

Title (en)
ACTIVE VIBRATION CONTROL

Publication
EP 0285632 B1 19930609 (EN)

Application
EP 87906587 A 19871006

Priority
• GB 8624053 A 19861007
• GB 8630422 A 19861219

Abstract (en)
[origin: WO8802912A1] To reduce noise inside a motor car passenger compartment, two loudspeakers (371, 372) are driven by signals derived from a reference signal $x(n)$ by adaptive filtering carried out by a programmed microprocessor and memory unit (36) which adapts the filtering in dependence on error signals $e(n)$ from four microphones (421, 422, 423 and 424) distributed in the passenger compartment. Reference filtering coefficients are initially determined by analysis of finite impulse responses when white noise is acoustically coupled from the loudspeakers (37) to the microphones (42), a white noise generator (48) being coupled to the unit (36). The reference signal $x(n)$ is restricted to one or more selected harmonics or subharmonics of the fundamental noise frequency by a filter (34) which tracks the selected frequency. The selected frequency may be obtained from a coil (31) in the ignition circuit of the vehicle.

IPC 1-7
G10K 11/16

IPC 8 full level
F01N 1/00 (2006.01); **F16F 15/02** (2006.01); **G10K 11/16** (2006.01); **G10K 11/178** (2006.01); **G10K 15/04** (2006.01)

CPC (source: EP)
G10K 11/178 (2013.01); **G10K 2210/1282** (2013.01); **G10K 2210/30232** (2013.01); **G10K 2210/3032** (2013.01); **G10K 2210/3046** (2013.01); **G10K 2210/3048** (2013.01); **G10K 2210/3049** (2013.01); **G10K 2210/3212** (2013.01)

Citation (examination)
• WO 8302031 A1 19830609 - SOUND ATTENUATORS LTD [GB]
• US 4473906 A 19840925 - WARNAKA GLENN E [US], et al
• S.J. Elliot and I.M. Stothers: "A MULTICHANNEL ADAPTIVE ALGORITHM FOR THE ACTIVE CONTROL OF START-UP TRANSIENTS"; Colloque Euromech 213, September 1986, Marseille (4 pages)
• S.J. Elliot and P.A. Nelson: "ALGORITHM FOR MULTICHANNEL LMS ADAPTIVE FILTERING", Electronics Letters, 10 October 1985, Vol. 21 (pages 979-981)
• K. Kido and S. Onoda: "AUTOMATIC CONTROL OF ACOUSTIC NOISE EMITTED FROM POWER TRANSFORMER BY SYNTHESIZING DIRECTIVITY"; Electrical Institute Repor 23 97HO, 1972, Tohoku University, Sendai, Japan (pages 97-110)
• S. J. Elliott and P. A. Nelson: "AN ADAPTIVE ALGORITHM FOR MULTICHANNEL ACTIVE CONTROL"; Proc. Inst. Acoustics Vol. 8(1), March 1986 (pages 135-147)
• B. Widrow und S.D. Stearns: "ADAPTIVE SIGNAL PROCESSING", Prentice-Hall, Inc., 1985 (pages 182-192, 142-143, 288-293)
• H.F. Olsen and E.G. May: "ELECTRONIC SOUND ABSORBER", J. Acoust. Soc. Am. Vol. 25, Nr. 6, November 1953 (pages 1130-1137)
• Black, "Modulation Theory", D. Van Nostrand Company Inc., 1953, Chapter 4
• Openheim and Schaefer, "Digital Signal Processing", Prentice-Hall, 1975, pages 26-30
• Schwartz, Bennet u. Stein, "Communication Systems and Techniques", McGraw-Hill, 1966, pages 82-85
• Taub und Schilling, "Principles of Communication Systems", McGraw-Hill, 1971, pages 157-195

Cited by
US8160264B2; US6940229B2

Designated contracting state (EPC)
BE DE FR GB IT NL SE

DOCDB simple family (publication)
WO 8802912 A1 19880421; DE 3786165 D1 19930715; DE 3786165 T2 19931014; EP 0285632 A1 19881012; EP 0285632 B1 19930609; JP 2890196 B2 19990510; JP H01501344 A 19890511

DOCDB simple family (application)
GB 8700706 W 19871006; DE 3786165 T 19871006; EP 87906587 A 19871006; JP 50595887 A 19871006