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(54) Title (EN): METHOD FOR SECURING THE OPERATION OF A TURBOMACHINE

(54) Title (FR): PROCEDE DE SECURISATION DU FONCTIONNEMENT D'UNE TURBOMACHINE

(57) Abstract:

(EN): The invention relates to a method for securing the operation of a rotating assembly of a turbomachine, comprising a turbine and a rotating machine, wherein the exceeding of a predetermined speed threshold (Ws) is anticipated by repeatedly carrying out a prediction cycle during which the following steps are carried out: measuring (E1 to E5) quantities related to the operation of the turbomachine including an actual rotational speed (W0) of the rotating assembly thereof; estimating (E6, E7), from said quantities, the engine torque (Cm) and resistant torque (Cr) applied to the rotating assembly; developing (E9 to E12) a value (DC') equal to the difference between said two torques; calculating (E13) a predicted rotational speed (W1) of the rotating assembly at a given time horizon on the basis of said representative value (DC') and the actual rotational speed (W0). An action is carried out (E16) on the operation of the turbomachine in order to limit the extent to which the speed of the rotating assembly thereof is exceeded in relation to said threshold (Ws) if the predicted rotational speed (W1) exceeds this threshold (Ws).

(FR): Procédé de sécurisation du fonctionnement d'un ensemble tournant d'une turbomachine comprenant une turbine et une machine tournante, dans lequel procédé on anticipe le dépassement d'un seuil de vitesse prédéterminé (Ws) en réalisant répétitivement un cycle de prédiction au cours duquel : on mesure (E1 à E5) des grandeurs relatives au fonctionnement de la turbomachine dont une vitesse de rotation réelle (W0) de son ensemble tournant; on estime (E6, E7) à partir de ces grandeurs les couples moteur (Cm) et résistant (Cr) appliqués sur l'ensemble tournant; on élabore (E9 à E12) une valeur représentative (DC') de la différence entre ces deux couples; on calcule (E13) une vitesse de rotation de prédiction (W1) de l'ensemble tournant à un horizon de temps donné, à partir de ladite valeur représentative (DC') et de la vitesse de rotation réelle (W0). On opère (E16) une action sur le fonctionnement de la turbomachine pour limiter l'ampleur du dépassement en vitesse de son ensemble tournant par rapport audit seuil (Ws) si la vitesse de rotation de prédiction (W1) dépasse ce seuil (Ws).

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