

# Quality castings for gear boxes



huh is a reliable partner for manufacturers of gear boxes. We are certified according to DIN EN ISO 9001 and work as development partner and supplier for this industry since many years.



**Fig. 1: Transmission case**  
Material: EN-GJL-200; Weight: 850 kg;  
Dimensions: 950 x 650 x 950 mm<sup>3</sup>  
Delivery type: Raw casting

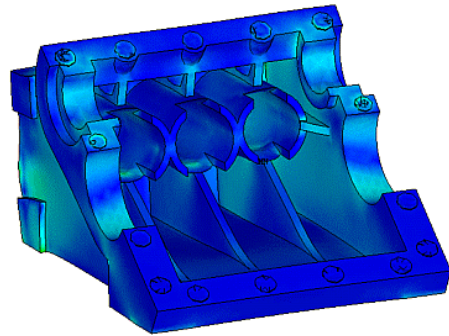
Comprehensive know-how has been collected in

- development and design,
- moulding of hand formed and machine formed castings,
- machining of castings according to the necessary tolerances,
- heat treatment and painting,
- quality assurance with dye penetrant inspection, ultrasonic and X-ray testing.

huh is a competent partner for transmission manufacturers! In our development department computer-aided design and finite element calculation of the transmission cases inclusive strength check are professionally performed.

An example for this is the transmission case for a high-pressure pump (fig. 2),

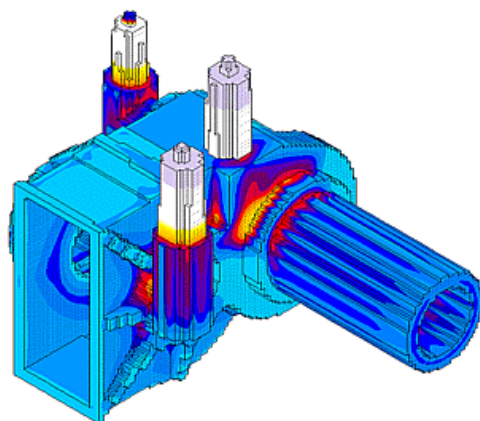
which has been designed at huh for a customer.



**Fig. 2: Lower part for transmission case**  
Material: EN-GJL-250; Weight: 100 kg;  
Dimensions: 550 x 430 x 320 mm<sup>3</sup>  
Delivery type: Pre-machined

At huh the development is performed on state of the art 3D-CAD-systems. Out of this data we generate volume models for the computation of the tensions with finite elements method (FEM). On basis of these tensions the strength check is conducted based on the FKM guideline.

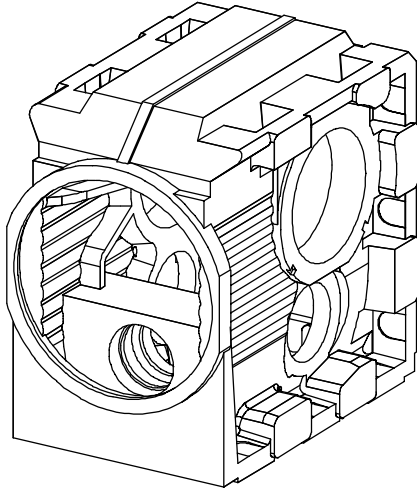
Also the computation models for the solidification simulation, which already guarantees a process-safe manufacturing for the first sample, are derived from the CAD data.



**Fig. 3: Simulation of solidification**  
Material: EN-GJS-400-18-LT; Weight: 210 kg;  
Dimensions: ca. 700 x 500 x 650 mm<sup>3</sup>  
Delivery type: Completely machined ready to mount

# Quality castings for gear boxes

:huh offers and carries out a restricting of the cost-driving tolerances of the raw casting for minimization of the machining operation costs.



Position Maß	(GTB 18) h.u.h	Grafische Soll-Ist-Darstellung				
		-2	-1	0	1	2
1 ∅ 536 mm	(± 2,3) ± 0,8	[Green bar from -1 to 1]				
2 ∅ 350 mm	(± 2,0) ± 0,5	[Green bar from -1 to 1]				
3 550 mm	(± 2,3) ± 0,4	[Green bar from -1 to 1]				
4 451,5 mm	(± 2,1) ± 0,4	[Green bar from -1 to 1]				
5 588 mm	(± 2,3) ± 0,7	[Green bar from -1 to 1]				
6 ∅ 536,7 mm	(± 2,3) ± 0,7	[Green bar from -1 to 1]				

\* Toleranzbereich vergleichbar mit DIN ISO 8062 CT10

**Fig. 4: Reduced variability of raw casting dimensions for hand formed transmission case**

Material: EN-GJL-200; Weight: 850 kg;  
Dimensions: 950 x 650 x 950 mm<sup>3</sup>  
Delivery type: Raw casting

As a result of the combination of foundry and machining plant under one roof processes are simplified and shorter. The supply of pattern, casting and machining to the requested date does not have to be coordinated at large expenditure with several suppliers.



**Fig. 5: Machined transmission case for harvesting machine**

Material: EN-GJS-400-18-LT; Weight: 210 kg;  
Dimensions: 700 x 500 x 650 mm<sup>3</sup>  
Delivery type: Machined ready to mount



**Fig. 6: Case for train transmission**

Material: EN-GJS-400; Weight: 238 kg;  
Dimensions: 600 x 600 x 550 mm<sup>3</sup>  
Delivery type: Assembled and machined ready to mount

The customer receives the casted, painted, machined and tested component ready to be installed out of one hand. In German we call this:



For this quality stands the Logo of the AGQ (german working group quality casting) !