Winner of transparent conductive film market?

This year is a significant year for the touch panel market as adoption of non-ITO films made of silver nanowire, copper mesh, silver mesh, silver halide, and silver nano particle has been examined and implemented in full scale. So far, touch panels were mostly employed for applications with relatively small screens, such as smartphone, tablet PC, notebook PC, ATM, and car navigation system. But recently, touch user interface (UI) began to be applied to devices with larger screens, such as all-in-one (AIO) PC, electronic board, and large notebook PC. As the screen gets bigger, data needs to be processed rises, and as a result, the resistance of transparent electrode has become very important.

For now, indium tin oxide (ITO) is the most commonly used material for transparent conductive film. When using ITO, glass-based ITO has resistance of about 50-60 ohm, while film-based ITO has about 100 ohm resistance given its mass productivity.

A touch panel up to the size of 20-30 inches can be realized by using ITO glass, which has lower resistance than ITO film. But it also has many weaknesses, such as less room to adjust weight, thickness, and designs. It is also fragile and less productive as it uses sheet unit process. Therefore, many attempts have been made to replace ITO glass. In particular, non-ITO films that can replace ITO films have already been applied to devices with large screens that ITO film, which has relatively higher resistance, cannot be used. (In fact, it will be more correct to see this as a market that substitutes the heavy, inconvenient ITO glass rather than the ITO film.) In addition, indium is a rare metal that is expensive and limited in supply, so this can be a move to replace the material.

At the same time, touch panel price is falling rapidly and expectation for optical properties is increasing. Touch panel makers are seeking to come up with ideas to have better specifications and lower production costs. In this context, many changes are being made in capacitive touch structure. Previously, GG (cover glass + ITO glass sensor) type, mostly used for the Apple products, or GFF (cover glass + two ITO film sensors) type accounted for most of the market. But now companies are using structures, which can improve production efficiency, lower production costs, have better optical properties, or realize lighter and thinner panels. In short, the representative structures, which can reduce the number of ITO sensor layers, trim processes while cutting costs and thickness, are GG → G1/G2, GFF → GF2, GF1, G1F, in-cell, and on-cell.

With these changes in the market, demand for ITO film, by area, is likely to gradually slow down due to a rise in demand for non-ITO films and changes in layer structures. Also, ITO film price is expected to fall rapidly as China and some other countries are investing heavily in ITO film production lines.

This report analyzes and forecasts the overall transparent conductive film market, including ITO film and non-ITO film as well as today’s issues in the touch panel market. It also provides clues on how to deal with the changes in the market going forward.
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Table of Contents

I. Touch panel market and industry trend
   1. Report outline
      1.1–3. Research objective / methodology / scope and definitions
   2. Touch panel industry trends
      2.1. Rising application of touch interface / 2.2. Increasing penetration of touch technology
      2.3. Touch panel technology and mechanism / 2.4. Advent of capacitive touch market
      2.5. Type and definition of capacitive touch panels
      2.6. Capacitive touch panel application trends in major products
      2.7. Changes in capacitive touch panel architecture of major applications
      2.8–10. Pros and cons of capacitive touch panel by architecture: Overall / Small-sized applications / Mid-to-large size applications
      2.11–14. Capacitive touch panel development directions: Overall / Single layer solution / In-cell, On-cell / Possible approaches to polarizer integrated sensors
      2.15. Hybrid products and their cannibalization
      2.16. Trends in ITO alternatives
      2.17. Release of flexible display: Samsung and LG to launch smartphones with curved screens using AMOLED in Q4-13
   3. Touch panel market forecast
      3.1. Classification of segments by application
      3.2. Overall touch panel market forecast
      3.3–4. Touch panel market forecast by technology / major application
      3.5. Touch panel market share of major application
      3.6. Resistive touch panel market forecast by application
      3.7. Capacitive touch panel market forecast by application
      3.8. Touch panel technology penetration trends
      3.9. Capacitive touch panel market forecast by layer structure
         Overview / Mobile phone / Tablet PC / Notebook PC / AIO PC / Overall
      3.10. Capacitive touch panel “one film solution” market forecast (Film sensor / Glass sensor)

II. Touch panel transparent conductive film industry
   1. Types and characteristics of transparent conductive film
      1.1. Types by material / 1.2. Metal-based transparent conductive film types
      1.3. Comparison of metal-based transparent conductive films
      1.4. Classification by major process / 1.5. Deposition methods / 1.6. Patterning types
   2. Characteristics of transparent conductive film
      2.1. Resistance and transmittance / Resistance and screen size
      2.2. Comparison of characteristics by application size
      2.3. Overall comparison
   3. Transparent conductive film application trends
      3.1. Transparent conductive film application trends by major application
      3.2. Touch sensor/transparent conductive film application trends by major brand
         Samsung, LGE, Leonovo, Huawei, HP, Dell, Asus, Acer, Toshiba, Sony
      3.3. Overall: Transparent conductive film application trends by application (layer structure / major set maker)
   4. Competition among transparent conductive films
      4.1. Competition by major application
      4.2. ITO film sensor production cost
      4.3. Value chain of transparent conductive film and major manufacturers
   5. Products and manufacturers of transparent conductive film
      5.1. ITO film (Nitto, Teijin Kasei, Sekisui, LG Chem, MAX Film, Mirae, Hanwha L&C, Oike, Gunze, O-film, Others)
      5.3. AgNW (Hyposung, LGE, WIA Corporation, Others)
      5.4. Ag nano ink (Carestream, Cabrios, InTek)
6. Issues with film sensor
   6.1. Narrow bezel: Necessity
   6.2. Necessity of narrow bezel: Bezel generating process and key features
   6.3. Necessity of narrow bezel: Metal on ITO
   6.4. One film sensor / 6.5. Direct bonding with LCD cell is on the rise
   6.6. Roll-to-roll photolithography patterning
   6.7. Slim GFF for thin touch panel sensor

III. Touch panel transparent conductive film market
   1. Transparent conductive film market forecast
      1.1. Market calculation basis: Capacitive touch panel layer structure
      1.2. Market calculation basis: Pros and cons of each touch layer structure
      1.3. Index chart
      1.4–6. Transparent conductive film market forecast / by technology / by application
      1.7. Resistive touch panel-use transparent conductive film market forecast by application
      1.8. Capacitive touch panel-use transparent conductive film market forecast by application
      1.9. Non-ITO market forecast
      1.10. Non-ITO film market forecast by application
   2. ITO film production lines and capacity
      2.1. Production line and capacity by major company
      2.2. ITO film production capacity and market share
      2.3. ITO film production capacity by region and its index chart
   3. ITO film supply chain/market share/price trend
      3.1. Supply chain between touch panel makers and ITO film makers
      3.2–7. ITO film supply chain: Samsung Electronics Co./ Apple Inc./ LG Electronics Inc./ LG Display Co./ Shenzhen O-film Tech Co./ Other major touch panel makers
      3.8. Market share of ITO film makers’ supplies to touch panel makers
      3.9. Market share by ITO film maker / 3.10. ITO film price trend

IV. ITO glass market and industry trend
   1. ITO glass market forecast
      1.1–3. ITO glass market forecast / by application / by technology
      1.4. Resistive touch panel-use ITO glass market forecast
      1.5. Capacitive touch panel-use ITO glass market forecast
      1.6. Comparison of resistive-use ITO glass and transparent conductive film market
      1.7. Comparison of capacitive-use ITO glass and transparent conductive film market
      1.8. Proportion of ITO glass and transparent conductive film by major application
   2. Production line and capacity of ITO glass sensor maker
      2.1. Production line and capacity of major maker
      2.2. Major makers’ production line by region
      2.3. Trends in major manufacturers (AUO, Cando, CPT, HannsTouch, Innolux, Laibao, Micro Technology, Buwon Advanced Coating Technology, Others)
   3. Issues with ITO glass sensor
      3.1. G2 structure / 3.2. G1/G2 structure and manufacturing process
      3.3. Comparison of sheet G2 and cell G2 / 3.4. Single layer ITO GG – GG1
      3.5. Rising application of G2 sensors to notebook PC
      3.6. Pros and cons of G2 in applications with 10-inch or larger screens / 3.7. Cell G2

Appendix. ITO film technology outline
   1. ITO film technology outline and requirements
      1.1. ITO film structure and general manufacturing process
      1.2. Characteristics of ITO film materials
      1.3. ITO film types (crystal, amorphous)
      1.4. ITO film performance and assessment measures
      1.5. Requirements for ITO film by technology
      1.6. Touch panel ITO film technology – Touch panel’s requirements and solutions