UBS

UBS Investment Research

MEMC Electronic Materials

Global Equity Research

United States

Electric Components & Equipment

Rating	Buy 2
	Prior: Neutral 2
Price target	US$17.00
	Prior:US$14.00
Price	US$13.42

RIC: WFR.N BBG: WFR US

2 March 2005

Upgrading to Buy 2

- **Estimate higher wafer demand & a more favorable product mix**

We estimate that 300mm wafers (which have higher prices and margins) will grow to 20% of shipments in 2006 from 12% in 2004, and expect higher margin epitaxial/prime wafers to grow to 70% of 300mm sales in 2006 (from about 60%). We also expect MEMC benefits from 300mm production at its subsidiary Taisil, which we estimate has 1% higher GM than the corporate average.

- **Benefits likely from potential shortage of polysilicon**

Our checks suggest that Polysilicon, a raw material used to manufacture silicon wafers and solar panels, remains in tight supply, given increased demand from solar panel producers and a lack of poly capacity expansions. MEMC has its own poly plants, which we expect can result in share gains over those who lack their own poly or long term agreements with poly suppliers.

- **Increasing estimates on improved outlook**

We increased our EPS estimates to reflect our more positive outlook for the company. Our 2005 and 2006 EPS estimates go to $1.10 and $1.34 from $1.02 and $1.06. Our new revenue estimates are $1.14B in 2005 and $1.25B in 2006, vs. $1.10B and $1.17B previously.

- **Valuation: Raising 12-month price target to $17 from $14**

Our price target is based on applying a 13x multiple to our revised 2006 EPS estimate of $1.34. We estimate free cash flow of $182M in 2006 ($0.78/shr.) which implies a current price to cash flow ratio of 17x.

Highlights (US$m)	12/03	12/04	12/05E	12/06E	12/07E
Revenues	781	1,028	1,138	1,253	-
EBIT	143	259	324	399	-
Net income (UBS)	117	224	249	312	-
EPS (UBS, US$)	0.53	0.90	1.10	1.34	-
Net DPS (UBS, US$)	0.00	0.00	0.00	0.00	-

Profitability & Valuation	5-yr hist. av.	12/04	12/05E	12/06E	12/07E
EBIT margin %	-3.7	25.2	28.5	31.8	-
ROIC (EBIT) %	-3.6	58.4	51.8	51.6	-
EV/EBITDA x	18.2	7.3	8.1	6.4	-
PE (UBS) x	-7.3	10.5	12.2	10.0	-
Dividend yield %	0.0	0.0	0.0	0.0	-

Source: UBS adjusted EPS is stated before goodwill-related charges and other adjustments for abnormal and economic items at the analysts' judgement.

Valuations: based on an average share price that year, (E): based on a share price of US$13.42 on 01 Mar 2005

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Trading data	
52-wk. range	US$13.29-7.39
Market cap.	US$2.79bn
Shares o/s	208m
Free float	37%
Avg. daily volume ('000)	1,146
Avg. daily value (US$m)	13.6

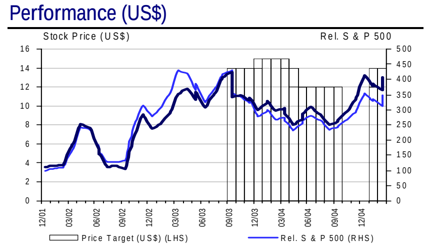
Balance sheet data 12/05E	
Shareholders' equity	US$0.69bn
P/BV (UBS)	4.3x
Net cash (debt)	US$0.06bn

Forecast returns	
Forecast price appreciation	+26.7%
Forecast dividend yield	0.0%
Forecast stock return	+26.7%
Market return assumption	8.6%
Forecast excess return	+18.1%

EPS (UBS, US$)

	12/05E			12/04
	From	To	Cons.	Actual
Q1E	0.24	0.24	*0.24*	0.16
Q2E	0.24	0.26	*0.25*	0.20
Q3E	0.26	0.29	*0.29*	0.27
Q4E	0.28	0.31	*0.31*	0.26
12/05E	1.02	1.10	*1.10*	
12/06E	1.06	1.34	*1.25*	

Performance (US$)



Source: UBS

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ANALYST CERTIFICATION AND REQUIRED DISCLOSURES BEGIN ON PAGE 7

Expect higher mix-driven average selling prices (ASPs) and higher margins

Our recent industry checks suggest that that 300mm demand is accelerating more than previously thought due mostly to the company's memory customers and a faster adjustment of inventory build that began in mid/late 2004. In addition, according to SEMI's wafer shipment report, 300mm wafer shipments represented 15.5% of the total silicon area shipped in 4Q04 (12% on average in 2004), ahead of our estimate of 14.4%. This proportion of 300mm wafers in MEMC's product mix is of key importance, given the 2.0 – 2.5x price premium (per unit of silicon area) that these larger wafers enjoy over smaller diameters and a 5-10% difference in gross margin.

Table 1: Silicon wafers – Area and price estimates

	200mm (8")	300mm (12")	Ratio
Area (sq in)	50.3	113.1	2.25x
Prices ($/sq inch)	$1.00	$2.00 - $2.50	2.0x – 2.5x
Price ($/ wafer)	$50	$225	4.5x – 5.6x

Source: UBS estimates

The SICAS capacity utilization report also indicates that 300mm wafer consumption accelerated in 4Q04 despite the overall decline in integrated circuit wafer starts. The report shows that while overall IC wafer starts declined 6.3% in 4Q04, 300mm wafer starts increased 2.5% Q/Q.

Table 2: Actual wafer starts trends

	1Q04	2Q04	3Q04	4Q04
Total ICs - Actual wafer starts per week	1,281.6	1,340.9	1,345.2	1,260.9
Q/Q growth		4.6%	0.3%	-6.3%
300 mm - Actual wafer starts per week (8" equivalent)	55.1	110.3	117.2	120.2
Q/Q growth		100.2%	6.3%	2.6%

Source: SICAS

As a result, we have increased our estimate of 300mm demand in 2005 and 2006 to 17.6% and 20.4% (from 16.6% and 19.4% respectively). In addition, we believe this acceleration in the adoption of 300mm wafers should result in a faster decline of the percent of lower priced test wafers in the mix. For a mature wafer size, test wafers have typically represented about 20% of the mix. As of the 4Q04, 300mm test wafers accounted for about 35% of MEMC's 300mm wafer shipments. Given this current trend we expect that there remains substantial room still for 300mm test wafers to decline as 300mm adoption increases. The result is increased demand for the more expensive polished and epitaxial wafers, which we estimate could grow to 70-75% of total 300mm wafer shipments by 2006 (from 65% currently). We have adjusted our estimate for 300mm wafer average selling prices to an 8% decline in 2005 (from 15% previously).

As a result of our assumption of higher 300mm demand and a faster decline in test wafers in the mix, our wafer industry model now estimates that mix-adjusted ASPs likely increase 3% and 1% in 2005 and 2006 respectively (from about flat previously).

Table 3: Wafer industry estimates

		300mm Volumes		ASP Growth			Revenue Growth	
	Wafer Volumes Growth	% of Total	Worst Case	Base Case	Best Case	Worst Case	Base Case	Best Case
CAGR 1991 - 2003	9%		-2%	-2%	-2%	0%	0%	0%
2003A	10%	8.2%	0%	0%	0%	11%	11%	11%
2004E	22%	12.0%	1%	6%	7%	23%	29%	30%
2005E	7%	17.6%	-1%	3%	4%	6%	10%	12%
2006E	8%	20.4%	-3%	1%	2%	5%	9%	10%
CAGR 2004 - 2007	8%		-2%	1%	2%	6%	8%	10%

Source: UBS estimates

We believe that MEMC will be able to realize higher gross margins on a better product mix. Although the company does not disclose the margin spread between 200mm and 300mm wafer sales other to say that it is "significant". We believe that the spread is in the 5 to 10% range.

The company's Taisil subsidiary in Taiwan should also contribute to higher gross margins, particularly next year. Production costs in Taiwan are lower than in other regions and this facility will only have 300mm equipment. Our industry checks suggest that gross margins at its Taisil are currently at least 100 bps higher than the corporate average. We note that before MEMC started consolidating Taisil's results in February 2004, Taisil's U.S. GAAP financial statements indicated gross margins that were in line with MEMC's corporate average (Table 4). However, as a result of MEMC's acquisition of all of Taisil's equity, it can now sell wafers to customers outside of Taiwan, which was not the case previously. This has resulted in a larger addressable market for Taisil and has given it enhanced pricing power; thus, the improvement in margins.

Table 4: Taisil Gross Margins

	2002	2003
Taisil Gross Margin	25%	29%
MEMC Gross Margin	25%	30%

Source: Company Reports

In addition, we believe that when 300mm capacity is up and running at Taisil, the company will be able to reap higher margins on those 300 mm wafers versus 300mm wafers produced in Japan or the U.S. 300mm capacity at Taisil is expected to be in place in the late 3Q05; hence we would expect to see MEMC's margins benefiting from this next year. Silicon on insulator (SOI), is potentially another source of margin expansion. This is however, a 2006 opportunity at the earliest, as SOI sales are insignificant at this time. The transition to 65nm and 45nm should drive demand for SOI wafers.

Expect polysilicon shortage to result in market share gains for MEMC

Polysilicon is manufactured in special chemical plants using silane gas as the raw material. MEMC owns 2 polysilicon plants, one is in Pasadena, TX and in the other is in Merano, Italy. The company uses most of its polysilicon production in the manufacturing of silicon wafers; any excess polysilicon is sold to other producers which we estimate is likely less than 5% of total sales.

Our industry checks suggest that the increasing demand of polysilicon from solar panel producers (Kyocera, Sharp, etc.) has resulted in a tight supply situation for polysilicon. According to our industry checks, no significant polysilicon plant expansions are scheduled to come on line soon as the lead time to build a plant from scratch is 12-18 months.

The main polysilicon suppliers are listed below in Table 5. We would highlight that on February 11, 2005, Komatsu (the #3 silicon wafer supplier) announced that it signed a letter of intent to sell its 75% stake in ASiMI to solar energy company Renewable Energy Corporation (REC) from Norway. The transaction is expected to be completed in April. REC has indicated that it will gradually shift ASiMI's polysilicon business to PV (solar panel) applications from electronic (silicon wafers for ICs) applications. However, ASiMI will honor the long term agreement with Komatsu to provide the latter with its polysilicon needs. We believe this development further tightens the supply of polysilicon for silicon wafer needs and increases the value of MEMC's polysilicon asset.

Table 5: Polysilicon producers

Polysilicon Producers	Supplier to:
Hemlock (U.S.)	Shin-Etsu Handotai owns 25% of Hemlock, Dow Corning 64%, Mitsubishi Materials 11%
Tokuyama (Japan)	Primary supplier to SUMCO
Wacker Chemie (Germany)	Wacker is parent company of Siltronic
ASiMI (U.S.)	Previously owned by Komatsu, recently Sold to REC (solar panel manufacturer)
MEMC (U.S.)	Owns facilities in Pasadena, CA and in Italy
Mitsubishi Polysilicon	
SGS	

Source: UBS estimates and company reports

Shin-Etsu Handotai, MEMC's main competitor, has a 25% stake in Hemlock, which suggests that Shin-Etsu likely has its polysilicon needs covered. We believe SUMCO, the # 2 silicon wafer producer, has long-term agreements with Tokuyama while Siltronic (# 3 player) buys its polysilicon needs from parent Wacker. Although Komatsu (#5 player) sold its ASiMI polysilicon producer business, it maintains a long- term agreement with buyer REC.

We believe the smallest silicon wafer producers such as Toshiba Ceramics (#6 player, 4.3% market share) and LG Siltron (# 7 player, 4.2% market share) are likely negatively impacted the most by ongoing polysilicon shortages, and that MEMC can benefit as a result and increase its market share. The largest solar panel producers are: Kyocera, Shell Solar, Sharp, and BP Solar.

We also expect that a continued shortage of polysilicon will also likely provide MEMC with additional pricing power when selling silicon wafers as the solar panel manufacturers are likely to offer a premium price for the available polysilicon. We believe that the silicon wafer manufacturers will likely increase prices to end customers to account for the higher sales they could receive by selling the polysilicon to the solar panel manufacturers.

Incrementally positive on wafer demand outlook

We now estimate that 2005 is shaping up to be a better year than what we expected in early January, when we initiated coverage of MEMC. End-markets remain robust and the excess inventory problem seems to be under control. Consequently, we have become incrementally more positive on the outlook for wafer demand.

Reports from semiconductor operators and OEMs during the recently completed earnings season suggest that the excess inventories that had accumulated both at OEMs and semiconductor fabs have been worked down substantially. This is also consistent with the SICAS capacity utilization report, which shows that in the fourth quarter of 2004 overall integrated circuit (IC) capacity utilization fell to 86% (from 92% in 3Q04), on a 6.3% decline in wafer starts.

Table 6: ICs – Wafer starts and capacity utilization rate

	1Q04	2Q04	3Q04	4Q04
Total ICs Capacity (wafer starts per week)	1,372.5	1,405.8	1,454.3	1,466.4
Q/Q growth		2.4%	3.4%	0.8%
Total ICs - Actual wafer starts per week	1,281.6	1,340.9	1,345.2	1,260.9
Q/Q growth		4.6%	0.3%	-6.3%
Capacity Utilization Rate	93%	95%	92%	86%

Source: SICAS

Additionally, according to the latest SEMI report, wafer shipments by wafer manufacturers to fabs declined 8.8% during 4Q04, which is more than the 6.3% decline in wafer starts during the quarter. This data suggests that fabs may have also decreased their bare wafer inventories during the last quarter.

These reports point to a much clearer channel across the food chain. Consequently, we have become more positive on the outlook for wafer starts and bare wafer shipments. Consequently, as shown on Table 3, we have raised our wafer shipment assumptions to +7% in 2005 and 2006 (from 5% and 6% respectively).

Price target and estimates revisions

We have revised our industry model and earnings model for MEMC to reflect our more positive outlook. We have increased our price target to $17 (from $14). Our target price is based on applying a 13x PE multiple applied to our 2006 EPS estimate of $1.34.

Revenue growth revision. After introducing our new estimates of unit growth, 300 mm demand and ASPs, our industry model results in revenue growth of 10% in 2005, and 9% in 2006 (up from 5% previously). We believe MEMC can continue to gain some market share in the next two years and we forecast slightly higher than the industry sales growth of 11% and 10% in 2005 and 2006 respectively (from 7% and 6% previously).

Gross margin revision. We have increased our gross margin assumptions for MEMC for the reasons explained above. We now forecast gross margin of 38.5% in 2005 and 41.3% in 2006 (from 37.7% and 37.5% respectively).

EPS revision. As a result of our new sales and gross margin assumptions, our new EPS forecasts are $1.10 in 2005 and $1.34 in 2006 (from $1.02 and $1.06).

■ MEMC Electronic Materials

MEMC, headquartered in St Peters, MO, is the world's only publicly traded pure-play silicon wafer manufacturer. The company produces and sells silicon wafers for the semiconductor industry, and is fourth in market share. MEMC sells its products to most semiconductor device manufacturers. Products include prime polished, epitaxial and test/monitor wafers in diameters ranging from 100mm to 300mm. The company operates nine plants that are strategically located close to the major semiconductor markets in the U.S., Europe, and Asia. Texas Pacific Group, a private equity company, controls MEMC.

■ Statement of Risk

MEMC's business is subject to the cyclicality of semiconductor demand, which can result in share price volatility. There is a risk of overcapacity of 300mm wafers in the future, which can result in price and margin erosion. In addition, continued investment in R&D and infrastructure are needed to ensure the long-term viability of the business which could limit EPS upside.

MEMC shares are 34% owned by the company's controlling shareholder Texas Pacific Group (TPG). Potential share sales by TPG could increase the supply of shares in the market and limit appreciation in MEMC's share price. MEMC has historically used stock options to compensate its employees. We estimate that the company’s potential stock option expense in CY06 is -$0.04 or 3% of our official $1.34 EPS estimate.

■ Analyst Certification

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Required Disclosures

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UBS Investment Research: Global Equity Ratings Definitions and Allocations

UBS rating	Definition	UBS rating	Definition	Rating category	Coverage[1]	IB services[2]
Buy 1	FSR is > 10% above the MRA, higher degree of predictability	**Buy 2**	FSR is > 10% above the MRA, lower degree of predictability	**Buy**	36%	32%
Neutral 1	FSR is between -10% and 10% of the MRA, higher degree of predictability	**Neutral 2**	FSR is between -10% and 10% of the MRA, lower degree of predictability	**Hold/Neutral**	53%	35%
Reduce 1	FSR is > 10% below the MRA, higher degree of predictability	**Reduce 2**	FSR is > 10% below the MRA, lower degree of predictability	**Sell**	11%	29%

1: Percentage of companies under coverage globally within this rating category.

2: Percentage of companies within this rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS; as of 31 December 2004.

KEY DEFINITIONS

Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months.
Market Return Assumption (MRA) is defined as the one-year local market interest rate plus 5% (an approximation of the equity risk premium).
Predictability Level The predictability level indicates an analyst's conviction in the FSR. A predictability level of '1' means that the analyst's estimate of FSR is in the middle of a narrower, or smaller, range of possibilities. A predictability level of '2' means that the analyst's estimate of FSR is in the middle of a broader, or larger, range of possibilities.
Under Review (UR) Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation.
Rating/Return Divergence (RRD) This qualifier is automatically appended to the rating when stock price movement has caused the prevailing rating to differ from that which would be assigned according to the rating system and will be removed when there is no longer a divergence, either through market movement or analyst intervention.

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US Closed-End Fund ratings and definitions are: Buy: Higher stability of principal and higher stability of dividends; Neutral: Potential loss of principal, stability of dividend; Reduce: High potential for loss of principal and dividend risk.
UK and European Investment Fund ratings and definitions are: Buy: Positive on factors such as structure, management, performance record, discount; Neutral: Neutral on factors such as structure, management, performance record, discount; Reduce: Negative on factors such as structure, management, performance record, discount.
Core Banding Exceptions (CBE): Exceptions to the standard +/-10% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Companies Mentioned table in the relevant research piece.

Companies mentioned

Company Name	Reuters	Rating	Price
MEMC Electronic[2,4,6,16]	WFR.N	Buy 2	US$12.98

Price(s) as of 28 February 2005. Source: UBS.

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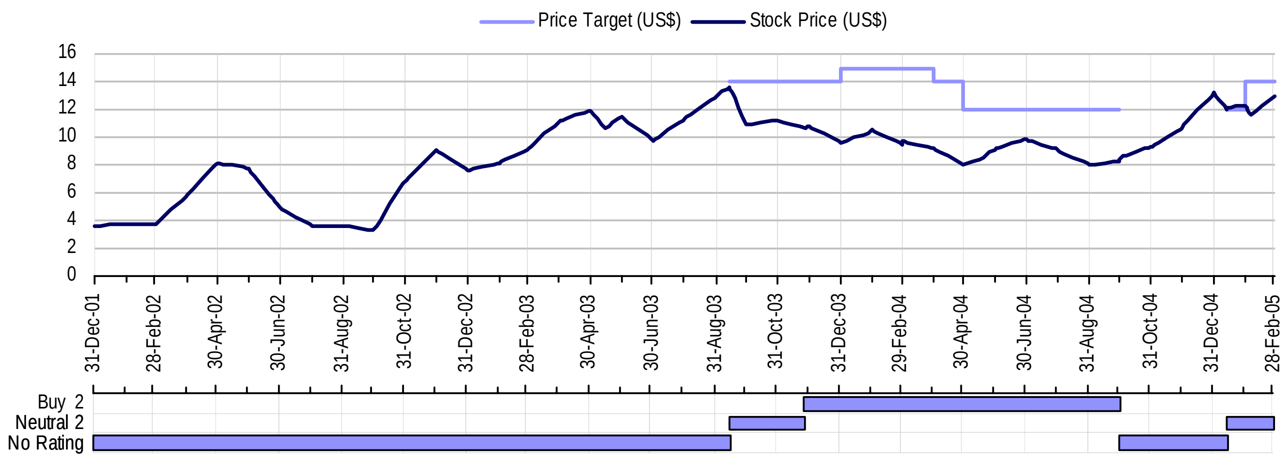
MEMC Electronic Materials (US$)



Source: UBS; as of 28 February 2005.

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