Disassembly Depth Analysis

In the disassembly depth analysis we attempt to maximize our return (or minimize our losses) as a function of depth of disassembly. The disassembly sequence comes from the reverse fishbone diagram. At each step of disassembly one needs to do a net revenue calculation which considers the various options for both the liberated components and the remaining product “hulk”.

The options generally include:

1. disposal as hazardous waste
2. disposal to land fill
3. disposal to a waste handler
4. sell as component or unit
5. shred, separate and sell materials

Net revenues are given as:

**Net revenues = Sales – Costs.**

Sales include both components and materials, costs include disposal fees, disassembly costs and shredding and separation costs. (See separate handout with approximate costs and values)

In graphical form the results could look something like Figure 1 (next page). The major trends indicated in the figure are that with a small amount of disassembly one can usually remove hazardous materials as well as liberate components with resale value. These actions result in reduced disposal costs and increased sales revenues. Continued disassembly however often just adds cost. The figure indicates the optimum level of disassembly.

General guidelines for estimating component and material value

1. Find market value of replacement component on the internet. Use replacement value x 0.45 . This is the estimated sales price for a used component to compete with a new component. Now multiply again by 0.10 (for time sensitive market and risk). Therefore the estimated value of the salvaged component is = (new replacement component value found on the internet or elsewhere) x 0.045.

2. Use tables provided, internet, and other sources for scrap (or virgin material) value. If scrap data is not available use 1/5 virgin value for scrap value as a rough estimate.
Figure 1 Change in net revenue with different levels of disassembly.