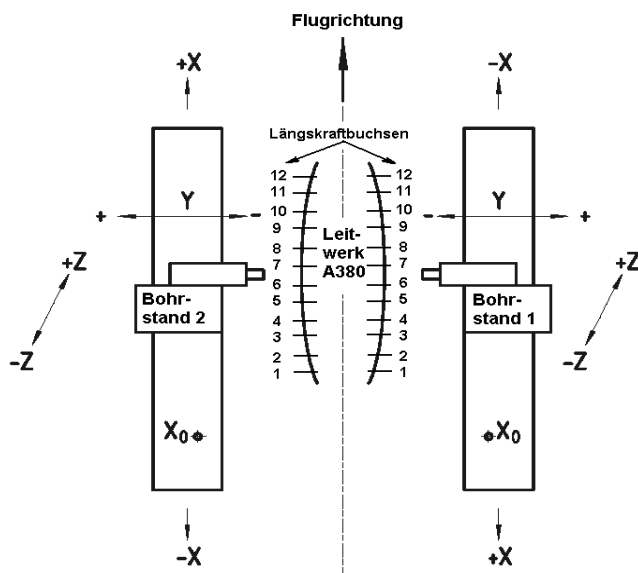




## Calibrating the A380 SLW and "best fit" calculation for processing the axial force drillholes in the SLW.

### Assignment:

To process the vertical tail drillings on the A380 rudder unit (Seitenleitwerk – SLW) by a drilling machine (FOOKE company), the A380 must be brought into a optimal flight position on a clamping table. This is understood as the exact alignment of the SLW to the fuselage. Further, a "best fit" calculation to optimize the remaining thickness of the work piece, after a boring process, will occur at the 24 titan thrust sleeves.



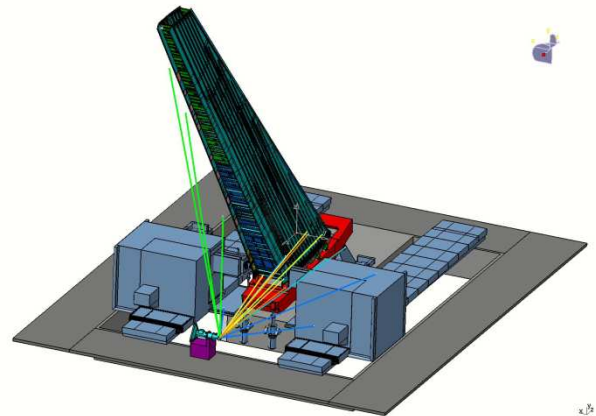
### Solution:

After strobing and binding the SLW to the FOOKE clamping table, the relevant points at the horizontal stabilizer are measured using a LEICA laser tracker. In the first step, the laser tracker references itself to the existing measuring points in the ground. In the second step, the points at the SLW are registered (e.g. rudder fork fixing, etc.).

The measured values are transferred to the coordinate system of the SLW and a link between the coordinate system of the airplane is established. This determines the requisite correction variables for aligning the clamping table. The correction of the clamping table is assumed by the boring mill individual NC control (Sinumerik 840D). The NC control receives a modified standard NC program with the correction variables via the TCP/IP network.

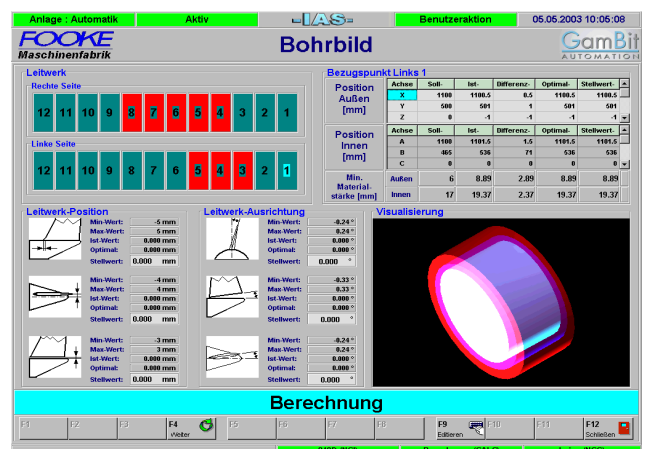
Once the A380 SLW is aligned in the optimal flight position, a measuring cycle to determine the position of all 24 thrust sleeves is started at the FOOKE drilling machine. The result of the measurements indicates the spatial length of all sleeves in

the SLW. Based on these measurements, the construction specifications, and the current ACTUAL position of the SLW, the remaining thickness of the work piece of the 24 titan thrust sleeves from the boring process is calculated.



If only one sleeve falls below the minimum remaining thickness of the work piece, the software automatically recalculates the new correcting variables for the clamping table in order to achieve the optimal position of the SLW. In this connection, the SLW is brought to the calculated position according to different, parametrical weightings under consideration of different edge and installation parameters. A renewed registry of all measuring points with conclusive "best fit" calculation of the 24 thrust sleeves occurs.

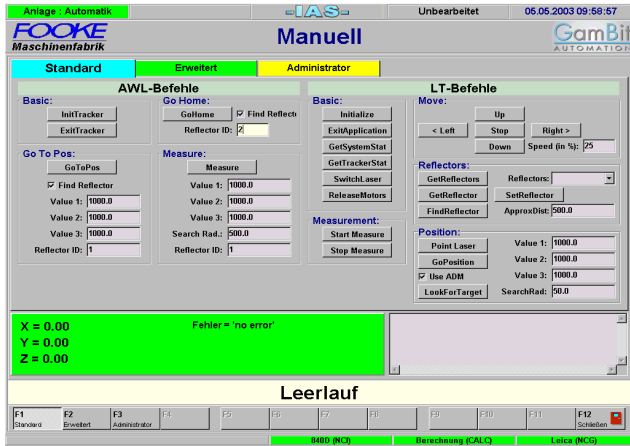
At the end of the optimization cycles, a parameter set is generated for the 840D NC control thus achieving the desired optimal drilling figure.



### The result:

The clearly structured operating surface enables unskilled operators to easily handle the program. The operator selects

the measuring procedures and starts the automatic program flow. Plausibility checks and range monitoring occurs automatically.



The program surface presents itself as menu-driven system in the Windows look, equipped with a context-sensitive online Help.

#### Technical features:

- › PC-based measurement system with LEICA laser tracker in "online" link
- › ORACLE database
- › Safeguard and archival of all QS data
- › Ethernet network

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