

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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Table of Contents Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg

1. Understanding the eBook Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - The Rise of Digital Reading Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Advantages of eBooks Over Traditional Books
2. Identifying Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - User-Friendly Interface
4. Exploring eBook Recommendations from Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Personalized Recommendations
 - Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg User Reviews and Ratings
 - Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg and Bestseller Lists
5. Accessing Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg Free and Paid eBooks

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 - Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg eBook Subscription Services
 - Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg Budget-Friendly Options
6. Navigating Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg eBook Formats
- ePub, PDF, MOBI, and More
 - Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg Compatibility with Devices
 - Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg Enhanced eBook Features
7. Enhancing Your Reading Experience
- Adjustable Fonts and Text Sizes of Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Highlighting and Note-Taking Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Interactive Elements Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
8. Staying Engaged with Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
- Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
9. Balancing eBooks and Physical Books Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
- Benefits of a Digital Library
 - Creating a Diverse Reading Collection Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
10. Overcoming Reading Challenges
- Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
- Setting Reading Goals Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
- Fact-Checking eBook Content of Leacutethique Du Laquo Care Raquo Laquo Que Saisje Raquo Ndeg
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
- Utilizing eBooks for Skill Development

- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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