

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 11-K

(Mark One)

**ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
FOR THE FISCAL YEAR ENDED December 31, 2010**

OR

**TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES AND EXCHANGE ACT
OF 1934
FOR THE TRANSITION PERIOD FROM _____ TO _____**

Commission File Number: 000-21835

A. Full title of the plan and the address of the plan, if different from that of the issuer named below:

**SUN HYDRAULICS CORPORATION 401(K) AND ESOP
RETIREMENT PLAN
1500 WEST UNIVERSITY PARKWAY
SARASOTA, FLORIDA 34243**

B. Name of issuer of the securities held pursuant to the plan and the address of its principal executive office:

**SUN HYDRAULICS CORPORATION
1500 WEST UNIVERSITY PARKWAY
SARASOTA, FLORIDA 34243**

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SUN HYDRAULICS CORPORATION 401(K) AND ESOP RETIREMENT PLAN
FINANCIAL STATEMENTS AND SUPPLEMENTAL SCHEDULE
AND REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
DECEMBER 31, 2010 AND 2009

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Participants and Administrator of the
Sun Hydraulics Corporation 401(k) and
ESOP Retirement Plan:

We have audited the accompanying statement of net assets available for benefits of Sun Hydraulics Corporation 401(k) and ESOP Retirement Plan as of December 31, 2010, and the related statement of changes in net assets available for benefits for the year then ended. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Plan is not required to have, nor have we been engaged to perform an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of Sun Hydraulics Corporation 401(k) and ESOP Retirement Plan as of December 31, 2010, and the changes in net assets available for benefits for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

Our audit was conducted for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule of assets (held at end of year) is presented for purposes of additional analysis and is not a required part of the basic financial statements, but is supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974. This supplemental schedule has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

/s/ Mayer Hoffman McCann P.C.

Clearwater, Florida
June 17, 2011

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Participants and Administrator of the
Sun Hydraulics Corporation 401(k) and
ESOP Retirement Plan:

We have audited the accompanying statement of net assets available for benefits of Sun Hydraulics Corporation 401(k) and ESOP Retirement Plan as of December 31, 2009, and the related statement of changes in net assets available for benefits for the year then ended. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Plan is not required to have, nor have we been engaged to perform an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of Sun Hydraulics Corporation 401(k) and ESOP Retirement Plan as of December 31, 2009, and the changes in net assets available for benefits for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

/s/ Kirkland, Russ, Murphy, & Tapp, P.A.

Clearwater, Florida
June 18, 2010

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SUN HYDRAULICS CORPORATION 401(K) AND ESOP RETIREMENT PLAN
STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS

| | December 31, | |
|---|---------------------|---------------------|
| | 2010 | 2009 |
| <u>Assets</u> | | |
| Investments at fair value | | |
| Cash timing difference | \$ (413) | \$ — |
| Common/collective trust fund | 7,815,385 | 7,209,395 |
| Money market fund | 234 | 178 |
| Mutual funds | 27,361,274 | 23,857,110 |
| Self directed brokerage accounts | 1,443,599 | 802,275 |
| Sponsor company common stock, non-participant directed | 12,460,127 | 9,668,925 |
| Total investments at fair value | <u>49,080,206</u> | <u>41,537,883</u> |
| Receivables | | |
| Employer contribution-cash | 90 | 82 |
| Employer contribution-sponsor company common stock | 2,192,882 | — |
| Participants' contribution | 90 | 77 |
| Notes receivable from participants | 2,120,688 | 2,112,832 |
| Total receivables | <u>4,313,750</u> | <u>2,112,991</u> |
| Net assets available for benefits at fair value | 53,393,956 | 43,650,874 |
| Adjustment from fair value to contract value for fully benefit responsive investment contract | (196,566) | (49,404) |
| Net assets available for benefits | <u>\$53,197,390</u> | <u>\$43,601,470</u> |

The accompanying Notes to the Financial Statements are an integral part of these financial statements.

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SUN HYDRAULICS CORPORATION 401(K) AND ESOP RETIREMENT PLAN
STATEMENTS OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS

| | Year Ended December 31, | |
|--|----------------------------|---------------------|
| | 2010 | 2009 |
| Additions to net assets attributed to: | | |
| Investment income | | |
| Net appreciation in fair value of investments | \$ 7,315,391 | \$ 8,102,019 |
| Interest on investments | — | 1 |
| Participant loan interest | 129,051 | 135,066 |
| Total investment income | <u>7,444,442</u> | <u>8,237,086</u> |
| Contributions | | |
| Participant | 1,523,058 | 1,353,932 |
| Employer-cash | 1,009,217 | 848,691 |
| Employer-sponsor company common stock, at fair value | 2,192,882 | — |
| Rollovers | 290,594 | 163,827 |
| Total contributions | <u>5,015,751</u> | <u>2,366,450</u> |
| Total additions | <u>12,460,193</u> | <u>10,603,536</u> |
| Deductions from net assets: | | |
| Benefits paid to participants | 2,837,700 | 4,292,916 |
| Administrative expenses | 26,573 | 26,495 |
| Total deductions | <u>2,864,273</u> | <u>4,319,411</u> |
| Net increase | <u>9,595,920</u> | <u>6,284,125</u> |
| Net assets available for benefits | | |
| Beginning of the year | 43,601,470 | 37,317,345 |
| End of the year | <u>\$53,197,390</u> | <u>\$43,601,470</u> |

The accompanying Notes to the Financial Statements are an integral part of these financial statements.

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SUN HYDRAULICS CORPORATION 401(K) AND ESOP RETIREMENT PLAN
NOTES TO THE FINANCIAL STATEMENTS
DECEMBER 31, 2010 AND 2009

1. Description of Plan

The following description of the Sun Hydraulics Corporation 401(k) and ESOP Retirement Plan (f/k/a Sun Hydraulics Corporation Retirement Plan) (the “Plan”) provides only general information. Participants should refer to the Plan agreement, as amended, for a more complete description of the Plan’s provisions.

General

The Plan became effective January 1, 1979. The Plan is a defined contribution 401(k) plan covering employees of its sponsor, Sun Hydraulics Corporation (“Corporation”), who have completed three months employment and reached the age of 18. Employees may enroll in the Plan effective on the first day of each calendar quarter following their third month of employment. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA).

During 2004, the Corporation adopted the Employee Stock Ownership Plan (“ESOP”). Under the ESOP, the Corporation may contribute on a discretionary basis company common stock to all employees eligible to participate in the Plan. The ESOP is a non-participant directed investment as the Corporation makes all contributions to the fund.

The sponsor company common stock fund is a share-based stock fund. At December 31, 2010, the fund held 329,633 shares of Sun Hydraulics Corporation common stock with a price of \$37.80 per share as of such date. At December 31, 2009, the fund held 368,340 shares of Sun Hydraulics Corporation common stock with a price of \$26.25 per share as of such date.

The Plan is administered by the Employee Benefits Committee (the “Committee”) except in connection with the acquisition, retention or disposition of Corporation stock held by the Plan, with respect to which the Board of Directors retained authority. The Committee is composed of five employees of the Corporation appointed by the Corporation’s Board of Directors. Charles Schwab Trust Company (the “Trustee”) is the current trustee for the Plan. Schwab Retirement Plan Services, Inc. provides the recordkeeping, accounting, and the telephone and internet exchange features of the Plan.

Contributions

Salary deferral contributions are made by participating employees through payroll deductions in amounts authorized by the employees. The Plan allows participants to make pre-tax contributions from 1% to 100% of their salary not to exceed statutory limits. Pre-tax contributions, of up to 6% of the employee’s salary (depending on length of service), are matched by the Corporation. Matching contributions are based on the years of service as listed in the following schedule:

| <u>Years of Service</u> | <u>% Match</u> |
|---------------------------|----------------|
| Less than three years | 3% |
| After three years | 4% |
| After five years | 5% |
| After seven or more years | 6% |

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Additional contributions may be made by the Corporation on a discretionary basis. During 2010 and 2009, the Corporation contributed \$2,192,882 and \$0, respectively, to the ESOP in the form of company stock. The contribution in 2010 is shown as a contribution receivable for that plan year.

Participant Accounts

Each participant's account is credited with the participant's contribution, any employer contribution and an allocation of Plan earnings or losses. Allocations are based on the participant's account balance.

Vesting

Participants are immediately vested in their voluntary contributions plus actual earnings thereon. Participants are vested in employer matching contributions and discretionary employer ESOP contributions based upon years of service defined in the Plan, as follows:

| <u>Years of Service</u> | <u>Vesting %</u> |
|-------------------------|------------------|
| Less than 1 | 0% |
| 1 | 20% |
| 2 | 40% |
| 3 | 60% |
| 4 | 80% |
| 5 or more | 100% |

Payment of Benefits

If a participant ceases to be employed by the Corporation for any reason other than death or total and permanent disability, prior to satisfying the age and service requirements for early or normal retirement, the terminated participant may elect to receive lump-sum or periodic payments of the participant's vested account balance. Withdrawals may be subject to tax withholdings and penalties.

Benefits may be paid upon death, disability, termination or retirement to the participants or their beneficiaries, in lump-sum amounts or periodic payments. Under certain circumstances, hardship withdrawals are allowed from the Plan.

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Investment Options

The participants, upon enrollment in the Plan, elect to invest their contributions, in multiples of five (5) % increments, in the investment options provided by the Plan. Initial investments in sponsor company common stock is not a participant directed investment option.

Notes Receivable From Participants

A participant may receive a loan based on the loan program set forth by the Plan. The minimum loan is \$1,000 and the maximum is \$50,000, not to exceed 50% of the participant's vested account balance. Loans are repaid through payroll deductions over a maximum of five (5) years. A participant can have only one loan outstanding. Current loans bear interest at rates between 5.25% and 10.25%.

Plan Expenses

The Plan pays the account administrative service fee from income earned by the Plan. The Corporation pays the administrative service fee, legal and accounting fees, and other expenses on behalf of the Plan.

Forfeitures

At December 31, 2010 and 2009, forfeited nonvested accounts totaled \$3,201 and \$33,722, respectively. Account balances will revert back to the Plan and will be used to pay reasonable administrative expenses of the Plan; any excess will be used to reduce the employer's matching contributions.

2. Summary of Accounting Policies

Basis of Accounting

The accompanying financial statements are presented on the accrual basis of accounting.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Investments

The Plan's investments are held by the Trustee. The Plan's investments are stated at fair value. If available, quoted market prices are used to value investments. For investments without quoted market prices, the net asset value is calculated and verified on a daily basis by the respective trusts and reported to the Trustee. Notes receivable from participants are valued at cost which equals fair value. Investment income and gains and losses are allocated among participants on the basis of individual participant account balances. Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividend income is recognized when earned.

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Payment of Benefits

Benefits are recorded when paid.

Net Appreciation in Fair Value of Investments

The Plan presents, in the statements of changes in net assets available for benefits, the net appreciation in fair value of its investments consisting of interest, dividends, the realized gains (losses) and the unrealized appreciation (depreciation) on those investments.

Recent Accounting Pronouncements

In September 2010, the Financial Accounting Standards Board issued guidance that requires participant loans be classified as notes receivable from participants, which are segregated from plan investments and measured at their unpaid principal balance plus any accrued but unpaid interest, which approximates fair value. Previously, loans were classified as investments and measured at fair value. The guidance should be applied retrospectively to all periods presented. The Plan adopted this guidance as of December 31, 2010 and reclassified participant loans from plan investments to a component of receivables for both periods presented in the statements of net assets available for benefits. Other than the reclassification requirements, the adoption of this standard did not have a material impact on the Plan's financial statements.

3. Investments

Investment balances that represent five percent or more of the net assets available for benefits are as follows:

| | 2010 | 2009 |
|---------------------------------|--------------|-------------|
| Sponsor Company Common Stock | \$12,460,127 | \$9,668,925 |
| Schwab Stable Value Select Fund | 7,815,385 | 7,209,395 |
| JPMorgan Core Bond Fund | 5,195,977 | 4,759,516 |
| Schwab S&P 500 Index Select | 4,367,113 | 4,253,971 |
| Artio International Equity A | 3,377,520 | 3,167,504 |
| Rainier Large Cap Equity | 2,896,175 | 2,345,129 |

During the years ended December 31, 2010 and 2009, the Plan's investments (including gains and losses on investments bought and sold, as well as held during the year) appreciated in value as follows:

| | 2010 | 2009 |
|---------------------------------|--------------------|--------------------|
| Mutual funds | \$3,246,328 | \$4,194,060 |
| Common/collective trust fund | 174,239 | 215,271 |
| Sponsor company common stock | 3,840,751 | 3,570,604 |
| Self directed brokerage account | 54,073 | 122,084 |
| Net change in fair value | <u>\$7,315,391</u> | <u>\$8,102,019</u> |

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A portion of the Schwab Stable Value Fund, a common collective trust (“CCT”), is invested in guaranteed investment contracts (“GICs”) which provide for benefit-responsive withdrawals by plan participants at contract value. The GICs are valued at fair value in Investments with an adjustment to reflect them at contract value on the Statement of Net Assets. The average yield for the CCT was 2.73% and 3.06% for the years ended December 31, 2010 and 2009, respectively. The CCT’s crediting interest rates on investments ranged from 0.02% to 9.88% and 0.22% to 9.70% on December 31, 2010 and 2009, respectively.

4. Fair Value Measurements

The Company uses the three-tier fair value hierarchy which prioritizes the inputs used in measuring fair value as follows:

Level 1. Observable inputs such as quoted prices in active markets;

Level 2. Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly; and

Level 3. Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

The asset’s fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. The following is a description of the valuation methodologies used for the investments measured at fair value, including the general classification of such instruments pursuant to the valuation hierarchy.

Common/collective trust fund

The common/collective trust fund’s market value is based on the asset value per unit as determined by the collective trust as of the valuation date and are classified as Level 2.

Common stocks

Sun Hydraulics Corporation common stock and common stocks held in self-directed brokerage accounts are stated at fair value as quoted by the market close price on a recognized securities exchange on the last business day of the Plan year and are classified as Level 1.

Money market funds

The money market funds are valued at quoted prices in an active market, which represents the net asset values of shares held by the Plan at year-end and are classified as Level 1.

Mutual funds

Mutual funds and mutual funds held in self-directed brokerage accounts are valued at quoted prices in an active market, which represents the net asset values of shares held by the Plan at year-end and are classified as Level 1.

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As of December 31, 2010, the Plan's investments measured at fair value on a recurring basis were as follows:

| Description | Assets Measured at Fair Value at 12/31/2010 | Fair Value Measurements at 12/31/10 Using | | |
|----------------------------------|---|--|---|---|
| | | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
| Common/collective trust fund | \$ 7,815,385 | — | 7,815,385 | — |
| Sponsor company common stock | 12,460,127 | 12,460,127 | — | — |
| Money market fund | 234 | 234 | — | — |
| Mutual funds | | | | |
| Target/Life Cycle/Allocation | 4,123,064 | 4,123,064 | — | — |
| Fixed Income | 5,195,977 | 5,195,977 | — | — |
| Large Company Equity | 10,037,402 | 10,037,402 | — | — |
| Mid Company Equity | 2,444,002 | 2,444,002 | — | — |
| Small Company Equity | 2,135,173 | 2,135,173 | — | — |
| International/Global Equity | 3,425,656 | 3,425,656 | — | — |
| Self directed brokerage accounts | 1,443,599 | 1,443,599 | — | — |
| | <u>\$49,080,619</u> | <u>41,265,234</u> | <u>7,815,385</u> | <u>—</u> |

As of December 31, 2009, the Plan's investments measured at fair value on a recurring basis were as follows:

| Description | Assets Measured at Fair Value at 12/31/2009 | Fair Value Measurements at 12/31/09 Using | | |
|----------------------------------|---|--|---|---|
| | | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
| Common/collective trust fund | \$ 7,209,395 | — | 7,209,395 | — |
| Sponsor company common stock | 9,668,925 | 9,668,925 | — | — |
| Money market fund | 178 | 178 | — | — |
| Mutual funds | | | | |
| Target/Life Cycle/Allocation | 3,515,568 | 3,515,568 | — | — |
| Fixed Income | 4,759,516 | 4,759,516 | — | — |
| Large Company Equity | 8,855,718 | 8,855,718 | — | — |
| Mid Company Equity | 1,995,170 | 1,995,170 | — | — |
| Small Company Equity | 1,563,634 | 1,563,634 | — | — |
| International/Global Equity | 3,167,504 | 3,167,504 | — | — |
| Self directed brokerage accounts | 802,275 | 802,275 | — | — |
| | <u>\$41,537,883</u> | <u>34,328,488</u> | <u>7,209,395</u> | <u>—</u> |

5. Non-participant Directed Investments

Information about the net assets and the significant components of the changes in net assets relating to the non-participant directed investments is as follows:

| | 2010 | 2009 |
|------------------------------|---------------------|--------------------|
| Net assets: | | |
| Sponsor company common stock | <u>\$12,460,127</u> | <u>\$9,668,925</u> |

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| | Year Ended December 31, | |
|---|----------------------------|--------------------|
| | 2010 | 2009 |
| Changes in net assets: | | |
| Contributions | \$ — | \$2,463,200 |
| Net appreciation | 3,840,751 | 3,570,604 |
| Benefits paid to participants | (604,061) | (562,633) |
| Administrative expenses | (6,449) | (6,440) |
| Loans taken | (281,692) | (327,906) |
| Forfeitures | (44,800) | (60,639) |
| Transfers to participant directed investments | (112,547) | (280,510) |
| | <u>\$2,791,202</u> | <u>\$4,795,676</u> |

6. Tax Status of the Plan

The Internal Revenue Service has determined and informed the Corporation by letter dated October 3, 2005, that the Plan and related trusts were designed in accordance with applicable sections of the Internal Revenue Code. Although the Plan has been amended since receiving the letter, the Corporation believes that the Plan is designed and is currently being operated in compliance with the applicable requirements of the Internal Revenue Code.

Additionally, the Internal Revenue Service has determined and informed the Corporation by letter dated May 20, 2011, the Plan and related trusts were designed in accordance with applicable sections of the Internal Revenue Code. Although the Plan has been amended since receiving the letter, the Corporation believes that the Plan is designed and is currently being operated in compliance with the applicable requirements of the Internal Revenue Code.

7. Plan Termination

Although it has not expressed any intent to do so, the Corporation has the right under the Plan to amend or discontinue the Plan at any time and to terminate the Plan, subject to the terms of ERISA. In the event of Plan termination, the participants will become 100% vested in their accounts and net assets of the Plan will be distributed to the participants and beneficiaries of the Plan.

8. Related Party Transactions

Certain Plan investments are shares of mutual funds and a common/collective trust managed by the Trustee and shares of the Corporation's common stock; and, therefore, these transactions qualify as party-in-interest.

9. Risks and Uncertainties

The Plan invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market, and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect participants' account balances and the amounts reported in the statements of net assets available for benefits.

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10. Reconciliation of Financial Statements to Schedule H of Form 5500

The following is a reconciliation of net assets available for benefits per the financial statements at December 31, 2010 and 2009 to Schedule H of Form 5500:

| | <u>2010</u> | <u>2009</u> |
|---|---------------------|---------------------|
| Net assets available for benefits per the financial statements | \$53,197,390 | \$43,601,470 |
| Adjustment from fair value to contract value for fully benefit responsive investment contract | <u>196,566</u> | <u>49,404</u> |
| Net assets available for benefits per Schedule H of Form 5500, line 1(l) | <u>\$53,393,956</u> | <u>\$43,650,874</u> |

The following is a reconciliation of net increase in net assets available for benefits for the years ended December 31, 2010 and 2009 per the financial statements to net income on Schedule H of Form 5500:

| | <u>2010</u> | <u>2009</u> |
|---|--------------------|--------------------|
| Net increase in net assets available for benefits per the financial statements | \$9,595,920 | \$6,284,125 |
| Adjustment from fair value to contract value for fully benefit responsive investment contract | <u>147,162</u> | <u>415,430</u> |
| Net income per Schedule H of Form 5500, line 2(k) | <u>\$9,743,082</u> | <u>\$6,699,555</u> |

SUPPLEMENTAL SCHEDULE

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SUN HYDRAULICS CORPORATION 401(K) AND ESOP RETIREMENT PLAN

SCHEDULE OF ASSETS (HELD AT END OF YEAR)

December 31, 2010

Information furnished pursuant to item 4i, Schedule H of Form 5500

Employer identification number: 59 2754337

| (a) | (b) | (c) | (d) | (e) |
|-----|---|--|--------------------|---------------------|
| | Identity of issuer, borrower, lessor, or similar party | Description of investment including maturity date, rate of interest, collateral, par or maturity value | Cost | Market Value |
| * | Schwab Stable Value Select Fund | Common/Collective Trust | \$ # | \$ 7,815,385 |
| * | Schwab Government Money Fund | Money Market Fund | # | 234 |
| | American Beacon Large Cap Value | Mutual Fund | # | 1,516,602 |
| | Artio International Equity A | Mutual Fund | # | 3,377,520 |
| | Blackrock Lifepath 2020 | Mutual Fund | # | 1,700,897 |
| | Blackrock Lifepath 2030 | Mutual Fund | # | 1,529,838 |
| | Blackrock Lifepath 2040 | Mutual Fund | # | 436,038 |
| | Blackrock Lifepath 2050 | Mutual Fund | # | 27,581 |
| | Blackrock Lifepath Ret I | Mutual Fund | # | 428,710 |
| | JPMorgan Core Bond Fund | Mutual Fund | # | 5,195,977 |
| | Loomis Sayles Small Cap Value | Mutual Fund | # | 2,135,173 |
| | Manning & Napier World Oppty A | Mutual Fund | # | 10,692 |
| | Morgan Stanley Mid Cap Grth P | Mutual Fund | # | 52,304 |
| | Oppenheimer Developing Mkts Y | Mutual Fund | # | 37,444 |
| | Perkins Mid Cap Value Inv | Mutual Fund | # | 2,391,698 |
| | Rainier Large Cap Equity | Mutual Fund | # | 2,896,175 |
| * | Schwab S&P 500 Index Select | Mutual Fund | # | 4,367,113 |
| | Thornburg Value R5 | Mutual Fund | # | 1,257,512 |
| | Personal Choice Retirement Account | Self Directed Brokerage Account | # | 1,443,599 |
| ** | Sponsor Company Common Stock | Common Stock | 3,889,236 | 12,460,127 |
| | Notes receivable from participants | Various maturity dates with interest ranging from 5.25%-10.25% | # | 2,120,688 |
| | Total investments | | <u>\$3,889,236</u> | <u>\$51,201,307</u> |

* Represents a party-in-interest to the Plan.

** Represents both a party-in-interest to the Plan and a non-participant directed fund.

Investments are participant-directed and, therefore, cost information is not required.

See accompanying independent registered public accounting firm's report.

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Exhibits:

| <u>Exhibit Number</u> | <u>Exhibit Description</u> |
|----------------------------------|---|
| 23.1 | Consent of Independent Registered Certified Public Accounting Firm – Mayer, Hoffman, McCann, P. C. |
| 23.2 | Consent of Independent Registered Certified Public Accounting Firm – Kirkland, Russ, Murphy, & Tapp, P.A. |

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SIGNATURE

The Plan. Pursuant to the requirements of the Securities Exchange Act of 1934, the Plan Administrator has duly caused this annual report to be signed on its behalf by the undersigned hereunto duly authorized.

Sun Hydraulics Corporation 401(K) and ESOP Retirement Plan

June 17, 2011

By: /s/ Tricia L. Fulton
Tricia L. Fulton
Chief Financial Officer (Principal
Financial and Accounting Officer)

CONSENT OF INDEPENDENT REGISTERED CERTIFIED PUBLIC ACCOUNTING FIRM

We have issued our report dated June 17, 2011, accompanying the financial statements of the Sun Hydraulics Corporation 401(k) and ESOP Retirement Plan included on Form 11-K for the year ended December 31, 2010. We hereby consent to the incorporation by reference of said report in the Registration Statements of Sun Hydraulics Corporation on Forms S-8 (File No. 333-30801, effective July 3, 1997, File No. 333-83269, effective July 20, 1999, File No. 333-62816, effective June 12, 2001, File No. 333-66008 effective July 27, 2001, File No. 333-119367, effective September 29, 2004, File No. 333-124174, effective April 19, 2005 and File No. 333-158245, effective March 27, 2009).

/s/ Mayer Hoffman McCann P.C.

Clearwater, Florida
June 17, 2011

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/s/ Kirkland, Russ, Murphy, & Tapp, P.A.

Clearwater, Florida
June 17, 2011