

### 8.11. THE ACOUSTIC CAMERA

The acoustic camera serves the noise analysis of machines. With this development a new discipline of acoustic photography and cinematography was created for industrial use. A video camera records the optical picture of the equipment, while at the same time microphones capture the acoustic waves coming from the motive.



A computer makes a map of the noise and layers it over the photo. In this way produced sound images help to identify causes of the damage or to derive notes for construction improvements. They permit conclusions about the dynamics of machines within the high speed range of up to 100.000 pictures per second and the detection of unpleasant frequencies.

### 8.12. AUTOMATIC DETECTION OF THE INTERFERENCE DEVELOPING PLACE (CONTACT POINT)

In future passenger car manufacturing plants the above mentioned localization techniques are no longer relevant - related to the quantity of the manufactured vehicles (mass production approx. 1000 vehicle/day).

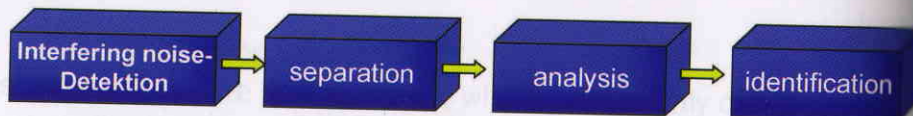
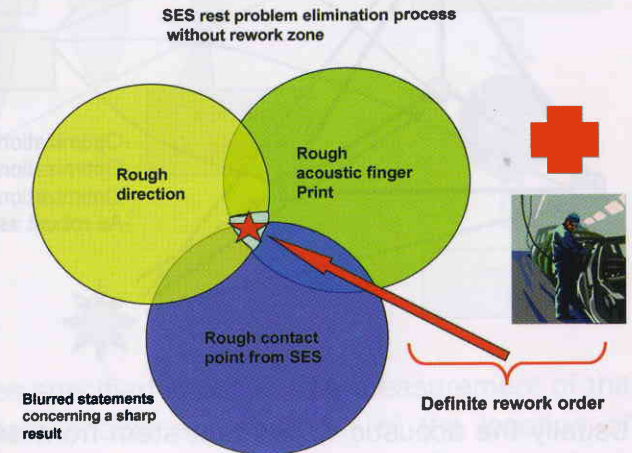


Illustration: Process of interference elimination

To enable an automatic localization of Interfering Sound, the following steps are necessary.

The measurement of the source location (contact point) of an interfering sound cannot be realised with microphones via airborne or solid-borne sound.

The first circle of the three-circle method marks the generation of data from very precise contact point data in the SES, which originate from the theory phase of the respective product development process. This result can however not be exact.



The second circle describes the generation of data from the acoustic finger print, which provides reference points for localization, but only marks an indistinct range.

The third circle is the acoustic result of a direction generation with "directing microphones", which are attached to the most meaningful locations in the product interior. In the phase of stimulation by road [see chapter 9.10] the necessary but also indistinct data are documented with the MAIS method.