

Press release
30 October 2019



Realfiction's ECHO technology can reduce the power consumption of TV displays by up to 80%

During the development of ECHO, it has become clear that implementation of ECHO into existing display technology, can reduce power consumption of the display by up to 80% due to the significant reduction in transmitted light. To secure the rights to this invention Realfiction has submitted an update to its ECHO patent application adding to the potential of its portfolio of patents pending regarding the ECHO technology.

How it works

Conventional TV screens use electricity to power millions of small pixels that make up the complete image we see. As each pixel continuously shines its light in all directions, only a tiny fraction of the light targets the viewers' eyes, essentially leaving the additional light and electricity wasted. By utilizing directional pixel technology and eye-tracking technique, the ECHO technology directly addresses this problem by pixels solely emitting light needed to target the viewer's eyes, thereby reducing the power consumption from the apparatus significantly. In fact, the ECHO technology will be so precise in targeting the viewer's eyes that it will work even if or when the person is moving in front of the screen.

To further explain the directional pixel technology, a video illustration can be viewed on the Realfiction website [here](#).

The ECHO technology

The principle of the ECHO directional pixel technology is to enable each pixel in a display to direct differentiated light toward the left and right eye of any spectator, which combined with eye-tracking technique and multiplexing will allow users to look around three-dimensional objects in full 3D. The full integration of ECHO in for example an OLED display, will allow multiple users to move around the same display without wearing any glasses, while each user experiences their own 3D perspective on the image, and can interact with the content in real-time.

The power reduction opportunity, based on implementing ECHO's core directional pixel technology into regular 2D displays, is simply a first, yet very important and commercially very interesting step on the road towards realizing the ultimate vision of creating the Holy Grail of 3D. This is because a first-generation implementation of ECHO, with the focus on reducing power consumption, will be less complex, less costly and faster to adapt and bring to market.

The potential

The ECHO power saving technology can be applied in both LCD and OLED TV's and in any geographical area. Global data on power consumption from TV displays is not immediately available. However, calculations and assumptions can be made by applying and combining various publicly available sources. Realfiction has performed such initial calculations relating to the television market in the US as an example and the

conclusion is that the potential savings in power usage from full adoption of the technology corresponds to several billion US Dollars and millions of tonnes of CO2 as follows:

With an average 2.24 Televisions per home¹ in the United States that are on for an average of 6 hours and 47 minutes per day¹, power consumption from Television usage adds up to approximately 105² TWh per year, corresponding to approximately 2.5%³ of the total electricity generation of 4,171 TWh³ in the United States.

Realfiction estimates that the ECHO technology can reduce the power consumption of displays of the average type televisions by close to 80%. When the average type television uses 150 watt, and studies show that all other functions than the display consumes 50 watt⁴, then the estimated reduction adds up to 80 watt per hour resulting in huge savings of approximately USD 7.4bN, 1.34% of the electricity production equivalent of 56 TWh of electricity and 25 million tons of CO2 only in the United States. As a result, ECHO has the potential to significantly reduce the yearly household consumption of energy, thus adding to lower carbon emissions on a global scale and USD savings.

These figures are based on what is the current average type television of 55". In the near future television displays are expected to increase in size⁵ which will therefore add further to the potential savings that the ECHO technology can lead to.

Time to market adoption

With the discovery of the power reduction principle, the ECHO technology is targeted to change the current global display market more rapidly than the original plans with 3D. One possible scenario for fast market adoption could be to license the core technology behind the add-on power reduction to key industry manufacturers of commercial TV displays.

Clas Dyrholm, CEO of Realfiction comments

“With the global challenges of climate changes in mind and the derivative focus on reducing pollution and energy consumption, I find it strange to see the current market trend in TV is pointing towards ever larger and brighter screens without anyone really challenging the exponential increase in power consumption. I strongly believe that a lower power consumption will be a more important feature in new consumer electronics. Therefore, I also believe that the potential to adopt this early part of the ECHO technology by commercial display manufacturers is, in fact, present and we look forward to addressing the relevant market stakeholders with our invention in the near future.”

¹ <http://www.csun.edu/science/health/docs/tv&health.html>

² Based on an average watt usage of 150 per television as per <https://www.igs.com/energy-resource-center/energy-101/how-much-electricity-do-my-home-appliances-use> and approximately 128 million households in the United States as per <https://www.statista.com/statistics/183635/number-of-households-in-the-us/>,

³ Based on electricity generation data from https://www.eia.gov/electricity/annual/html/epa_01_02.html

⁴ http://www.displaymate.com/LG_OLED_TV_ShootOut_1.htm and studies performed by Realfiction on 3 new televisions from LG, Samsung and SONY.

⁵ <https://edition.cnn.com/2019/01/08/tech/ces-2019-tv-trends/index.html>

Important disclaimer

Although Realfiction and its Board of Directors fully support the information and statements in this press release with great excitement, and while they also acknowledge the apparent groundbreaking potential of the ECHO technology, it cannot be guaranteed that a) the ECHO technology will indeed be included in commercial products, b) the patents pending will in fact be granted, c) the ECHO technology will obtain and/or maintain any future leadership position vis-à-vis competing technologies, existing or invented in the future and d) the future power reduction savings will materialize as described above.

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This information is information that Realfiction Holding AB is obliged to make public pursuant to the EU Market Abuse Regulation. The information was submitted for publication, through the agency of the contact person set out above, at 13.00 CET on 30 October 2019.

About the ECHO technology

Realfiction has previously announced the completion of its Proof of Concept for its patent pending ECHO technology, and a grant from Innovation Fund Denmark to support the development of a beta-version. The vision of the ECHO technology continues to be the dream of truly changing the world of 3D. ECHO is a scalable display technology that makes it possible and cost-effective to present high quality 3D in open air, without the use of glasses or other lenses and with look-around capability for groups of people.

About Realfiction Holding AB

Founded in Denmark in 2008, Realfiction is a leading innovator and provider of Mixed Reality solutions and services, a market estimated to reach USD 80 billion by 2025. Realfiction continues to invent technologies within Mixed Reality, with an intention to disrupt the industry by pursuing the vision of converting science fiction into real fiction. Realfiction Holding AB's share is publicly traded on Nasdaq Stockholm First North under the symbol "REALFI". The share's ISIN code is SE0009920994.