

Computer simulation을 이용한 주조 금형 방한설계의 응용기술

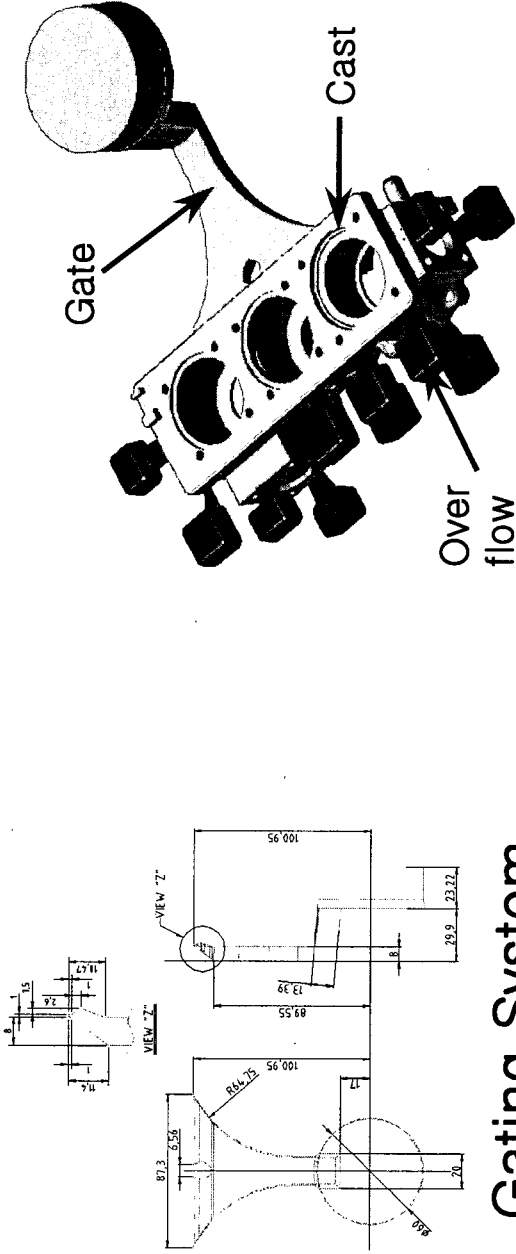
일시: 2002년 2월

한국생산기술연구원 최정길

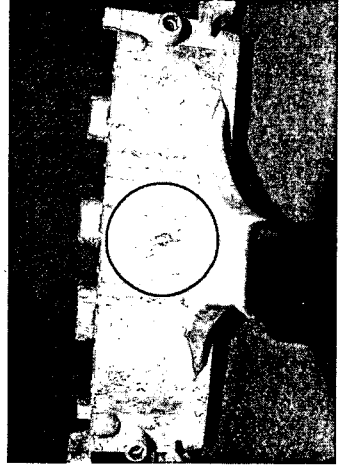
목 차

- **Gas Valve**
 - AI D/C, 가정용 소형 가스 보일러의 부품개발
 - 구조방안의 개선에 의한 문제 해결
- **AI Wheel**
 - Low Pressure D/C, 차량용 AI Wheel 제품개발
 - 최적 구조방안 도출
- **AI Front Cross Member**
 - 차량 부품
 - 강재 프레스/용접품을 AI 중력금형구조품으로 대체 방안 도출 및 양산 체제 구축

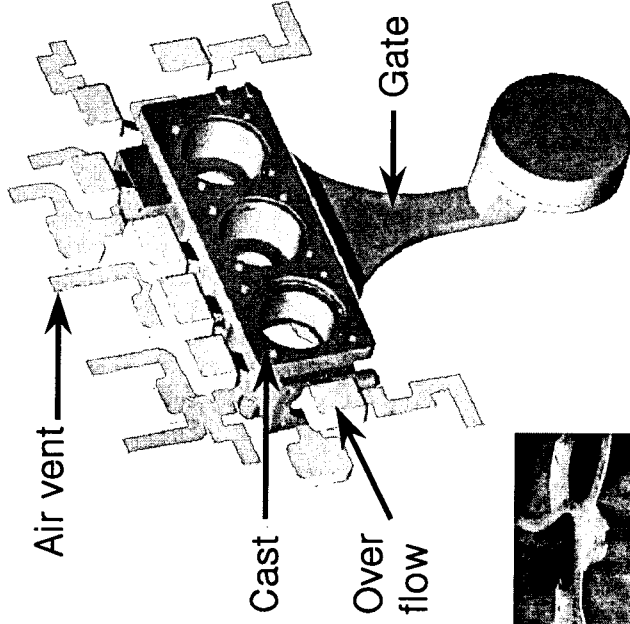
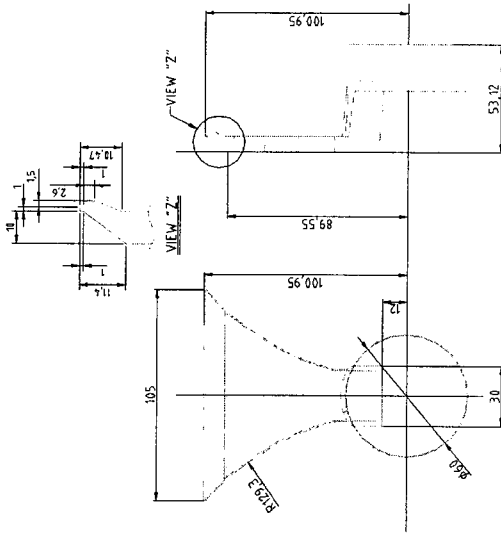
개선 전 구조방안



• Gating System

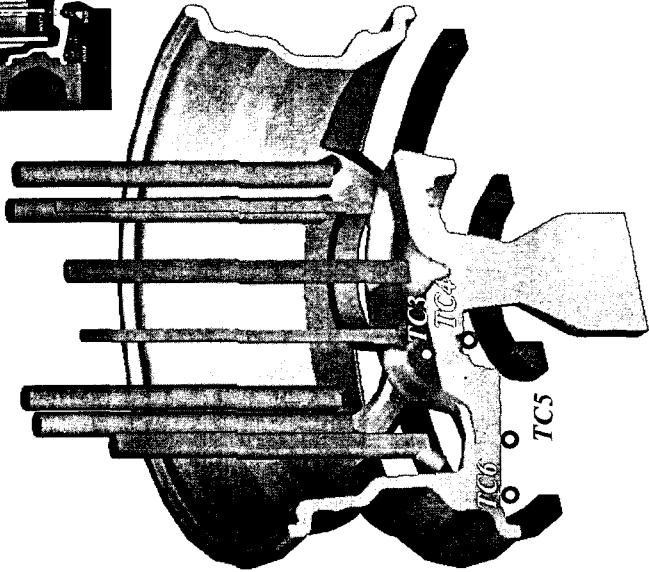
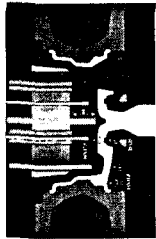


개선 후 구조방안



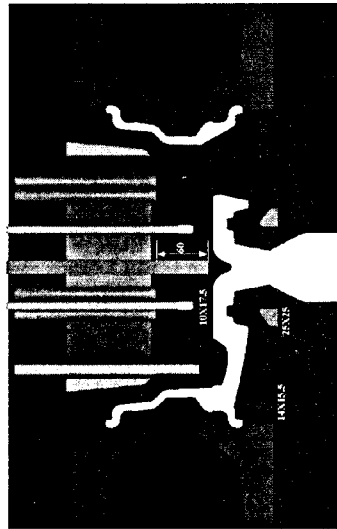
• Gating System

AI Wheel Low Pressure D/C

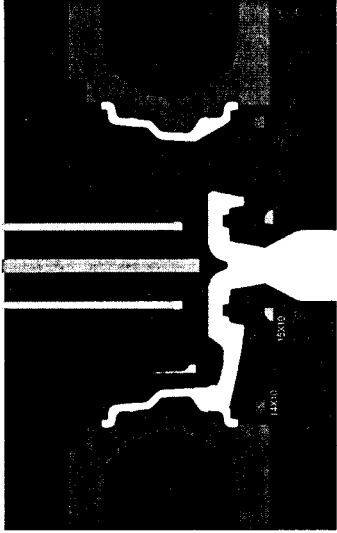


- 승압공통수 각수 냉각수 설계
- 차압중회반복주 및 냉응고냉
- 자동냉각수 조절기
- 사출열 금형 내의 열
- 축열 부위 조절
- 휠본미의 반
- 주조공정에서 반
- 작업시간의 단축에
- 구조결함 감소에
- 한 생산성의 향상

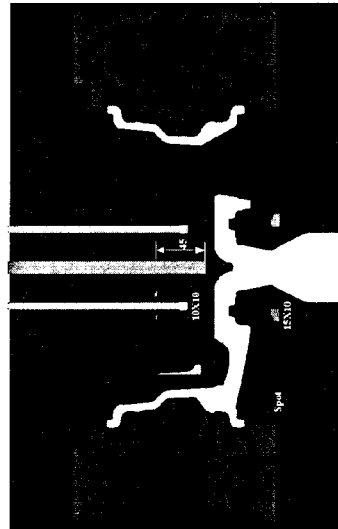
Case 별 조건



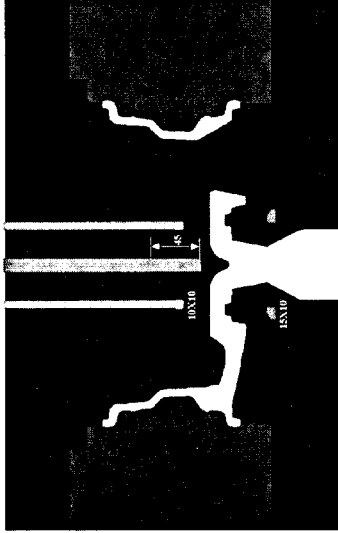
Case 1



Case 2

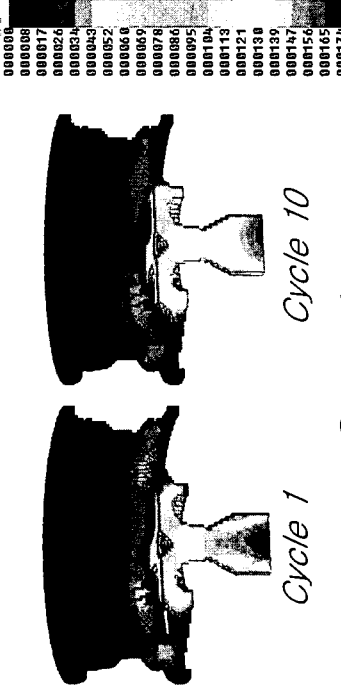
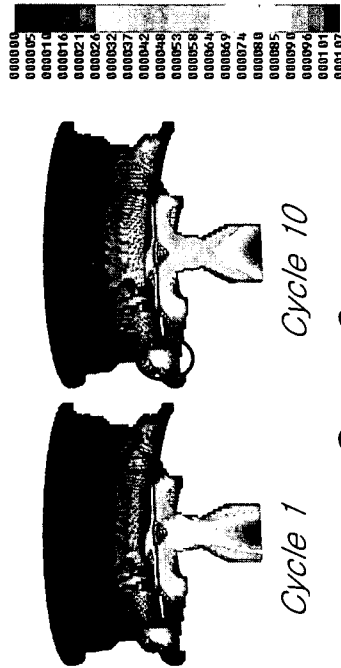
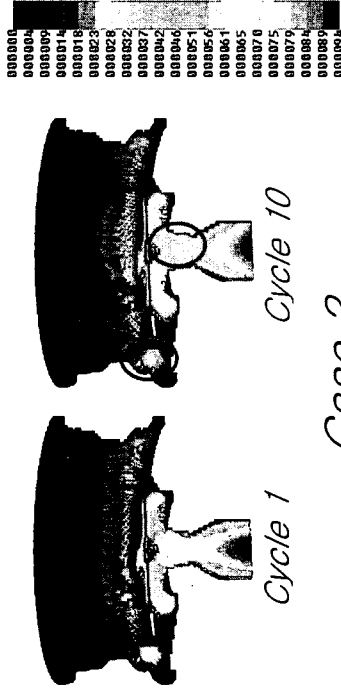
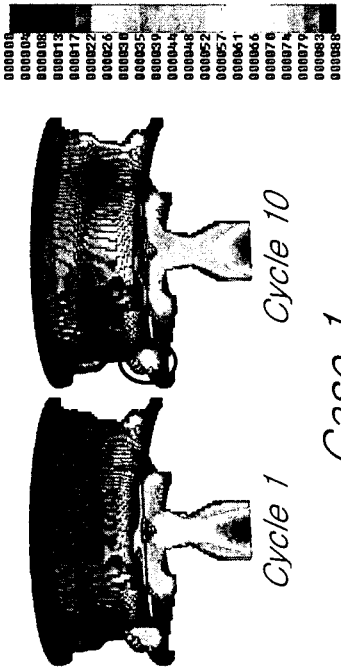


Case 3

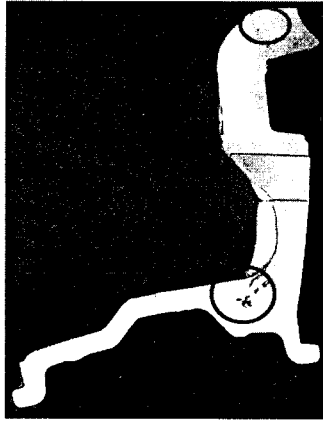
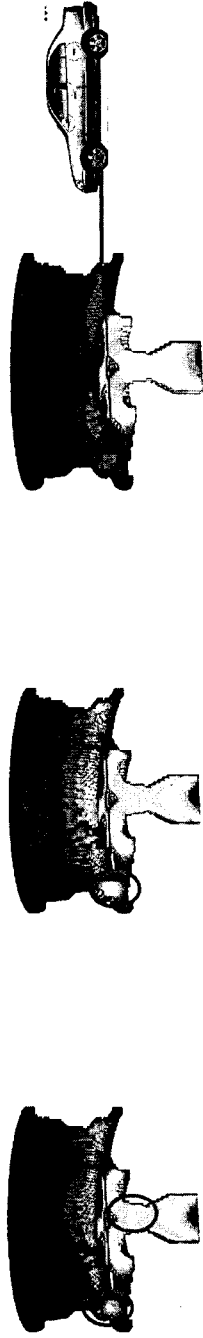


Case 4

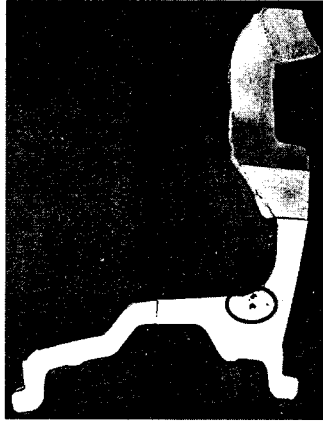
응고 해석 결과



Wheel 주물의 절단면



Case 2



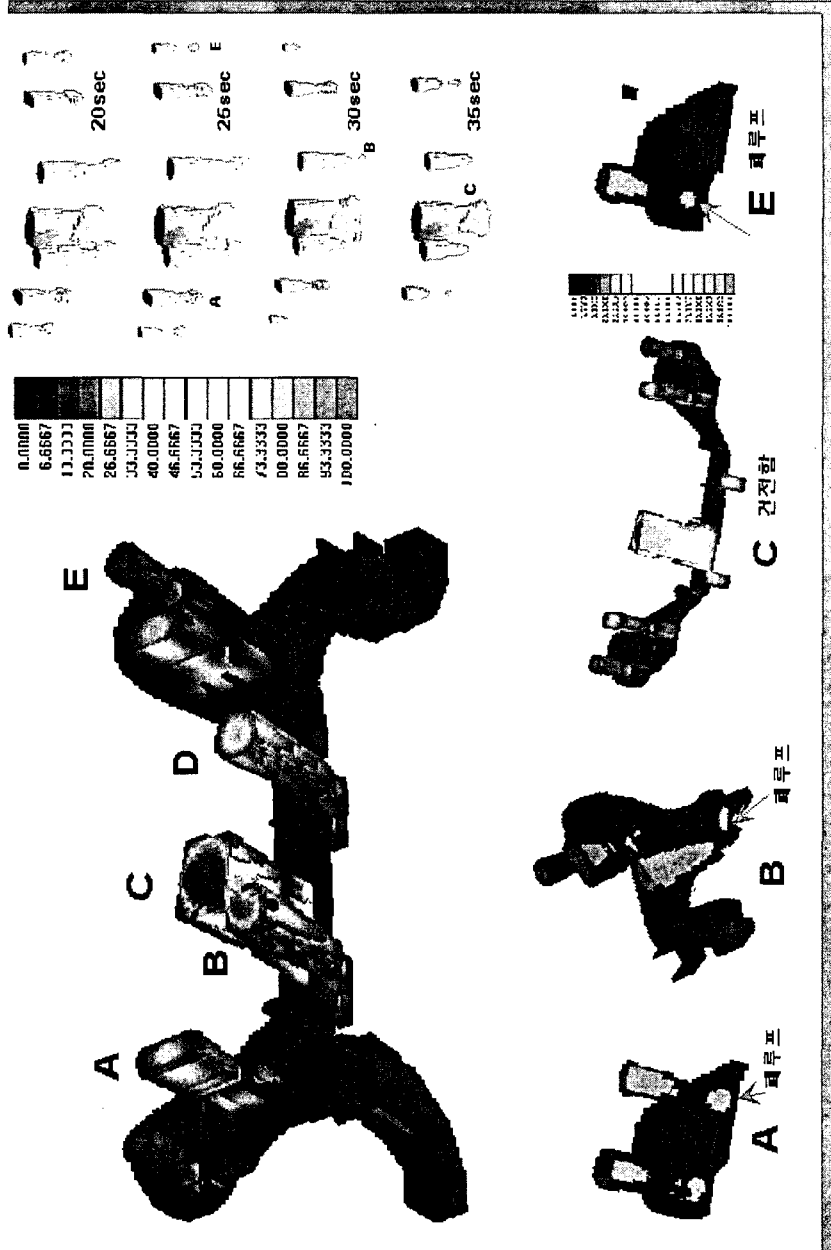
Case 3



Case 4

the productivity can be improved more than 35 %

중력금형주조에 의한 주조시제품 개발



반복 주조시의 주물의 응고 시간 변화



조건 : Cycle time - 4분 40초

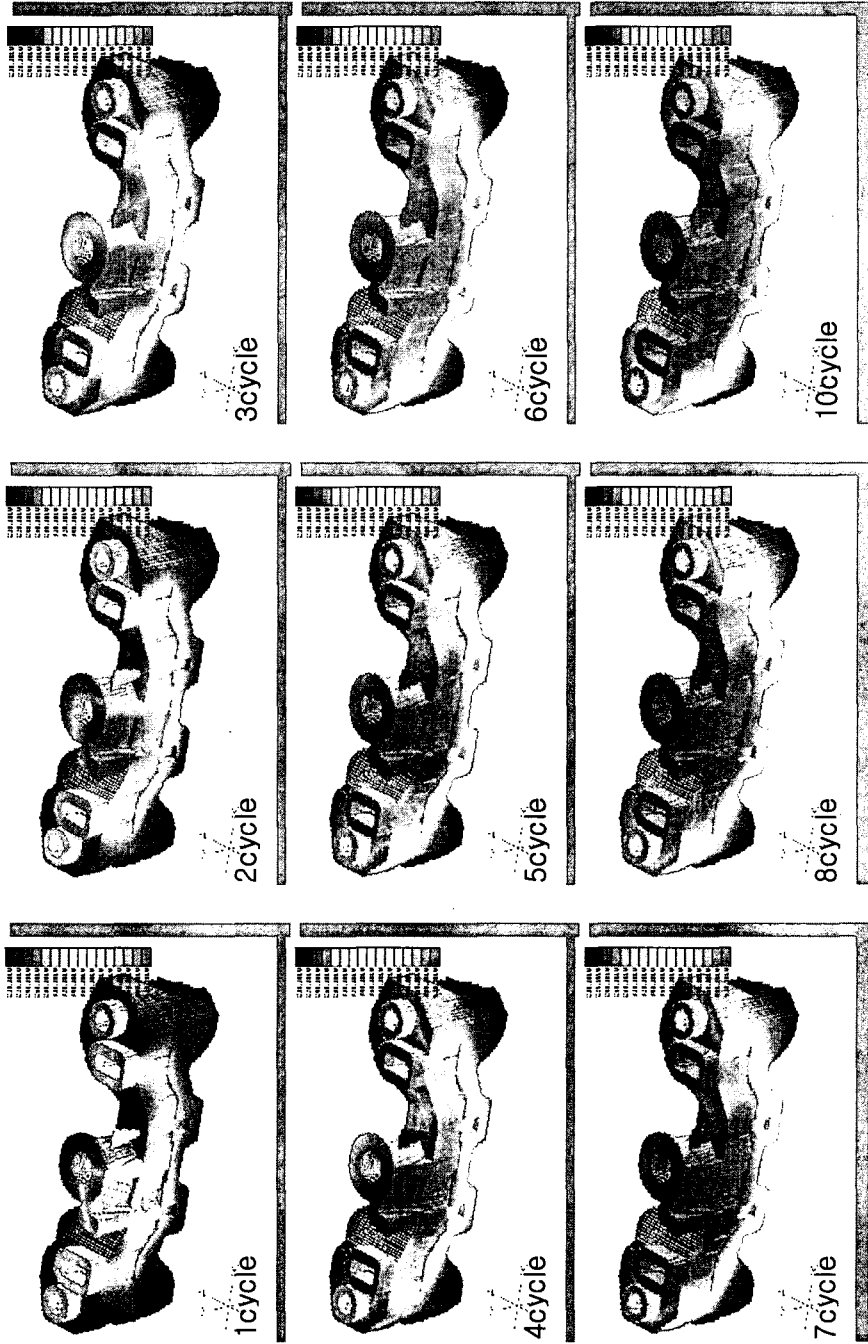
Open time - 120초, Close time - 160초

금형의 초기온도 - 200 °C

용탕주입온도 - 700 °C

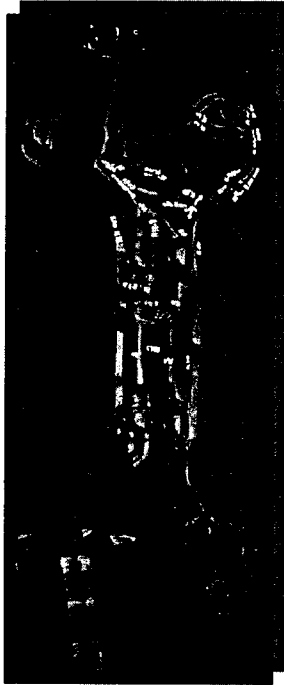


반복 주조시의 금형의 온도분포 변화

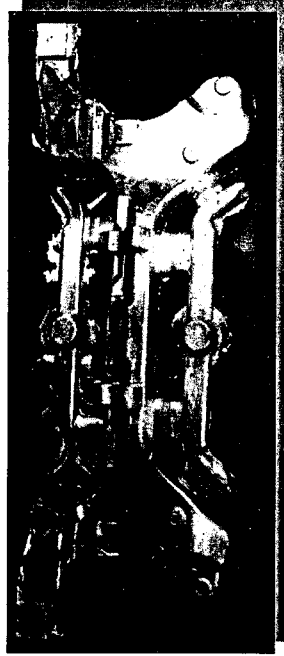


17 구조팀

제품의 비교



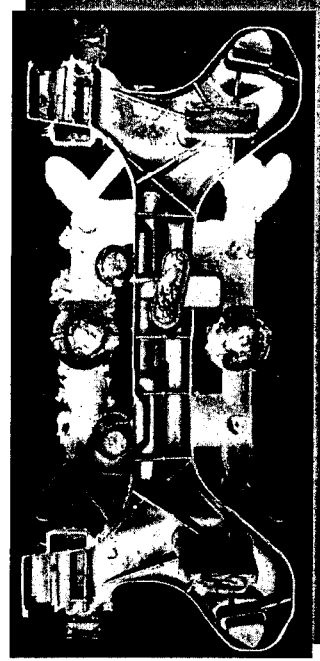
기존의 프레스제품 (상)



금형주조제품 (상)



기존의 프레스제품 (하)



금형주조제품 (하)