

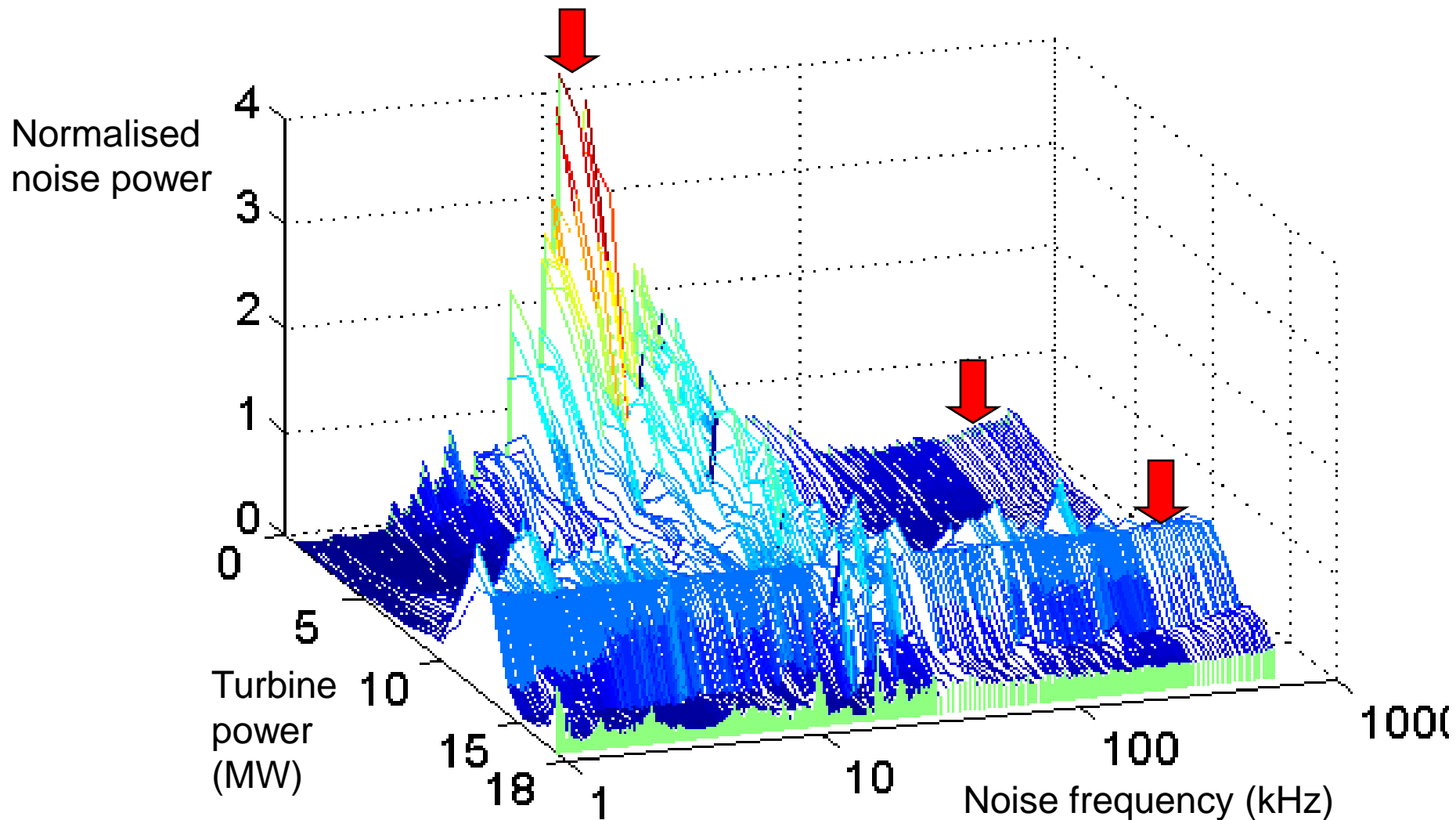
Cavitation mechanisms

In most cases, several different cavitation types appear in a turbine (leading-edge, trailing-edge, surface, etc.), and the same type can be found in different places within the turbine. These cavitation occurrences are referred to as cavitation mechanisms. A cavitation mechanism can be erosive or non-erosive.

Each cavitation characteristic can be expressed for the total cavitation or for a single mechanism.

Several signal and data processing methods are used to identify and assess the cavitation mechanisms.

An illustration of one step of the analysis,
which reveals cavitation mechanisms:



Illustrations of cavitation characteristics expressed for separate cavitation mechanisms follow...

Vertical Francis turbine

48 MW

20 guide vanes

17 runner blades

Three cavitation mechanisms were found in this case.

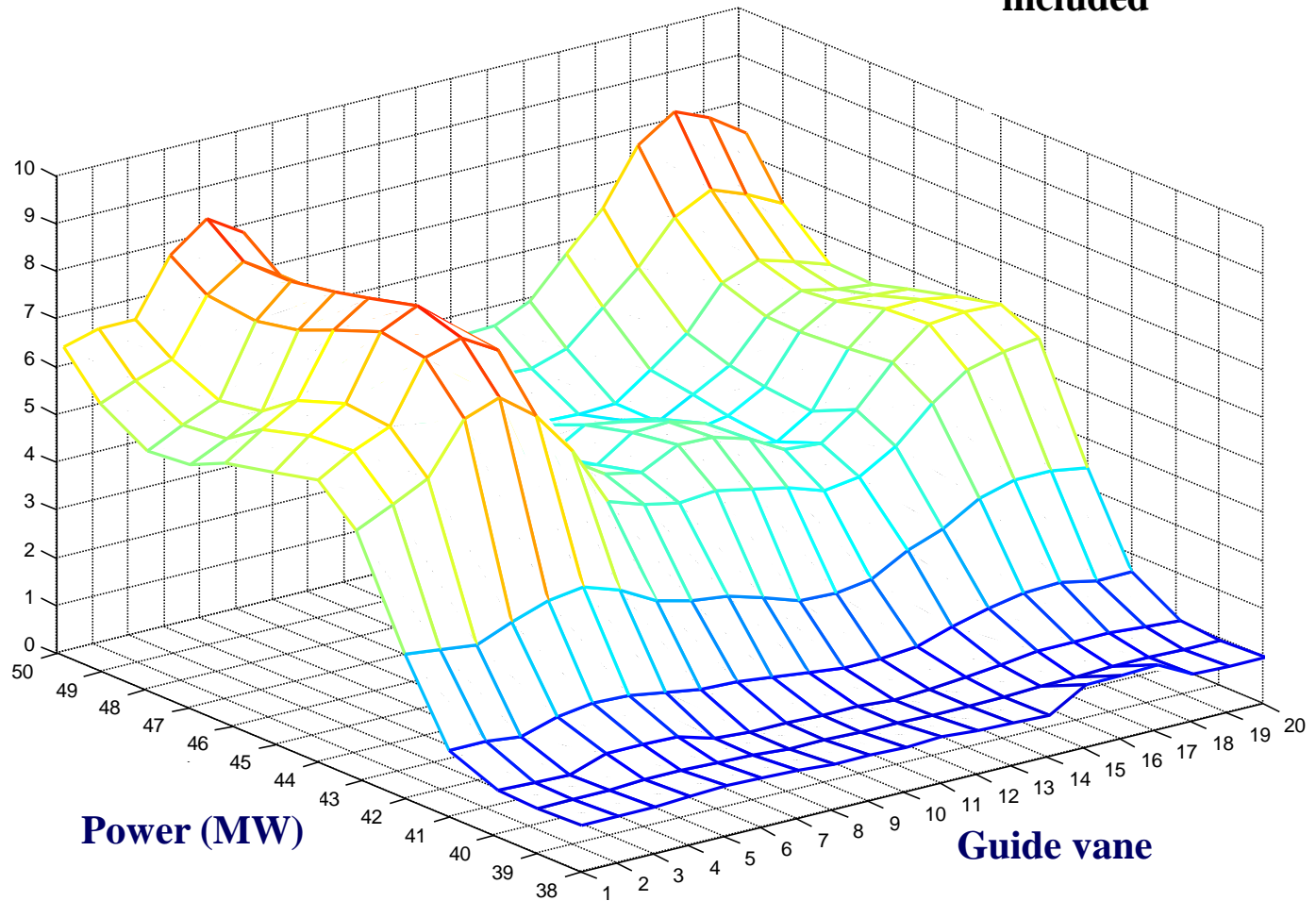
Only one of them was erosive.

The mechanisms are illustrated on the wicket-gate and global cavitation characteristics.

Wicket gate cavitation characteristic

All cavitation mechanisms included

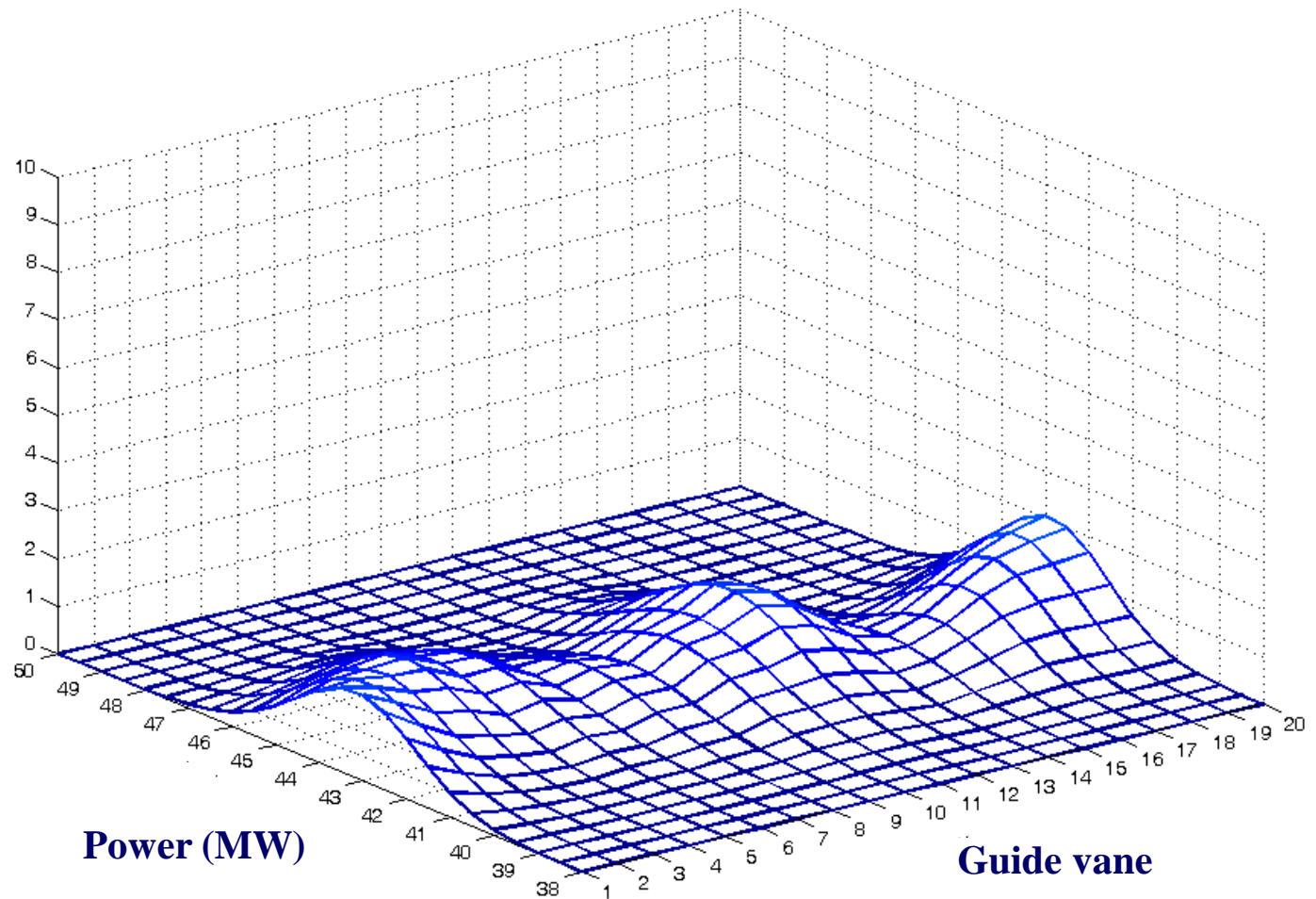
Component of the cavitation intensity influenced by a guide vane (% of the total)



Wicket gate cavitation characteristic

Low-power
mechanism

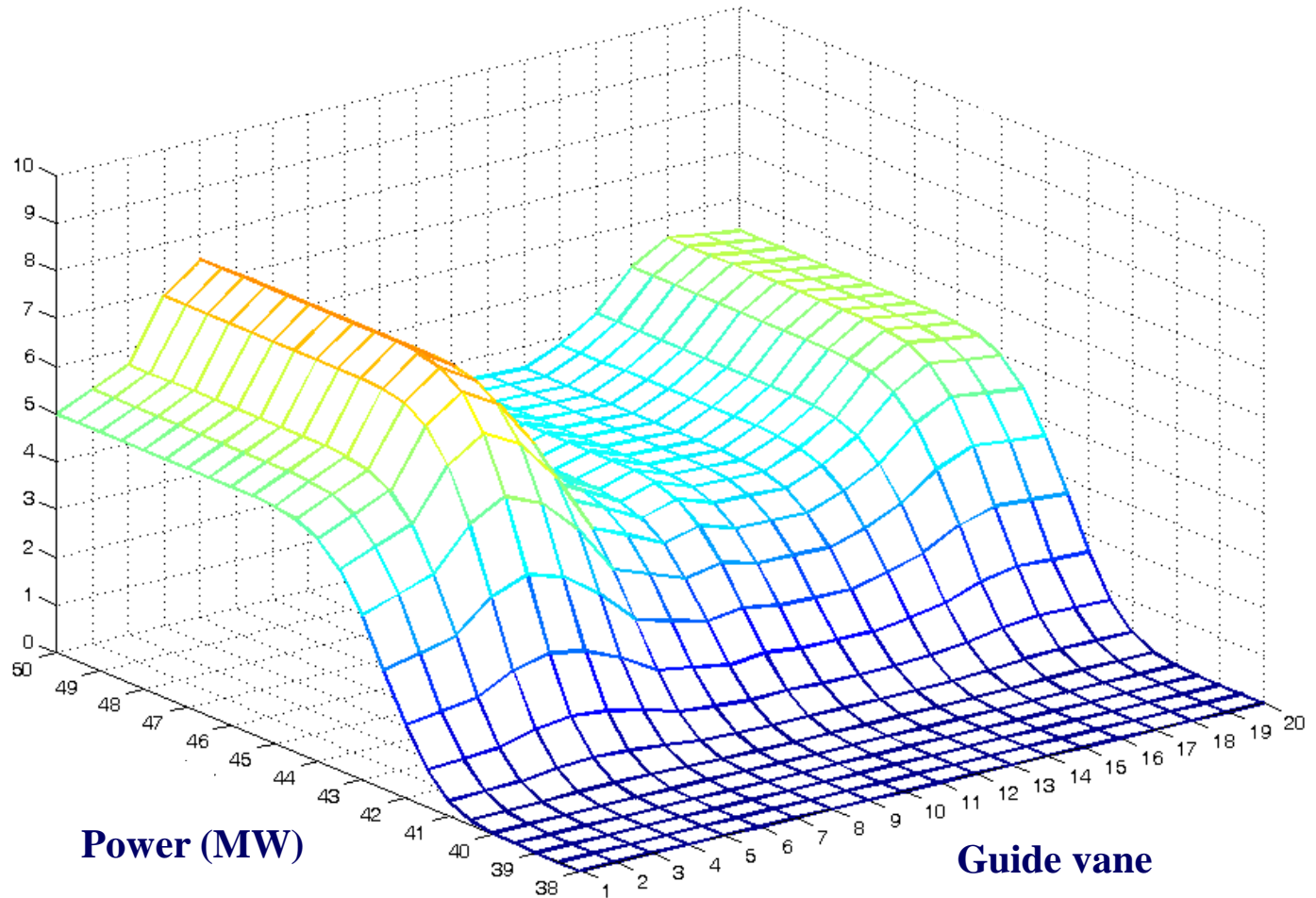
Component
of the
cavitation
intensity
influenced
by a guide
vane
(% of the
total)



Wicket gate cavitation characteristic

**Basic
mechanism**

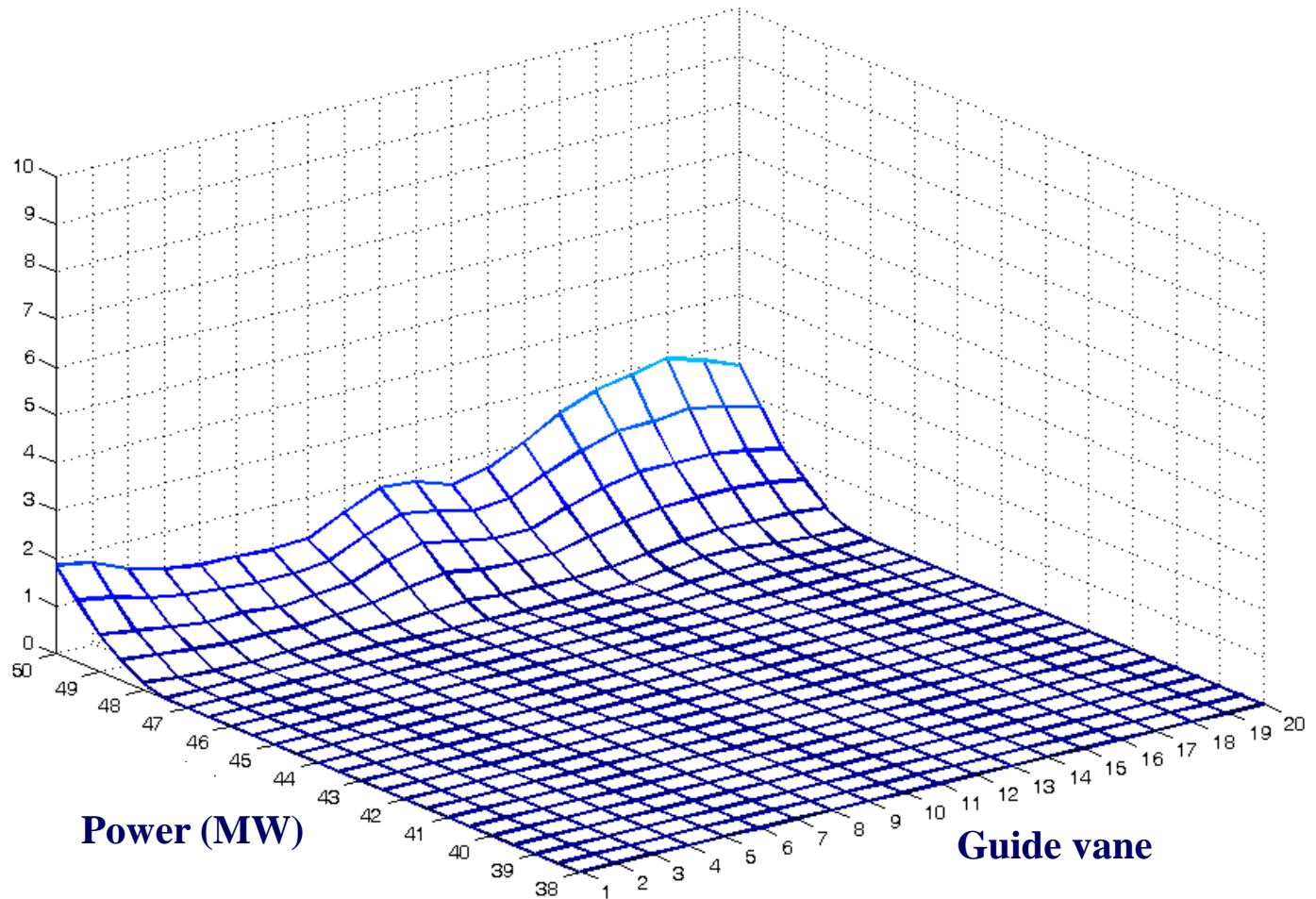
**Component
of the
cavitation
intensity
influenced
by a guide
vane
(% of the
total)**



Wicket gate cavitation characteristic

**High-power
mechanism**

**Component
of the
cavitation
intensity
influenced
by a guide
vane
(% of the
total)**



Global cavitation characteristic

