Delivering profitable growth driven by attractive market opportunities & strong technology inflections

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RF Power Technology for more and faster Electronic Devices

Plasma Control Technologies

Industry Drivers

Technology Inflections

RF Power Challenges

- Performance
- Speed
- Power
- Accuracy
- Quality
- Costs

IoT

- 3D Nand
- Multiple Patterning
- FinFET
- TSV
- Advanced Displays

3D Nand

Multiple Patterning

FinFET

TSV

Advanced Displays
PCT Vision 2020
Raise of Sales to CHF 170 – 180 million
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Exploiting the huge Technology Inflections for Strong Profitable Growth

<table>
<thead>
<tr>
<th>Growth</th>
<th>Application Opportunities for COMET</th>
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<tbody>
<tr>
<td>Until 2020:</td>
<td>1  3D Technologies</td>
</tr>
<tr>
<td>Sales growth of</td>
<td>2  Internet of Things</td>
</tr>
<tr>
<td>about 60-70 m CHF</td>
<td>3  Advanced Displays</td>
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<tr>
<td>about 40 %</td>
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<td>about 40 %</td>
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<td>about 20 %</td>
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1. 3D Technologies

Memory capacity required!

Worldwide data transfer and storage continuous to grow at explosive rate. Growth of memory requires investments in Semi Processes.

- 300 million photos uploaded per day
- 347'000 new tweets every minute
- 300 hours of video uploaded per minute
- 80 million photos uploaded per day

Infrastructure
- High-performance computing
- SSD, data storage, cloud computing
- Communication Infrastructure

Mobile Computing
- Processors
- Memory
- Sensors
- Connectivity
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1. 3D Technologies

Major technology inflections for Plasma

DRAM

Multi-patterning: Dual, Quad, even Octa-patterning 3D

3D NAND

Transition to 3D NAND

Advanced Packaging

Through Silicon Via (TSV) 3D

Source Charts: Lam Research, Investor & Analyst Meeting 2015

Deposition and Etch intensive
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1. 3D Technologies

3D NAND Flash Development

Growth Opportunity for COMET:
More layers mean more RF power sets

layers

2008 - 2009
2015
2017
2019

Growth
Growth
2. Internet of Things

**Trend**

**Rising Demand for smart objects**

Up to 50 bn devices are expected to be connected to the Internet of Things by 2020*

**Situation of fabs**

- IoT drives micro electronics capacity demand
- Wafer fabs need more than 95 % uptime
- RF technology used by fabs is out of date
  - Problems with repeatability, reliability and downtime due to frequent failures, expensive repairs and availability of parts

* source: VLSI Research, Impact of IoT on Semiconductor Manufacturing, June 2015
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2. Internet of Things

Opportunity for COMET
Conversion of existing fab systems with COMET PCT RF power technology enable faster and repeatable processes which result in higher throughput and yield.

Conversion Advantages
- New generation COMET RF power systems promise 15 – 30 % improvement over existing equipment.
- Reduction of unplanned failure and tool downtime ⇒ higher efficiency
- Less repair costs and lost wafers, higher efficiency ⇒ cost reduction
3. Advanced Displays: Coating & Encapsulation

Technology Inflections

OLED Technology – better image quality

Thin Film Encapsulation enables OLED and flexible displays

- OLED markets (display and lighting markets) may exceed USD 13 bn by 2016 and USD 60 bn by 2020.

Source Chart: IDTechEx
3. Advanced Displays: Coating & Encapsulation

Challenge of OLED production
OLED displays form “black spots” when H₂O contacts the organic material.

PECVD TFE
Thin Film Encapsulation will protect OLED materials and ensure long life and display quality on rigid and flexible substrates.

COMET products support TFE production. TFE enables OLED displays to reduced costs with high yield.

Growth opportunity: COMET is very well positioned in TFE market
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Key Account Partnering

Growing Customer and Revenue Base

- Innovation
- Speed
- Quality
- Manufacturing
- Cost
- Reliability

Penetration existing Key-Accounts

New Key-Accounts

Catalog Sales / Small Accounts

Growth in Technology Inflections

2014

mCHF 106

2020

mCHF 170 - 180

40 %

40 %

20 %

“COMET PCT vacuum capacitors and RF power systems enable faster and repeatable processes which result in higher throughput and yield for our semiconductor and display customers.”
Thank you for your attention