



More than 20,000 metric tons of television glass are reprocessed at Schott every year. For panel glass, in particular, there are high demands because it has to be free of foreign materials.

Thilo Horvatitsch  
Mainz

## Recycling instead of Dumping

**Advances in recycling possibilities for television screen glass and in European waste management laws are helping to promote the reprocessing of used television glass in Europe. As a major producer of television glass, Schott is a motor of this development.**

► Some 100 specialists from European companies, environmental agencies and ministries recently attended the second conference on the recycling of end-of-life picture tubes from television sets and computer screens in Mainz. The interest in this event showed once again that environmentally compatible alternatives to dumping used cathode-ray-tube glass and solutions for a closed engineering material cycle are still a high priority two years after the first meeting took place in 2000 (for more information, see Schott Info 96/2000).

As the organizer of this conference, Schott has been considered a pioneer in the recycling of television glass since the mid-1990s. In the past two years the company has increased its use of recycled television glass from 3,000 to more than 20,000 metric tons per year. The reuse of panel glass, the biggest glass fraction of picture tubes, in glass melts for panel production has been particularly successful. Until now, this area of recycling has been seen as difficult because of the extremely high demands on the glass in terms of purity. One major obstacle is the proper sorting the glass components from the picture tubes. The funnel consisting of the tube neck and cone are made of lead glass, while panels are made of glass containing barium and strontium. In order to recycle panel glass it has to

be free of foreign materials. This requires a careful and proper separation of the parts.

### Recycling of panel glass successful

Industrial techniques for separating picture tubes into funnel and panel glass currently require using a diamond saw to cut the tube from the screen or an electric band heater to split the tube along a clearly defined line. ZME Elektronik Recycling in Heuchelheim is a leader in Germany in separating picture tube glass. In cooperation with this company and other recycling specialists, Schott has developed a profile of requirements and processes for recycling end-of-life picture tubes. The television glass manufacturer has been using specially purchased and sorted end-of-life funnel glass since 1999, and today, it has increased the content of recycled material in funnel glass melting tanks to up to 36 percent (funnel and mixed glass). "In the meantime we can also use end-of-life panel glass continuously with at least 15 percent of the melting capacity of our panel glass melting tank. This amounts to some 22,500 metric tons per year," explained Dr. Udo Ungeheuer, a member of Schott's Board of Management.

Sufficient amounts of separated materials are a prerequisite, and this is still a critical issue. The reprocessing of unseparated mixed glass (funnel and panel glass) is possible, but because of the required quality, the proportion and therefore the quantity are going to be limited. In addition, the end of

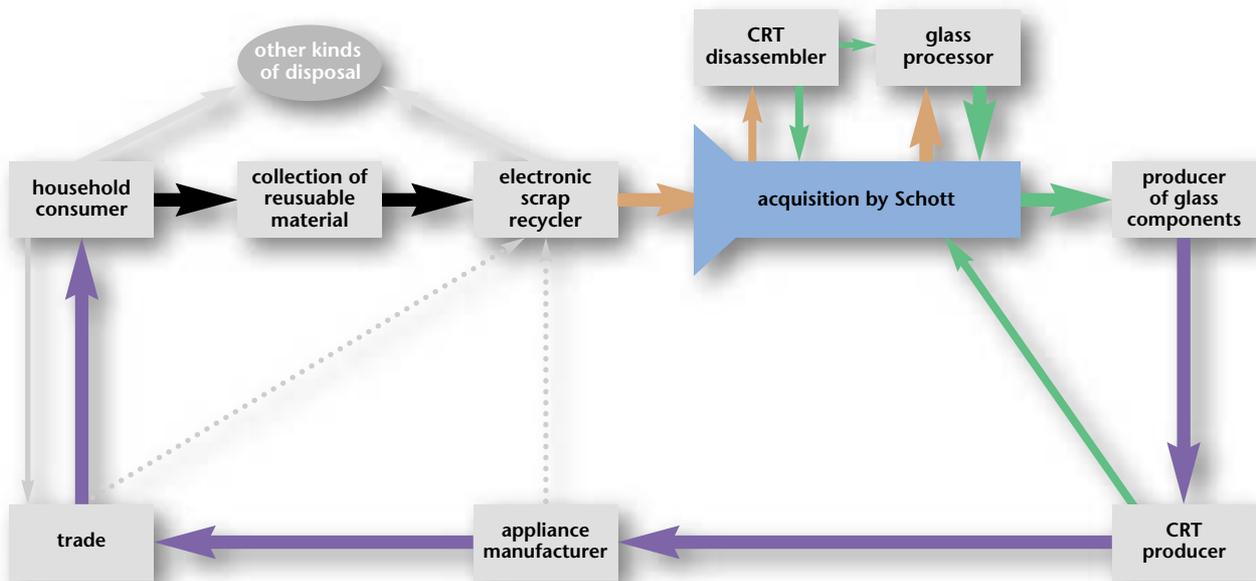
recycling possibilities for both funnel and panel glass have not yet been reached because large amounts of television glass are still being disposed of by electronic recyclers or are taken to landfills, and are therefore not available as raw material. Through active acquisition, Schott is thus trying to obtain the quantities required for economically efficient, closed loop recycling.

### A new waste key number for 750,000 metric tons

The necessity of such initiatives is obvious. Somewhere between 500,000 and 750,000 metric tons of end-of-life television glass are accumulated every year, and this quantity will not be reduced in the middle term. In 2002 alone the global production volume amounted to a total of 245 million television and computer screen tubes, and Europe accounted for 41.5 million of them. In the fiscal year 2001/2002 Schott produced some 150,000 metric tons of television glass, and market researchers are predicting an increase of global cathode ray tube production for the coming years, despite the equally anticipated major growth in the

new generation flat panel display technology. Television glass producers, in particular, must therefore find environmentally compatible recycling solutions. A new waste key number in the electronic waste classification of waste management legislation in Europe and the future EC Directive on WEEE (Waste from Electric and Electronic Equipment) are supposed to push for recycling. Picture tube glass can no longer be declared construction waste. Instead of just the picture tube, now the entire end-of-life television unit or computer monitor is considered waste that requires special control. The recycling quota of at least 65 percent for sets containing cathode ray tubes, which is planned in the Directive on WEEE, can only be attained if the picture tube glass is reused. Dumping will thus be made more difficult, while glass separation and the creation of a material cycle will be promoted. Thomas Oberle, Business Segment CRT Special Glass Recycling, indicates the kind of capacities Schott alone currently has to handle: "Apart from end-of-life panel glass, we have an annual total of 23,000 metric tons of end-of-life mixed glass at all our productions sites, or alternatively, 54,000 tons of end-of-life funnel glass." ◀

Some 100 participants in the conference at Schott in Mainz learned about the latest solutions for a closed loop for television glass.



**An ecologically appropriate use of television glass: recycling in a closed loop**