Subject: Re: That line array sound
Posted by Earl Geddes on Fri, 24 Jun 2005 22:43:26 GMT
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Linc wrote: They are right our of your book. On page 68 , fig: 3-15 , it looks like you do not assume a plane wave front in the nearfield.One cannot assume a plane wave in the near field. The correct analysis comes from taking the sound radiation from each infinitessimal element and integrating over the entire source. This is exactly what EQ. 3.7.68 does. The radiation from the infinitessimal element is the Green's Function for the proper coordinate system. In the cylindrical case it is the Hankel Function which then becomes EQ 3.7.69.All sound radiation problems come down to solving EQ. 3.7.68 or something very much like it. So where deos EQ 3.7.68 come from? This comes from a solution of the scalar wave equation by using Green's Theorem to find this solution as an integral over the boundary of some enclosed volume. One bounding surface is let go to infinity, where the solution must go to zero, and hence the integral goes to zero on this surface, leaving a solution as an integral over the source only. Complex math, but it is the classical approach. BEM is a direct solution of this bounding integral done on elements numerically. Thus it can be used for any source shape - however this approach has its problems too.