

## **5. OVERALL RISK INDEX**

The risk for all operational problems considered in the risk model can be integrated into only one overall risk index. First, an integrated value for filamentous bulking must be obtained as the maximum value, at each time step, among the risks of the three type of bulking problems (caused by three different causes), at the same time as the maximum value between the risks of low F/M foaming and foaming due to high RBOM fraction provides the integrated foaming index. Then the final aggregation simply consists in picking the maximum filtered value of the integrated bulking, integrated foaming, rising and deflocculation risks at every time step to produce the overall risk. For a specific activated sludge system, these integrated values give an idea of the overall risk of solids separation problems as well as indicates the problem to cope with first.

$$\text{Overall risk (OR)} = \text{Max}_{\text{every } t} (R_{\text{Bulking}}, R_{\text{Foaming}}, R_{\text{Rising}}, R_{\text{Deflocculation}})$$