

# GAS TURBINE EXPERIMENTAL METHOD

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## ABSTRACT

*The present work describes the technological and functional solution of an aerothermodynamic brake tested on turboengines testing beds. The method was created by the National Research and Development Institute for Gas Turbines COMOTI, Bucharest (INCDT COMOTI). The method and the brake are structurally and functionally described, bringing up all the benefits, especially the wide power and speed applicability range. It was obtained by the alteration of a gas turbine and by the adjustment of an operational or nonoperational combustion chamber. It is shown that its power limits can also cover the "zero power area" and that it is also functional at negative powers (it supplies power). After some theoretical considerations presented, the brake is functionally and structurally described in details, insisting on the initial engine alterations. Testing results regarding the adjustment with the combustion chamber are also shown, along with engine testing data.*

## REFERENCES

- [1] C. Carlanescu, D. Racota, D. Scheianu, and M. C. Trentea, "Measurement Method through Air Thermodynamic Brake", Brevet RO 112058. OSIM. Romania, 1996.
- [2] C. Carlanescu, D. Ursescu, and I. Manea, "Turbomotoare aeroderivative", Editura Didactica si Pedagogica. Bucharest, 1997.
- [3] XXX, "AI 20 Gas Turbine", Motor Sich, Ukraine.
- [4] C. Carlanescu, V. C. Moise, M. Ionescu, M. Ene, P. C. Posoiu, and M. M. Merisanu, "Combustion Chamber with Partial Premix", Brevet RO 110081. OSIM. Romania, 1993.
- [5] G. Carlanescu and C. Ion, "Chambre de combustion avec preamestec partiel. Medaille d'Or.", Salon Mondial de l'Invention, de la Recherche et des Nouvelles Technologies. Bruxelles, EUREKA'99, 1999.
- [6] C. Carlanescu, I. Manea, C. Ion, and S. Stefan, *Low Emission Gas Turbines*, Editura Academiei Tehnice Militare. Bucharest, 2000.
- [7] A. H. Lefebvre, *Gas Turbine Combustion*, McGraw and Hill. New York, 1986.
- [8] A. Hristici and A. G. Tumanovsky, *Gazoturbiniie dvigatelei zascita ocrusciaiuscei credi*, Kiev. USSR, 1983.
- [9] A. H. Lefebvre, "The role of fuel preparation in low emission combustion", ASME Papers, JE6TP, vol. 117, 1995.