

# Mobile Display report

---

October 2007

---

## 4DD Turns the Corner

A year ago, ferroelectric LCOS supplier Forth Dimension Display (4DD) (Dalgety Bay, Scotland, [www.forthdd.com](http://www.forthdd.com)) was losing money, and so, made a big change in its strategic direction. It decided not to pursue the RPTV market and to focus on the high-end near-to-eye space. It cut staff by 40% and refocused its sales efforts. The strategy has paid off. Sales are up 40% over last year and the company is near a break-even point today, with profitability by the end of the year nearly assured.

Over the last year, the staff dropped from 50 to 30 and should stabilize shortly at 32. Cash was flowing out of the company a year ago and it is flowing into the company now. 4DD has no debt, owns its own LCOS microdisplay fab and so, has a very strong balance sheet. Barring any unexpected events, CEO Greg Truman expects the company to be profitable by the end of the year, thus achieving his goal.

How did they do it? According to Truman, it started by focusing on their existing customers in the high-end near-to-eye segment. This segment consists of high-end head-mounted display for training and simulation, military and professional electronic viewfinders and image insertion into microscopes. For these and other emerging applications like printing, instrumentation and metrology, 4DD offers only one microdisplay: a 0.88-inch panel with 1280x1024 resolution and a high 93% fill factor. Since it is ferroelectric, it switches very fast allowing for field sequential color operation, driven by LEDs. The company offers this product as a chip set (microdisplay on flex plus ASIC driver) for higher volume customers, or as a development kit, that includes a more advanced driver board.

In the training and simulation segment, customers like nVIS have steadily increased their sales, thus helping 4DD. nVIS sells very high performance HMDs to military and other customers. These headsets typically cost north of \$20K. 4DD says it has invested heavily in developing cabling solutions that will help drive high resolution images long distances (10 meters) over a cable for nVIS and others in this segment, a non-trivial problem according to Truman.

Another good customer, Rockwell Collins, uses 4DD displays in some weapon sites and other head mounted displays, but recently won \$23.8M contract from the US Army for the supply SR100A HMDs for the AVCATT program. Rockwell Collins beat L3 Communications for the award, but according to Truman, 4DD was speced in both proposals – now that's a nice way to do business. The award will be a plumb contract for 4DD. Each of these HMDs costs in the \$100K range, so there could be 200 HMDs or so in this program.

October 2007

1

In addition, Truman said they are also ramping up production for a higher volume professional application where the display is used as an electronic viewfinder in a high-end professional camera. Truman said he could not yet name the customers for this project. He did say the \$25K camera was shown at NAB, began shipping this summer, and features a 4K-resolution CCD chip set.

Are these existing markets big enough to sustain multiple microdisplay providers? Truman doesn't think so as he speculates the market for the above is perhaps \$10M to \$15M for the microdisplay provider – not such a big market to divide among multiple players, he thinks.

Besides these markets, 4DD is starting to get more traction in other professional and industrial sectors. Image insertion of data and images into microscopes for neurosurgery is becoming mainstream, according to Truman. Ear, nose and throat could adopt the technology next, he said. 3D metrology, printing and even real military platforms are also exciting areas of interest for 4DD.

What about other resolutions, we asked. Truman says they will not go after the low resolution part of the market, but will focus on the high end where they have good strengths. He says there is some pull for a full HD panel, but having the pipelines and cabling to support it needs to be considered. In addition, SXGA offers quite good image quality right now. Going to FHD will offer wider field of view capabilities, but at the cost of more complex optics. Is this a good trade off, he wonders?

Interestingly, in recent interview with Konica Minolta at CEATEC that company's lead engineer for microdisplay systems said they weren't considering HD resolution for their LCD based system at this time due to lack of customer interest. Read more, in our CEATEC coverage, this issue.

4DD has certainly had its share of difficulties over the years, but reaching the current financial and business development milestones is a very good achievement. Congratulations to all at 4DD who have helped make this happen. –CC

---

*Forth Dimension Displays, Greg Truman, [44] 1383-827-950, [gtruman@forthdd.com](mailto:gtruman@forthdd.com)*

---