DryChain10 significantly reduces the risk of moisture damage

DryChain10 (Kuivaketju10) is a moisture management operating model for construction processes that reduces the risk of moisture damage throughout a building's life cycle. Moisture risk management is based on a chain where the 10 most critical moisture risks are identified and controlled at all stages of the construction process, and the successful implementation of control measures is verified in a reliable way.

The operating model consists of a risk list and verification instructions, that define the ten most critical moisture risks for each stage of the construction process and the measures that can be taken to avoid those risks. By managing these risks more than 80 percent of the costs of consequential moisture damage can be avoided.

During the design work, the architectural, structural, HVAC and electrical designers will modify the DryChain10 risk list and verification instructions to correspond with the specific features of the project in question, thus ensuring comprehensive management of moisture risks. The specific project features can arise, for example, from a town plan, construction site, architectural or structural solutions, or material choices.

The DryChain10 model begins with a person or company embarking on a construction project and making a decision to execute the project in accordance with the operating model. The model makes it mandatory to attach a qualified moisture management coordinator to the project at an early stage, responsible for supervising and directing the implementation of the DryChain10 model throughout the process with the project owner's authorization. The coordinator also double-checks and approves all the verification performed during the construction process.

Designers need to demonstrate that they have taken the DryChain10 risk list and verification instructions in consideration in their plans. The contractor, in turn, while executing the plans, verifies and documents the successful implementation of the phases with DryChain10 risks attached.

RALA DryChain10 in a nutshell:

- ✓ **Preventive measures are targeted against the 10 most critical moisture risks in construction processes.**
- ✓ **The 10 risks are controlled throughout a building's life cycle from ordering to use.**
- ✓ **Successful implementation of the control measures is reliably verified and documented for each risk.**

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Responsibilities per project stage

The project owner is responsible for making the decision to execute the project in accordance with the principles of the DryChain10 operating model. After the decision, the project owner's first task is to involve a qualified moisture management coordinator in the project, who, with the project owner's authorization, supervises and coordinates the implementation of DryChain10 throughout the construction project.

The moisture management coordinator must be familiar with the DryChain10 operating model and have sufficient training and experience to perform the task. They must also be completely independent of the designers and the contractors. In a project where the building project owner and the contractor are the same operator, the humidity management coordinator must be hired from outside the project owner's/contractor's organization. In projects of normal complexity, the project owner can act as a coordinator before the design stage begins.

The project owner agrees with the designers and contractors already at the tender stage that the operating model will be used in the project. The utilization of DryChain10 should also be recorded as a mandatory requirement in all final design and works contracts.

The project owner's responsibilities also include providing a realistic timetable for the design, site implementation and commissioning stages of the project. The adequacy of the overall schedule must be assessed together with the moisture management coordinator for the first time already at the ordering stage. At a later stage, the realism of the schedule needs to be reassessed together with the designers and the contractor.

The adequacy of the schedule must be assessed in relation to, for example, the time of implementation, the construction site, architectural and structural solutions, and material choices. An unrealistic timetable makes successful implementation of the operating model significantly more difficult.

Design

At the core of the operating model are the DryChain10 risk list and verification instructions. The ten most critical moisture risks have been identified based on experiences of the problems that generally occur in Finnish construction projects. The risk list defines the risks and the measures that can be taken to avoid them.

For designers and contractors, the verification instructions are the most important part of DryChain10 as they spell out how the risks identified in the risk list should be addressed in the design phase ("Designer Checklist") and in the site phase ("Contractor Checklist"). The Designer Checklist provides designers in different fields with a detailed list of things that should be included in their plans to combat the risks. The Contractor's Checklist reviews the means by which the successful implementation of risky phases of work should be verified and documented.

In the design stage, the DryChain10 operating model applies to architectural, structural, HVAC, electrical and automation designers. Each of them implements the operating model in the same way. First, they go through the DryChain10 risk list and verification instructions and modify their contents to correspond with the specifics of the project. Items can only be removed from the risk list if the item in question does not

exist in the project under construction at all. Based on this assessment work, a final risk list and verification instructions for the project will be drawn up, which will be assessed and approved together with the moisture management coordinator.

The DryChain10 risk list and verification instructions are used as a design checklist. The aim is to make detailed plans for how to execute the risk areas. For example, the challenges related to the watertightness of the outer wall in connection with openings, vias and joints must be solved at the design stage. At the final stage of design, the planners, together with the moisture management coordinator and the contractor, assess whether the plans are applicable for the risk areas. In addition, the designers familiarize the main contractor's site organization with the plans and participate in site meetings to discuss issues related to their field of design.

Site implementation

At the construction site, ensuring compliance with the DryChain10 model is the main contractor's responsibility. He makes sure that all site workers are provided with an introduction to the operating model. The orientation must include at least the basic principles of the DryChain10 model as well as the Contractor's Checklist from the verification instructions. Employees must know the different phase of work, the successful implementation of which will be verified.

The verification instructions specified by the designers include the Contractor's Checklist, which outlines the phases of work that involve risks, the successful implementation of which must be verified and documented. The main task of the contractor, when following the DryChain10 model, is to verify the successful implementation of these phases in accordance with the checklist. There are specific documentation obligations that ensure that the verification is carried out in the prescribed manner and at the right time.

The overall responsibility for the verification must be assigned to one person who is approved by the moisture management coordinator. The person in charge must have sufficient resources to perform the task. The selected person is responsible, on behalf of the main contractor, for verifying that the phases of work have been successfully executed in accordance with the checklist.

Commissioning

The commissioning of a building is divided into two stages in DryChain10. The tasks of the first stage are the same as in the site implementation stage. The primary task of the main contractor is to verify and document the successful implementation of the risky phases of work according to the Contractor's Checklist in the verification instructions. The list contains risk points that are specific to the deployment stage.

The second stage of the commissioning includes a final assessment of how well the implementation of the operating model has gone. The assessment is based on the moisture management coordinator's monitoring and reporting throughout the project as well as the documentation done in accordance with the Contractor's Checklist. An all-around successful project can apply for a RALA DryChain10 status.

For final summary, a report that discusses the success of the operating model and possible deviations between the plans and implementations of the risk areas is prepared. In the case of uncorrected deviations, it must be possible to justify their insignificance or to present follow-up measures to be implemented during use. The final report is assessed and approved by the project owner, the moisture management coordinator, the designers and the contractor.

Use

For the building to remain dry and healthy throughout its life cycle, the DryChain10 operating model also sets requirements for the maintenance of the building. To meet the requirements, the moisture management coordinator, in cooperation with the designers and the contractor, forms a Dry Chain10 section for the building's maintenance manual. The section includes all risk items in the Dry Chain10 risk list that involve in-service maintenance measures.

The DryChain10 section of the maintenance manual must define required regular inspections and maintenance as well as maintenance periods and associated repairs and replacements for all included risk areas. The section should also include the maintenance instructions provided by the material manufacturer. For each needed measure defined, documentation instructions must be presented in a similar manner to the Contractor's Checklist of the verification instructions.