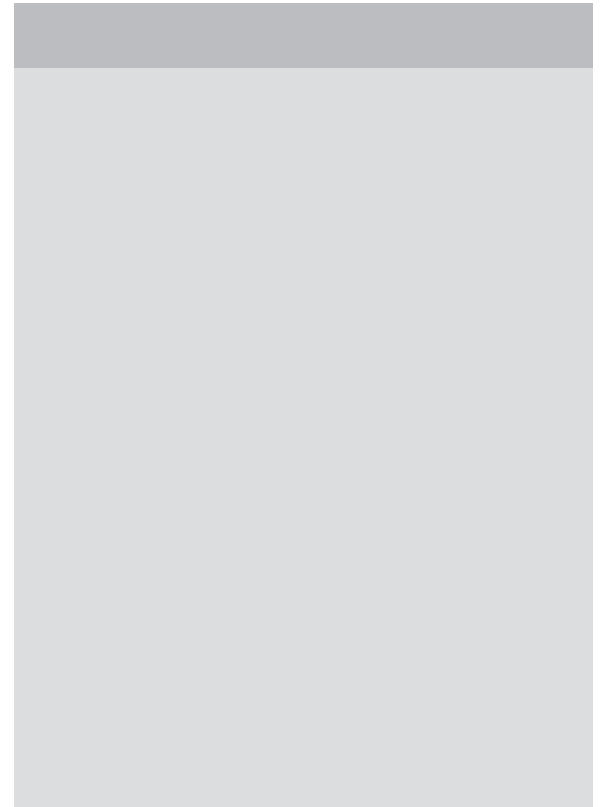


## Support during design phase



From the first design to the finished product – fast and competent solutions. In spite of the use of advanced development tools, ever shorter development cycles from the first draft to the finished prototype involve some risk of assemblies being designed with extremely time-consuming and labor-intensive balancing procedures. Over and over again, our customers present us with this sort of problem – be it a crankshaft, an electric armature running at high speed, or an automatic fan.

For us at Schenck RoTec, cost-efficient balancing starts with optimizing the vibratory behavior of a rotor. By calculating the behavior of the rotor and its bearings with the help of the finite-element method, we can provide you with a wealth of knowledge for designing your rotors or assemblies. This will prevent unpleasant surprises with regard to the vibratory behavior of your work-pieces, and render design and production more cost-efficient – enhancing the performance of your products.

Putting theory into practice. The moment of truth comes when the first prototype of your design work is finally complete. Will your assumptions, ideas and calculations turn out to be correct? Will your prototype behave as expected, or will you have to improve certain details?

In our test shop, we can analyze how your rotor or assembly will behave in actual operation. In the event that measured results do not meet your performance specifications, we will make suggestions as to how your product can be improved. We will help you to reduce tolerances and mounting accuracies to a reasonable and economically tolerable level, or to simply define the best solution for balancing.

Basic principles of balancing in production. For many rotors, the decision as to what stage of rotor production is best for balancing is easily answered: Balancing is typically the last step in production, and essential for ensuring a low level of vibration.

For complex rotors consisting of several subassemblies, balancing is one of many steps in production, and the question as to when the rotor should be balanced is not so easy to answer. Further questions arise. Do you need to balance the individual parts of the rotor, and, if so, how accurately? What tolerances should be specified, given both technical and economic considerations? The right sequence of production steps and optimum design of the balancing processes will help to contain production cost.

Spot checks on prototypes prior to starting production will provide information about the statistical distribution of unbalance before and after the balancing

## Support during design phase

process. Such considerations help to tailor the balancing process not with regard to the achievable performance, but rather with regard to the actually required performance. These are questions which we deal with every day and you can benefit from our wealth of experience in this area. Although such an analysis is particularly useful for implementing new production processes, we will also optimize existing production processes to provide cost-efficient balancing procedures.

Quality standards How do you assess the quality of your rotors or assemblies? Do you know at any point, what the quality of your balancing process is?

Various quality parameters document the condition of your rotor as well as the quality of your balancing process. These figures can be used for a continuous improvement of your products and to demonstrate the quality of the products you ship to your customers. The requirement for certain quality characteristics and the definition of tolerances require careful consideration by our specialists to ensure process reliability and contain the cost of production.

Apart from unbalance-induced vibration, rotors and assemblies often exhibit further vibrations, which may be indicative of certain faults present in a rotor.

The proper view on your product It's a familiar problem. On the one hand your customers require higher quality, but on the other hand you are faced with the need to cut costs. These are two conflicting requirements which can, however, be reconciled by adopting the right approach to the balancing of rotating and oscillating components.

With our extensive expertise and up-to-date equipment, we will be able to analyze your rotors and assemblies in order to identify the cause of vibration. We can support you with a wide range of measurements, calculations and design suggestions, right up to the optimized production of your product. We will provide everything you need to ensure that your rotors will run smoothly – quickly and confidentially.

# Support during design phase

