**Process optimization**

1. No indication of errors. High quality parts are expected.
2. Cavity pressure peak
   - Switching to holding pressure too late (overcharging)
   - Injection speed too fast
   - Internal stresses, low strength, deformation under conditions of temperature
3. Pressure release before compression
   - Switching to holding pressure too early
   - Uncontrolled filling
   - Warpage
4. Drop in pressure during holding pressure
   - Holding pressure time too short
   - Melt is flowing back
   - Sink marks in gate area
5. Residual pressure
   - Mold too weak or switching to holding pressure too late
   - Deformation of die plates during injection phase
   - No relaxation after solidification of melt

**Effect of various parameters on cavity pressure**

1. Injection starts
   - Hydraulic pressure rises
2. ... 2 Melt injected into cavity; melt has not yet reached sensor
   - No cavity pressure
3. Melt reaches sensor
   - Cavity pressure signal rises
3. ... 3 Cavity fills
   - Cavity pressure rises
4. Cavity reaches volumetric filling
   - Ideal switching to holding pressure
5. Maximum cavity pressure
   - Depends on machine settings, material properties, etc.
6. Sealing point
   - Melt at gate has solidified so that material cannot flow back out of cavity
6. ... 5 Melt compresses
   - Melt cooling causes volume shrinkage compensation of shrinkage through holding pressure
7. Atmospheric pressure = processing shrinkage begins

The status of the injection-molded part is reflected directly in the cavity pressure curve. Every process change caused by fluctuating process conditions can be identified with the cavity pressure curve.

1. Maximum effect on part quality / 9. Minimum effect on part quality

**Automatic switching point identification**

- Compensation of viscosity fluctuations
- Compensation of process fluctuations
- High process stability

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