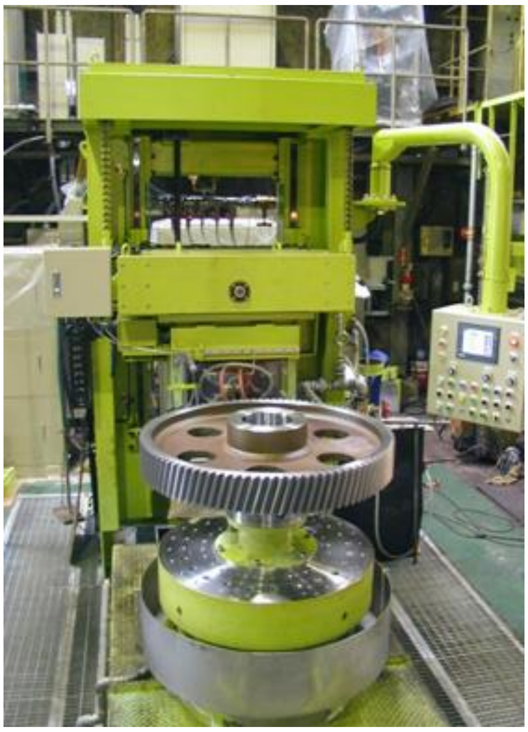
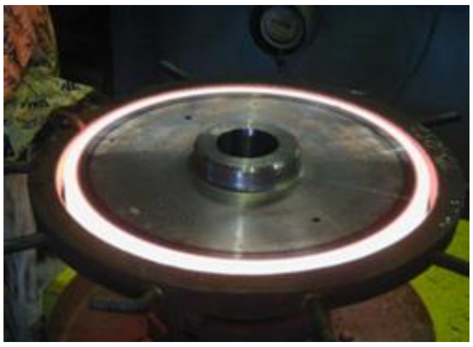
IH quenching of gears

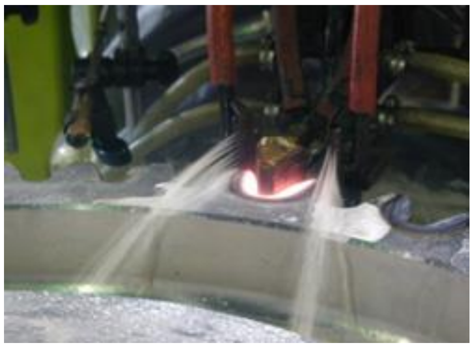
DHF has been providing IH quenching service to gears having various size and tooth shape to achieve the best performance.



Gear fully automatic quencher

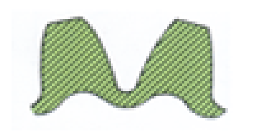
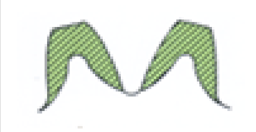
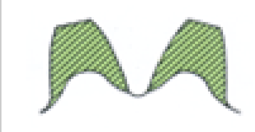
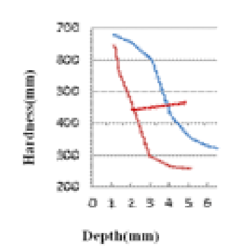
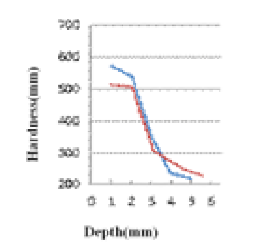
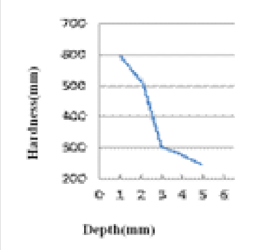
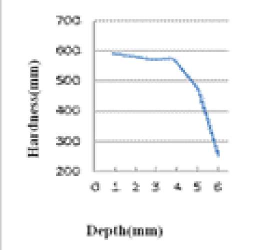


One time quenching of all gear teeth



One-by one quenching of gear tooth

Quenching method type

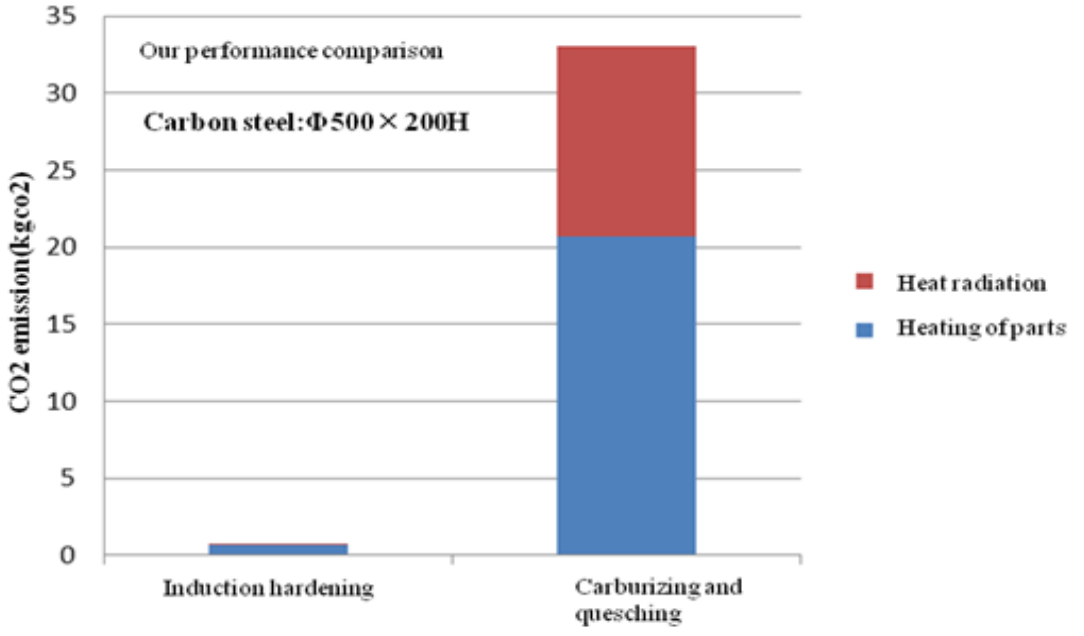
	Tooth side and bottom		Tooth side	
	One-time all teeth	One-by-one tooth movement	One-by-one tooth movement	One or one tooth
Shape of the hardened layer				
Cross-section hardness				
Feature	Increase 1) wear-resistance 2) tooth side surface pressure capacity 3) tooth bottom strength		Increase 1) wear resistance 2) all tooth surface pressure capacity	
	1) Uniform hardnes of all teeth	1) The size distortion is small compared with one-time all teeth quenching	1) The size distortion is relatively small is comparatively small	1) The size distortion is relatively small is comparatively small
	2) Max.tooth bottom mechanical strength	2) Tooth bottom mechanical strength is high	2) Tooth mechanical strength is high	2) Tooth mechanical strength is high
	3) Tight coil setting is not required	3) Require relatively small power supply	3) Tight quenching control is not required	3) Tight quenching control is not required
Example of use	1) Heavy load	1) Heavy load	1) Light load	1) Light load
	2) Medium and small modules	2) Lerge and medium modules	2) Large and medium modules	2) small modules
	3) Flat tooth	3) Flat tooth	3) Flat tooth	3) Hypoid gear
	4) High-end vehicle	4) Helical gear	4) Helical gear	

Hardness and hardened depth of gears made of typical materials

	Tooth top quenching		Tooth top and bottom quenching			
	Hardness (HS)	Depth (mm)	Tooth top surface hardness (HS)	Tooth top hardened depth (mm)	Tooth bottom surface hardness (HS)	Tooth bottom hardened depth (mm)
S35C	60～70	≧1.5 -50	60～70	≧1.5 -50	≧50	≧1.5 -45
S45C	60～75	≧2.0 -55	60～70	≧2.0 -55	≧55	≧1.5 -50
SCM435	60～73	2～5 (Over55)	60～73	2～4 (Over55)	≧60	2～3 (Over55)
SCM440	60～75	2～6 (Over55)	60～75	2～4 (Over55)	≧60	2～4 (Over55)
SNC631	60～73	2～5 (Over50)	60～73	2～4 (Over50)	≧60	2～3 (Over48)
SNCM439	60～75	2～6 (Over55)	60～75	2～5 (Over55)	≧60	2～4 (Over45)

Advantages of high-frequency induction heating

- **The high energy efficiency due to heat generation in the blank gear**
- **Quick heating results in a short quenching time**
- **By pinpoitn zone heating, it is possible to quench only necessary area only**
- **No CO2 emission and clean quenching secures low environment load**



Comparison of CO2 emission of high frequency quenching and carburizing quenching