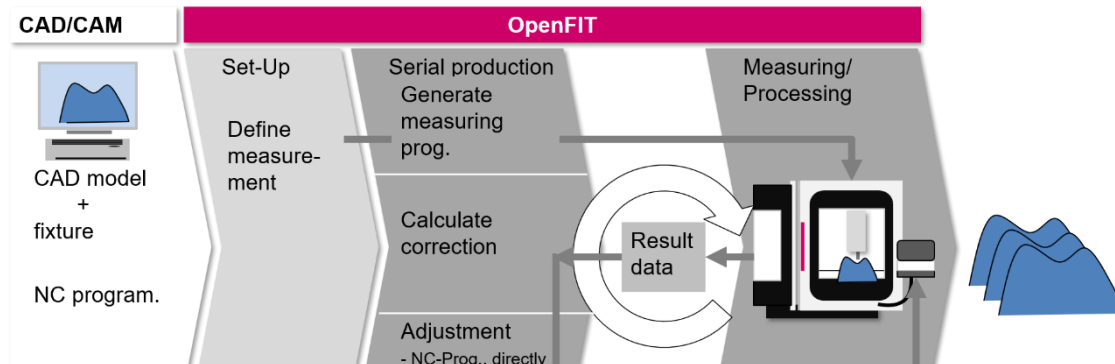# OpenFIT –
Optimise process orientation

Processing complex parts requires to adjust the processing steps to workpiece's position/ orientation inside machine and fixture. This enables an optimal positioning of the final part geometry inside the casted or printed blank parts. Forced to do this manually ends up in a time-consuming unproductive work.

OpenFIT includes tools to accelerate this task, aligning the processes 'by software!'

After importing the CAD models of workpiece and fixture and the specific NC program, the measurement to capture the as-is situation inside the machine is easily defined by some mouse clicks, within the integrated measuring module.

OpenFIT will then generate the measuring program and will handle the data transfer to and from the NC control, automatically.

To check the results, set position and detected position can be shown, overlayed.

Depending on the capabilities of the NC control, OpenFIT offers some options how to apply the calculated orientations.

BCT.
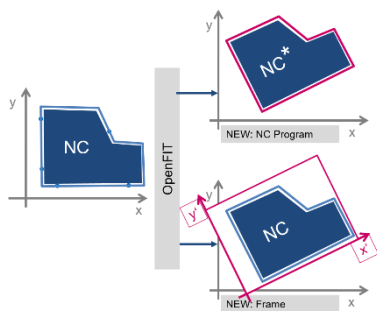
Different options how to use the new orientation

The newly calculated orientation can be used to re-calculate the NC program or the orientation can be transferred to the NC controller as coordinate-system definition, directly (depending on the controller type). The latter approach has the advantage that the original NC program will be used unchanged!

Consider machine and fixture characteristics

In general, OpenFIT corrections comprise all 6 degrees of freedom. But, is it meaningful to calculate corrections the machine is not able to realise? Or, why ignoring the restrictions offered by the fixture design?

OpenFIT is able to consider these characteristics and to adjust the calculation to the real situation inside the machine. OpenFIT results will therefore always reflect the reality.
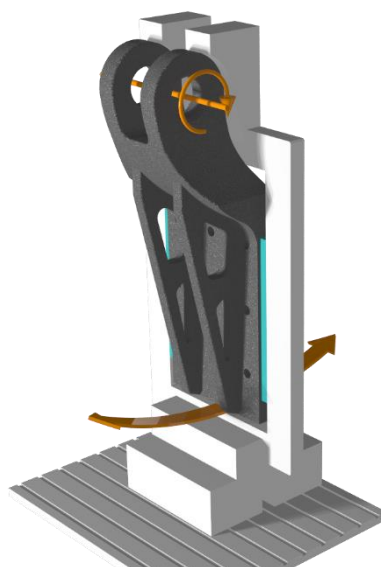
VolumeFIT

The enhanced version offers considering the amount of stock material located at processing regions, additionally. This guarantees that there is enough material left, required for a reliable manufacturing process. If this cannot be realised the user will be informed.

REMARK: Using a BestFIT only cannot guarantee that the final part shape is completely located inside the blank part. It may happen that some regions are still sticking out, if this position minimised the overall deviations between set- and is-situation.
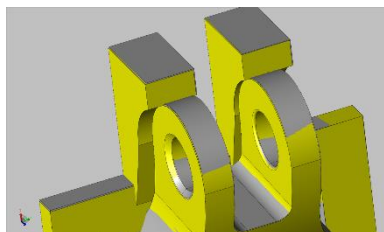
OpenFIT-connection

To realise an automated processing, OpenFIT is directly connected to the NC controller of the machine. This allows to transfer programs for measuring and processing, as well as measuring results automatically.

BCT GmbH is specialised in automated processing of individually shaped parts. Our expertise is:
- Geometric adaptive machining
- Integration of measuring-technologies in NC processes

We integrate solutions to improve the efficiency of the manufacturing processes for new-part, re-work and repair tasks.

BCT: Your counterpart, contact us!

Technical Details

Software	Software to adjust NC programs to the individual position/orientation of workpieces inside machines and fixtures.

- restrictions of degrees of freedom depending on capabilities of machine and fixture
- free selection of possible rotation axis
- different methods to calculate the deviations
- direct adjustment of NC programs and automatic transfer to the NC controller
- transfer of the new orientation as coordinate system definition. Hereby NC programs will not be changed.
- overlay set- and detected workpiece position
- use external measuring results by registration technology

Option **BestFIT**: Minimising differences between set- and is position/orientation

Option **VolumeFIT**: Consider stock material to be left over for processing, additionally.

Software, general
- Windows based
- CAD Import IGES or STP
- NC Import as DIN program, CLDATA or native formats (on request)
- graphical user interface German/English
- define measuring process by mouse click or direct definition of points by entering their coordinates (tactile measuring)
- automatic generation of measuring process flow
- iterative measuring to increase the precision
- measurements using various orientations
- no specific touch trigger probe required

Connection
Direct connection to machines with:
- Sinumerik 840D (operate, powerline)
- Fanuc i-Series
- Heidenhain
- Okuma
- Beckhoff

Scope of delivery
- OpenFIT software including documentation.
- installation and training on arrangement

BCT.