■ The numerical solution of potential problems via boundary integral techniques was first proposed by

      Treffts in 1926.

However, real numerical computation on the basis of BEMs were only performed in the 60-ties and 70-tres ($\leadsto$ C.A. Brebbia).

■ <u>**Advantages of BEM** in comparison with FEM:</u>

1. Reduction of physical dimensions:
   $$2D \longrightarrow 1D, \quad 3D \longrightarrow 2D$$

2. In general, only the boundary Γ must be discretized!
   For 2D problems, the boundary Γ is only a curve: $\Rightarrow$ simple structure of the input and output data!

3. In practice, the people often need only the values on the boundary (Cauchy-data):
   $\rightarrow$ The BEM provides these values directly!

4. On the basis of the representation formula, one can get the solution and its derivatives with the <u>same</u> accuracy!

5. The interior and the exterior BVPs can be treated by the same technique!