ACOUSTICS2008/421
The Physical Characteristics of Mechanical Pipe Organs and how much they allow the Organist to Influence the Initial Transient

Jose Grossinho
R. Francisco da Silva Marques, n°5, 2°Dto, 2825-125 Caparica, Portugal

It has been accepted by organists that one can change the timbre of the organ simply by varying the velocity of the key. Previous research (Nolle, 1941, 1992) shows clearly that there is a change in the initial transient of the sound with different pressure rise times (PRT) on the foot of the pipe. More recent research (Woolley, 2006) shows that in mechanical action organs there is no major difference in the velocity of the key when the organist thought there was. The velocity of opening of the pallet is one of the main aspects that influence the PRT. Calculations of the flexibility of mechanical parts from organs in Mafra, Portugal, where taken, as well as motion of the key, pressure on the pipe's foot and sound measurements on a model organ, using human touch on the key. Due to the pressure differences in the wind chest and the groove, it's difficult to control the pallet movement after it starts to open. The results show that there is a more efficient control of the velocity of opening of the pallet on more rigid actions, giving a better control to the organist over the timbre of the instrument.