,000,000 | none | 463,769   | 463,769 |
| General Motors Welfare Benefit Trust      |            |      |           |         |
| (L-T Veba).....                           | 2,000,000  | none | 92,754    | 92,754  |
| General Motors Welfare Benefit Trust      |            |      |           |         |
| (ST-Veba).....                            | 2,000,000  | none | 92,754    | 92,754  |
| Global Bermuda Limited Partnership.....   | 2,180,000  | none | 101,102   | 101,102 |
| Hallmark Master Trust High Yield (13)..   | 250,000    | none | 11,595    | 11,595  |
| Investcorp - SAM Fund Ltd.....            | 1,400,000  | none | 64,928    | 64,928  |
| JMG Capital Partners, LP.....             | 3,500,000  | none | 162,319   | 162,319 |
| JMG Triton Offshore Fund, Ltd.....        | 3,500,000  | none | 162,319   | 162,319 |
| KBC Cayman.....                           | 1,500,000  | none | 69,566    | 69,566  |
| KBC Financial Products USA.....           | 2,100,000  | none | 97,392    | 97,392  |
| Lakeshore International Ltd.....          | 4,100,000  | none | 190,145   | 190,145 |
| Lancer Securities Cayman LTD.....         | 1,000,000  | none | 46,377    | 46,377  |
| Lehman Brothers Inc. (14).....            | 1,000,000  | none | 46,377    | 46,377  |
| Lipper Convertibles, L.P.....             | 11,367,000 | none | 527,166   | 527,166 |
| Lipper Convertibles Series II, L.P.....   | 2,000,000  | none | 92,754    | 92,754  |
| Lipper Offshore Convertibles, L.P.....    | 2,000,000  | none | 92,754    | 92,754  |
| Lipper Offshore Convertibles, L.P. #2..   | 1,000,000  | none | 46,377    | 46,377  |
| Merced Partners Limited Partnership....   | 5,000,000  | none | 231,885   | 231,885 |
| Morgan Stanley & Co. Incorporated (15).   | 10,251,000 | none | 8,022,794 | 475,409 |
| Nomura Securities International,          |            |      |           |         |
| Inc.....                                  | 1,000,000  | none | 46,377    | 46,377  |
| Palladin Securities Cayman LLC.....       | 500,000    | none | 23,189    | 23,189  |
| Paloma Securities LLC.....                | 8,000,000  | none | 375,015   | 371,015 |
| Peoples Benefit Life Insurance            |            |      |           |         |
| Company.....                              | 4,000,000  | none | 185,508   | 185,508 |
| Peoples Benefit Life Insurance Company    |            |      |           |         |
| TEAMSTERS.....                            | 6,000,000  | none | 278,261   | 278,261 |
| PGEP III LLC.....                         | 500,000    | none | 23,189    | 23,189  |
| Quattro Fund, LLC.....                    | 3,500,000  | none | 162,319   | 162,319 |
| Retail Clerks Pension Trust.....          | 2,500,000  | none | 115,943   | 115,943 |
| Retail Clerks Pension Trust #2.....       | 1,500,000  | none | 69,566    | 69,566  |
| Rhapsody Fund, LP.....                    | 1,700,000  | none | 78,841    | 78,841  |
| St. Albans Partners Ltd.....              | 4,000,000  | none | 185,508   | 185,508 |
| Spear, Leeds & Kellogg.....               | 1,500,000  | none | 69,566    | 69,566  |

1

| Selling Securityholders               | Principal Amount of Notes Owned and Offered(1) | Principal Amount of Notes Owned After the Offering(2) | Shares of Common Stock Beneficially Owned Prior to Offering | Shares of Common Stock Offered Hereby(3) (4) t |
|---------------------------------------|--|---|---|--|
| TIAA-CREF Mutual Funds                |  |   |   |  |
| F/B/O its High Yield Bond Fund (16).. | \$ 250,000                                     | none  | 11,595  | 11,595   |
| TQA Master Plus Fund, LTD.....        | 500,000  | none  | 23,189  | 23,189   |
| TQA Master Fund, LTD.....             | 2,000,000                                      | none  | 92,754  | 92,754   |
| Teachers Insurance and Annuity        |  |   |   |  |
| Association.....                      | 6,000,000                                      | none  | 278,261   | 278,261  |
| Thomas Weisel Partners LLC (17).....  | 3,550,000                                      | none  | 164,638   | 164,638  |
| UBS O'Connor LLC F/B/O                |  |   |   |  |
| UBS Global Equity Arbitrage           |  |   |   |  |
| Master Ltd.....                       | 4,500,000                                      | none  | 208,696   | 208,696  |

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|   |            |      |         |         |
|---|------------|------|---------|---------|
| Variable Insurance Products Fund III:   |            |      |         |         |
| Aggressive Growth Portfolio.....  | 26,000     | none | 1,206   | 1,206   |
| Volkswagen of America Inc.--  |            |      |         |         |
| Salaried Eaton Vance Mgt. (18).....   | 100,000    | none | 4,638   | 4,638   |
| Any other holder of notes or future transferee, pledgee, donee or successor of any holder (19)..... |            |      |         |         |
|   | 12,159,000 | none | 563,896 | 563,896 |

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- (1) Assumes that the full amount of the notes held by the selling holder is being offered for registration hereunder.
- (2) Because the selling holders may, pursuant to the prospectus, offer all or some portion of the notes and shares they presently hold or, with respect to shares, have the right to acquire upon conversion of such notes, we cannot predict the amount or percentage of the notes and shares that will be held by the selling holder upon termination of any such sales. In addition, the selling holders identified above may have sold, transferred or otherwise disposed of all or a portion of their notes and shares since the date on which they provided the information regarding their notes and shares in transactions exempt from the registration requirements of the Securities Act. See "Plan of Distribution." The selling holders may sell all, part or none of the notes or shares listed in the table. The amounts listed in the table assume that each selling holder sells all of its convertible notes and/or shares of common stock underlying such notes.
- (3) Assumes that the full amount of the notes held by the selling holder is converted into shares of common stock at the conversion price and offered hereunder by such selling holder.
- (4) The conversion price and the number of shares issuable upon conversion of the notes are subject to adjustment under certain circumstances. See "Description of Notes--Conversion of Notes." Section 15.3 of the indenture governing the convertible notes provides that if any fractional shares of common stock are issuable upon conversion of the notes, Holdings may either pay cash in lieu of such fractional shares or round up the number of shares issuable upon conversion. The number of shares reported in the table assumes that Holdings rounds up the number of shares issued upon conversion. We expressly reserve the right to pay cash in lieu of fractional shares, and any decision as to whether pay cash or round up for fractional shares will be made at the time the notes are surrendered for conversion.
- (5) AIG Soundshore Opportunity Holding Fund Ltd. owned 115 Holdings' January 2001 puts exercisable at \$10 and 115 Holdings' February 2001 puts exercisable at \$10 prior to the offering.
- (6) AIG Soundshore Strategic Holding Fund Ltd. owned 115 Holdings' January 2001 puts exercisable at \$10 and 115 Holdings' February 2001 puts exercisable at \$10 prior to the offering.
- (7) Alta Partners Holdings, LDC sold 284,100 shares of SpectraSite common stock short.
- (8) Deephaven Domestic Convertible Trading Ltd. owned \$2,000,000 aggregate principal amount of Holdings' 12 1/2% senior discount notes due 2010 prior to the offering.

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- (9) Deutsche Banc Alex.Brown was a co-lead underwriter of our public common stock offering in July 2000 and a co-manager of our public common stock offering in February 2000. Deutsche Banc was also a placement agent for our 12 7/8 % senior discount notes due 2010 and our 10 3/4% senior notes due 2010.
- (10) DIA High Yield Bond Fund owned \$2,750,000 aggregate principal amount of Holdings' 11 1/4% senior discount notes due 2009 prior to the offering.
- (11) Eaton Vance High Income Portfolio owned \$5,360,000 aggregate principal amount of Holdings' 12% senior discount notes due 2008, \$25,500,000 aggregate principal amount of Holdings' 11 1/4% senior discount notes due 2009 and \$3,870,000 aggregate principal amount of Holdings' 12 7/8% senior discount notes due 2010 prior to the offering.
- (12) Eaton Vance Income Fund of Boston owned \$1,150,000 aggregate principal amount of Holdings' 12% senior discount notes due 2008, \$12,235,000 aggregate principal amount of Holdings' 11 1/4% senior discount notes due 2009 and \$4,080,000 aggregate principal amount of Holdings' 12 7/8% senior discount notes due 2010 prior to the offering.
- (13) Hallmark Master Trust High Yield owned \$1,550,000 of SpectraSite's 11 1/4% senior discount notes due 2009 prior to the offering.
- (14) Lehman Brothers Inc. was an initial purchaser of our 12% senior discount notes due 2008 and a co-manager of our public common stock offerings in February 2000 and July 2000.
- (15) Morgan Stanley & Co. Incorporated was the placement agent for the convertible notes. Morgan Stanley & Co. Incorporated was also an initial purchaser or placement agent for our 11 1/4% senior discount notes due 2009, our 12 7/8% senior discount notes due 2010 and our 10 3/4% senior notes due 2010 and was co-lead underwriter of our public common stock offerings in February 2000 and July 2000.
- (16) TIAA-CREF Mutual Funds F/B/O its High Yield Bond Fund owned \$250,000 aggregate principal amount of Holdings' 12 1/2% senior discount notes due 2010 prior to the offering.
- (17) Thomas Weisel Partners LLC was a co-manager of our public common stock offering in July 2000.
- (18) Volkswagen of America Inc.--Salaried Eaton Vance Mgt. owned \$15,000 of Holdings' 11 1/4% Senior Discount Notes due 2009 prior to the offering.
- (19) We may from time to time include additional selling holders and information about such selling holders' plans of distribution in future supplements to the prospectus, if required. The amounts provided assume that any holders of the notes, or any future transferees, pledgees, donees or successors of or from any such other holders of notes, do not beneficially own any common stock other than the common stock issuable upon conversion of the notes at the conversion rate.