Brainstorm: Transflective displays

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What are the intrinsic advantages of transflective displays and how will they benefit the industry?

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Recently, I was home waiting for a package to be delivered. When the driver finally arrived, he handed me my package and a handheld device with my package details and a space for signature capture. Had we not been standing in the shade at my front door, it would have been difficult to read the display. There was little contrast between the text and the overall “color” of the display – his device came with a passive monochrome display.

This is a perfect example of a device that could benefit from a transflective display – a “hybrid display” with both transmissive and reflective display characteristics.

Transmissive LCDs work best indoors or in controlled light environments. In outdoor bright light environments, images tend to wash out and are difficult to see (like the delivery driver’s display).

One way to compensate for high ambient light is to boost the displays’s brightness, but to do this, more power is generally required and the lifespan of the display’s backlight may be reduced. For many display applications, like the delivery driver’s, reduced power consumption and maximum backlight life are important. Therefore, a transmissive display may not be the best fit.

Reflective displays offer an alternative to high-bright, high-power transmissive displays in bright light environments. These displays reflect ambient light to display images clearly without engaging the backlight system, thereby reducing power consumption and conserving backlight life.

Transflective LCDs operate effectively in both indoor and outdoor environments without increasing power consumption or compromising backlight life. In lower

ambient light environments, the display can be operated in transmissive mode; in high ambient light environments, the display can be operated in reflective mode with the backlight off, thus conserving power.

Another type of transflective display* has a backlight system, but uses special films to reduce surface reflection, improve contrast and widen color reproduction range.
*Note: NLT Technologies Ltd. offers two types of transflective displays: one with both transmissive and reflective properties (SR-NLT) and a second type that is a transmissive display (ST- NLT) incorporating proprietary films to reduce surface reflection, improve contrast and broaden the color reproduction range of the display.

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