Claims

1. An early warning method for a roadheader remote monitoring system, comprising:

preconfiguring early warning strategies corresponding to respective parameters of a roadheader, and preconfiguring combined parameter information and early warning relationships among respective parameter in the combined parameter information;

determining early warning results of the respective parameters in the combined parameter information according to the corresponding early warning strategies, during system's real-time remote monitoring of the respective parameters of the roadheader, and

determining, according to the early warning results and the early warning relationships, a combined early warning result corresponding to the combined parameter information, and triggering a combined early warning when the combined early warning result meets a combined early warning trigger condition,

wherein the preconfiguring early warning strategies corresponding to respective parameters of a roadheader comprises:

preconfiguring standard determination strategies corresponding to the respective parameters of the roadheader under different construction environments, and

when it is determined according to the standard determination strategies that the roadheader has any substandard parameter, determining that the substandard parameter meets its independent early warning trigger condition,

the method further comprises:

when any one of the parameters of the roadheader meets its independent early warning trigger condition, triggering the independent early warning corresponding to the parameter, and

the method further comprises:

pre-classifying the independent early warnings corresponding to the respective parameters of the roadheader according to parameter functions, to obtain a plurality of early warning types;

pre-determining for each of the early warning types, and assigning roles and role-levels to the responsible personnel; and

when an independent early warning is triggered, sending a corresponding early warning message by a short message platform to upper-level responsible personnel, so that the upper-level responsible personnel forwards the early warning message level by level to lower-level responsible personnel,

wherein the early warning method further comprises:

refraining from triggering early warning within a pre-configured adjustment duration once an early warning is triggered.

~~2. The early warning method for a roadheader remote monitoring system according to claim 1, wherein the preconfiguring early warning strategies corresponding to respective parameters of a roadheader comprises:~~

~~preconfiguring standard determination strategies corresponding to the respective parameters of the roadheader under different construction environments, and~~

~~when it is determined according to the standard determination strategies that the roadheader has any substandard parameter, determining that the substandard parameter meets its independent early warning trigger condition.~~

32. The early warning method for a roadheader remote monitoring system according to claim 21, wherein the preconfiguring early warning strategies corresponding to respective parameters of a roadheader comprises:

associating any one of the parameters of the roadheader with a working state corresponding to the parameter, and

when it is determined, according to both the standard determination strategy and the working state that correspond to the parameter, that the parameter is substandard, determining that the parameter meets its independent early warning trigger condition.

~~4. The early warning method for a roadheader remote monitoring system according to any one of claims 2 to 3, comprising:~~

~~when any one of the parameters of the roadheader meets its independent early warning trigger condition, triggering the independent early warning corresponding to the parameter.~~

~~5. The early warning method for a roadheader remote monitoring system according to claim 4, comprising:~~

~~pre-classifying the independent early warnings corresponding to the respective parameters of the roadheader according to parameter functions, to obtain a plurality of early warning types;~~

~~pre-determining responsible personnel for each of the early warning types, and assigning roles and role-levels to the responsible personnel;~~

~~when an independent early warning is triggered, sending a corresponding early warning message by a short message platform to upper-level responsible personnel, so that the upper-level responsible personnel forwards the early warning message level by level to lower-level responsible personnel.~~

63. The early warning method for a roadheader remote monitoring system according to claim ~~5~~1, comprising:

when the combined early warning is triggered, sending a corresponding early warning message by the short message platform to management personnel who triggers the combined early warning.

~~7~~4. The early warning method for a roadheader remote monitoring system according to claim ~~5~~1, comprising:

recording the responsible personnel who receives the early warning message and the time of the receipt, and generating an early warning transfer timeline.

~~8~~5. The early warning method for a roadheader remote monitoring system according to claim ~~7~~4, comprising:

cancelling the early warning if the relevant parameter of the roadheader is adjusted by relevant responsible personnel, after the early warning is triggered.

~~9~~6. The early warning method for a roadheader remote monitoring system according to claim ~~8~~5, wherein the early warning relationship between two parameters in the combined parameter information is AND or OR.

~~10~~7. An early warning system for a roadheader remote monitoring system, comprising:

an preconfiguring module, configured to preconfigure early warning strategies corresponding to respective parameters of a roadheader, and preconfigure combined parameter information and early warning relationships among respective parameters in the combined parameter information;

an early warning determining module, configured to determine early warning results of the respective parameters in the combined parameter information according to the corresponding early warning strategies, during system's real-time remote monitoring of the respective parameters of the roadheader; and

an combined early warning module, configured to determine, according to the early warning results and the early warning relationships, a combined early warning result corresponding to the combined parameter information, and triggering a combined early warning when the combined early warning result meets a combined early warning trigger condition.

wherein the preconfiguring early warning strategies corresponding to respective parameters of a roadheader comprises:

preconfiguring standard determination strategies corresponding to the respective parameters of the roadheader under different construction environments, and

when it is determined according to the standard determination strategies that the roadheader has any substandard parameter, determining that the substandard parameter meets its independent early warning trigger condition,

the early warning system further comprises

an independent early warning module configured for, when any one of the parameters of the roadheader meets its independent early warning trigger condition, triggering the independent early warning corresponding to the parameter,

a classifying module configured for, pre-classifying the independent early warnings corresponding to the respective parameters of the roadheader according to parameter functions, to obtain a plurality of early warning types;

a role assigning module configured for, pre-determining responsible personnel for each of the early warning types, and assigning roles and role-levels to the responsible personnel; and

a message sending module configured for, when an independent early warning is triggered, sending a corresponding early warning message by a short message platform to upper-level responsible personnel, so that the upper-level responsible personnel forwards the early warning message level by level to lower-level responsible personnel,

wherein the early warning system is further configured for:

refraining from triggering any early warning within a pre-configured adjustment duration once an early warning is triggered.