

FLOW SORT offers high-capacity X-ray sorters with Re-concentration machine accuracy.... A world first!

1. High capacity X-ray diamond recovery machines traditionally utilize a **“broad channel feed arrangement”** (see Fig. 1) in which several particles pass through the sorters optical luminescence detection zone simultaneously.
 - a. This often results in the **cumulative luminescence** emitted by several weakly luminescent particles adding up to the luminescence level of a poorly luminescent diamond and thus cause a false ejector activation leading to an increase in yield.
 - b. In practice this necessitates lowering the sensitivity of a sorter’s optical system in order to keep its yield within manageable limits.
 - i. This however comes at the cost of reduced diamond recovery efficiency.
2. This problem does not arise in sorters that examine **“one-particle at a time”** This so called “pearl-string” feed pattern has:
 - a. The advantage of being able to measure the **luminescence of each individual particle** (diamond) passing through the sorter without the interference of other adjacent luminescent mineral particles.
 - b. The disadvantage of such a feeding arrangement is the low material throughput.
 - i. Single file feeding, “pearl-string”, material presentation to a sorter is generally reserved for re-concentration sorters. Sorters specifically employed to increase the diamond concentration in concentrates obtained from “high-capacity”, primary X-ray diamond recovery machines.
3. **The introduction of a unique, patented (SA Pat. Appl. 2011/07547) optical scanning system has made it possible to carry out a “one-particle at a time” optical particle inspection whilst passing material “in a broad channel feed formation” through the sorter!**

The breakthrough came with the invention of a scanning device that restricts the photo-multiplier’s view of the passing feed material stream to a “small” area (viewing spot), typically occupied by no more than a single feed-particle. The viewing spot transverses the entire broad channel feed formation a thousand times per second, guaranteeing all particles passing will at least be checked twice. (See Fig. 2)

Fig. 1

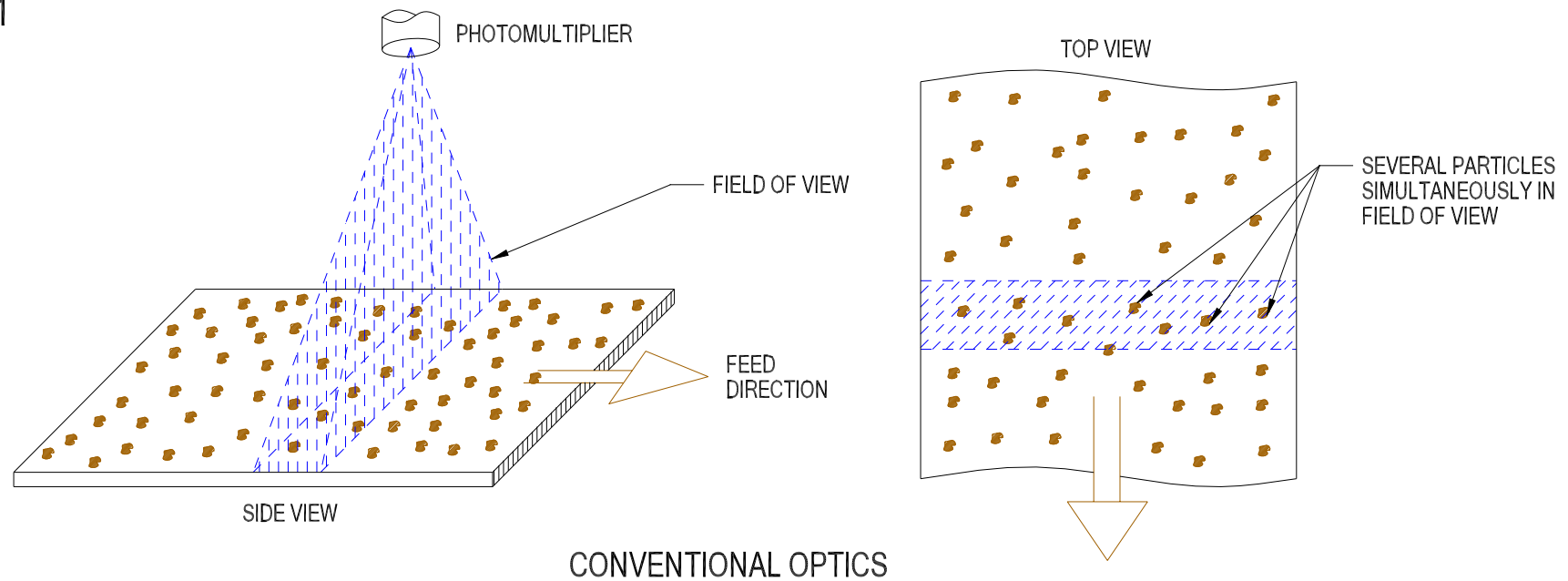


Fig. 2

