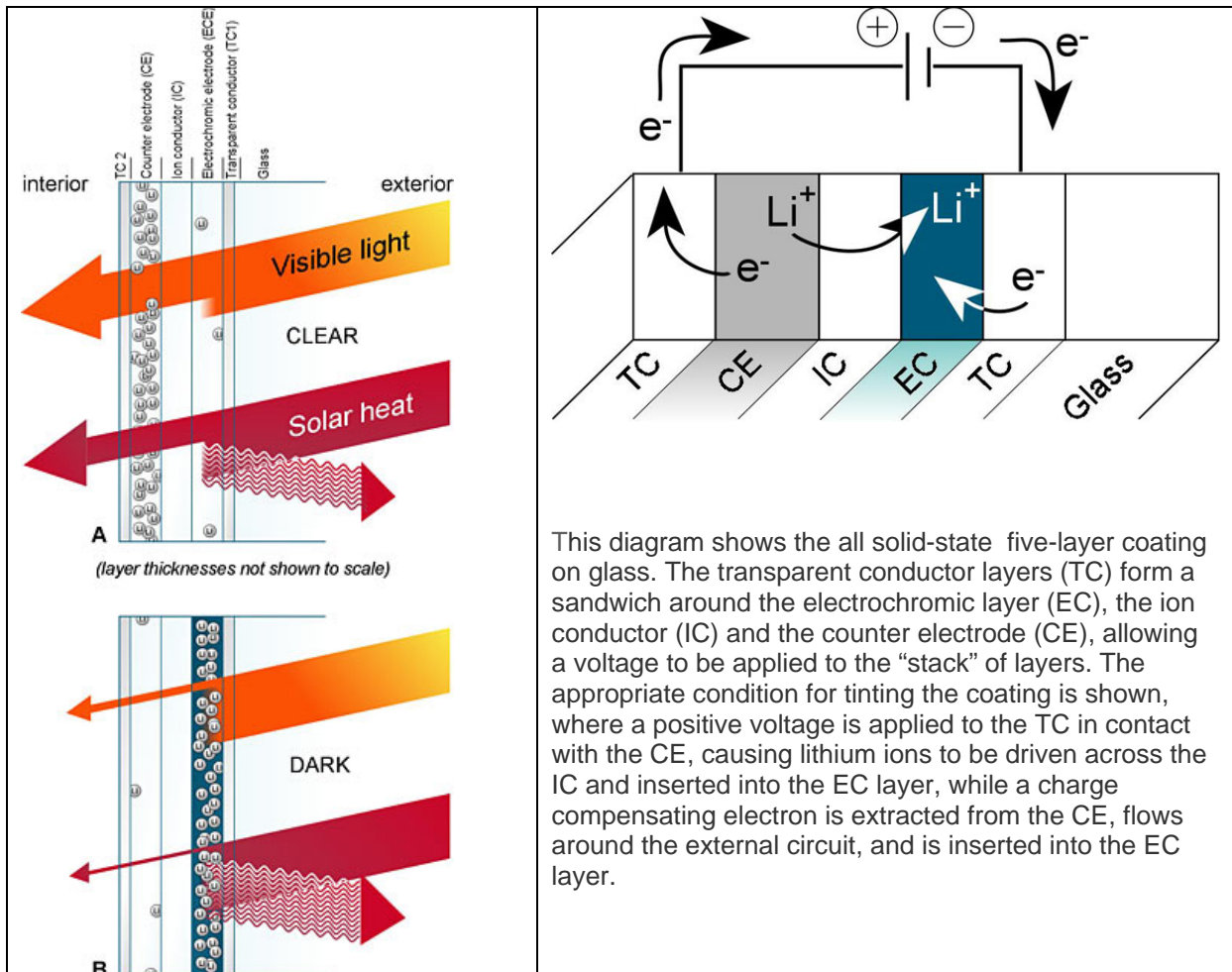


### HOW EC GLASS TECHNOLOGY WORKS

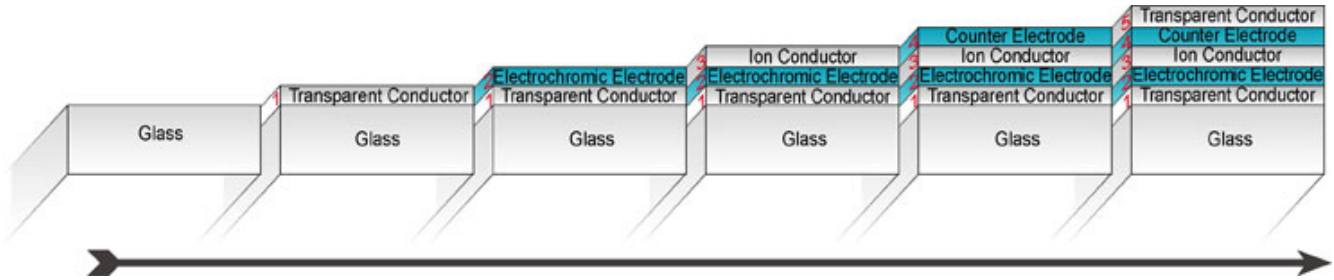
The illustration on the right shows what happens when a EC window is switched. (A) The coating on the glass is made up of five layers. When voltage [less than 5V DC] is applied to these layers in their “clear” state, they darken as lithium ions and associated electrons transfer from the counter electrode to the electrochromic electrode layer. (B) Reversing the voltage polarity causes the ions and associated electrons to return to their original layer, the counter electrode, and the glass untints. This solid state electrochromic reaction is controlled through a low voltage DC power supply. When the glass coating darkens, the sun’s light and heat are absorbed and subsequently reradiated from the glass surface – much the way low-emissivity glass also keeps out unwanted heat.



After coating the individual panes of glass with the layers described above, the industry standard insulating glass units (IGUs) are fabricated. These IGU are then installed into frames supplied by the window, skylight and curtainwall partners or by a supplier chosen by the architect or builder. Once installed in a building, the EC glass IGUs are operated by a control system. The configuration of the control system can be customized depending upon the needs of the project: windows, skylights and curtainwall can be controlled by a building automation/control system, manually using wall switches, or a combination of the two. The control system wiring conforms to the requirements for NEC® Class 2 circuit, and is powered by UL listed power supplies, ensuring that the entire system meets industry standards.

### HOW EC GLASS TECHNOLOGY IS MADE

The panes are made by sputter coating float glass with layers of metal oxides in a proprietary process similar to that which is used to make millions of square feet of low-e glass every year. The EC coatings in total are less than 1/50th the thickness of a human hair.



### WHAT'S THE DIFFERENCE BETWEEN LC, SPD AND EC

Liquid crystal (LC) or polymer-dispersed liquid crystal (PDLC) devices are called “privacy” glass as they turn from a transparent state to an opaque state, which has a milky white hue. LC devices are fabricated in a double laminated configuration with the LC inside two plastic plies encased in two glass sheets. They are used in interior glazing applications where privacy is required. They are not recommended for envelope applications because they do not control heat gain and because of the degradation potential of the organic LC material and the double glass/plastic laminate construction in exterior environments.

Suspended particle devices can be varied from a high transmission state to a lower transmission, tinted state, like electrochromics can. Applications include fast switching displays and interior dynamic mirrors. The material is organic based and fabrication method is similar to LCD. Therefore, durability concerns prevent it being recommended for the building envelope. Also, the light modulation and energy saving performance is only moderate compared to electrochromic products. It requires 50-100V alternating current to power, and the “off” state is tinted.