

# *Cooling water intakes and outfalls*



Cooling water intakes can draw in large quantities of seaweed, fish, crustaceans, jellyfish and man-made debris. This not only requires daily trash removal but can also create operational problems during incidents of large-scale ingress. Major influxes of fish and seaweed disrupt performance and can, in some cases, cause complete shutdown. The cost of routine disposal of screen trash could, like any other, be reduced by considering intake system design and operation.

Pisces biologists have considerable experience and expertise of such aspects of intake and screening systems. We can offer advice on:

## **Siting**

Positioning of intakes to reduce screen blockage, thus contributing to increased plant efficiency.

## **Design**

Selection of suitable designs of intake structure, configuration and screen type (wedge-wire, louvre, drum) for the job. Studies of fish swimming speeds and their reactions to intake structures and water currents mean that we can advise on the optimum flow structures required for reduction of fish intake. Our research into fish behaviour enables us to advise on deterrent methods (sound, light, bubble curtains) and fish return systems; these not only reduce trash but also fish loss in the vicinity of the plant.

## **Prediction**

With our computer expert system PISCES (Predicting Inshore Saline Communities by Expert System), derived from a unique database compiled over 30 years of screen catch studies, we can predict, for any British coastal location, likely species and numbers of fish at an intake to facilitate siting and give the design advice outlined above.



Cooling water outfalls raise a series of environmental concerns that Pisces has long experience of analysing and mitigating.

Pisces staff can offer advice on:

**Thermal effects**

The dispersal of heated water discharges and the influence of heat on the aquatic environment.

**Biocides**

The dispersal and fate of biocides such as chlorine into the environment.

**FGD effluents**

The impact and fate of flue gas desulphurisation effluents including heavy metals such as mercury within marine ecosystems.



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