

Suivi de la tension résiduelle par auscultation des tirants d’ancrage du parc hydraulique EDF

Follow-up of the residual strain by monitoring of the ground anchors of EDF’s hydropower plants

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MOTS CLÉS

Précontrainte, tirants, pesage, cellule de charge.

RÉSUMÉ

Assez peu d’ouvrages hydrauliques EDF sont aujourd’hui équipés de tirants d’ancrage auscultés. Dans l’hydraulique, cette technique a pour but de stabiliser et/ou renforcer une structure par des ancrages actifs. Mais avec le vieillissement des ouvrages hydrauliques, ces méthodes de confortement deviennent intéressantes voire indispensables, ainsi que le suivi métrologique de la traction appliquée. Dans ce contexte, il s’est avéré utile d’établir un premier Retour d’Expérience sur l’auscultation des tirants d’ancrage pour le parc hydraulique EDF ainsi qu’un inventaire des techniques permettant la mesure de tension résiduelle. Cela permettra d’engager des réflexions sur l’harmonisation des pratiques et ainsi mieux aborder sur le long terme les techniques d’auscultation pour ce type de confortement et les futurs projets (Chambon, Choranche).

ABSTRACT

Today, relatively few EDF’s hydropower plants are equipped with monitored anchors. In hydraulics, the purpose of this technique is to stabilize and/or reinforce a structure by active anchors. With the ageing of the hydraulic works, these methods of confortement become interesting even essential, as well as the metrological follow-up of the strain applied. In this context, it proved to be useful to establish a first feedback on the monitoring of anchors for EDF’s hydropower plants as well as an inventory of the techniques allowing the measurement of residual strain. That will allow to engage reflections on the harmonization of the practices, and to better approach on the long run the techniques of monitoring for this kind of confortement and the future projects (Chambon, Choranche).

1. PREAMBULE

1.1 La précontrainte par post-tension

Parler de « précontrainte par post-tension » est un abus de langage car la précontrainte consiste à mettre en tension des armatures en acier avant leur blocage. Elles sont ensuite relâchées et permettent alors de mettre en compression le béton par simple effet d’adhérence. Il s’agit donc dans ce cas de « pré-tension ».

La « post-tension » consiste à mettre en tension des câbles ou barres après durcissement du béton de la structure à conforter. Ces tirants, intérieurs ou extérieurs au béton, sont enfilés dans des gaines et des ancrages qui s’appuient sur l’ouvrage.

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