



simple & effective design retrieval for engineering applications  
from Applied Search Technology Ltd.

## Production Applications of CADFind3D



### Rapid Estimating

Rapid production of quotations and estimates is a key competitive element in the operation of any specialist engineering company, particularly for those that offer bespoke design or manufacturing services. The time and resources required to produce comprehensive and accurate job estimates are a significant cost burden and the delays involved may make it difficult to respond within customer time scales.

In many cases the company may have produced or quoted for a similar item before – if that past quote or job record can be found then it can be used as the basis of a new and more accurate quotation much more quickly than starting from scratch.

The problem is finding that existing quotation or job from amongst the thousands that exist in the company's records.

Any number of factors may make this process much more difficult than might be expected – the database may extend to 10's of thousands of parts; the company may not use a consistent system for part numbers (for example, it might use customer numbers); the part or drawing number may say nothing about the characteristics of the item concerned ('123-789654'); part descriptions may be generalized ('bracket', 'spacer' etc.) or simply be unrecorded; the nearest item may have been made for a different customer, etc., etc.

Even if the company uses Enterprise Resource Planning system, or has a Product Data Management system for its engineering data, the searches will be constrained by the fact that they are textual in nature – we are limited to examining the alphanumeric characters in the description or part attributes. These systems do not allow us to find something based on what it looks like - that is a match determined by the geometric similarity of two parts. We need to be able to 'find something that looks like this'.

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CADFind3D can do that. It allows the company's database of parts to be searched using geometry to find suitable matches. The system extracts the required geometry from a customer's part model (or it can be modelled roughly) and then scans its database to find similar parts that have been estimated, planned or made before. A quick visual scan allows the user to select the most suitable part which can then be used as the basis of the new quote.

CADFind3D's catalogue(s) provide a convenient way to store customer solid models in a format that allows easy retrieval and flexible organization.



## Group Technology

Cellular manufacturing has become increasingly common since the early days of 'Group Technology' in the mid 1970's. Cells are organised around the manufacture of a group, or 'family' of similar parts. Similarity in this case relates to the way parts are made.

Identifying potential cell families is a critical part of the cell design process. The process of finding families can be based on finding parts that look the same (i.e. shape similarity). Most commonly this approach is done manually by visually inspecting the parts or 3D models. Alternatively Production Flow Analysis may be used but PFA suffers from problems of data accuracy and rigidity of manufacturing methods. Both methods are slow and error prone, resource expensive and likely to lead to sub-optimal cell designs.

CADFind3D Pro's research-based technology allows users to find groups of similar parts using geometrical, shape & size based retrieval. The system has a powerful analysis tool that automatically identifies potential families of parts and then allows the user to refine the groups interactively. This refinement facility makes full use of CADFind3D Pro's extensive searching capabilities but allows an engineer's product and manufacturing knowledge to be properly employed in the process.

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