

Information Disclosure and Intellectual Property

SC C2

PS1-3 Question 1.9

Given that most of the procedures and rules in the system operation management are usually made available to the national regulators (and most times publicly available), should these algorithms also become available to improve transparency of actions taken? if so, how can the developers of such algorithms protect their intellectual property?

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To ensure the clarity of the electric power industry: The objective functions and constraint conditions should become available for reference

Advantage of enabling the refer to the algorithm

- Make it widely available for researchers to know the current state, features, and issues of automatic control systems which utilized AI by disclosing the control algorithm.
- Open the door for further contribution to the development of the study about future AI utilization.

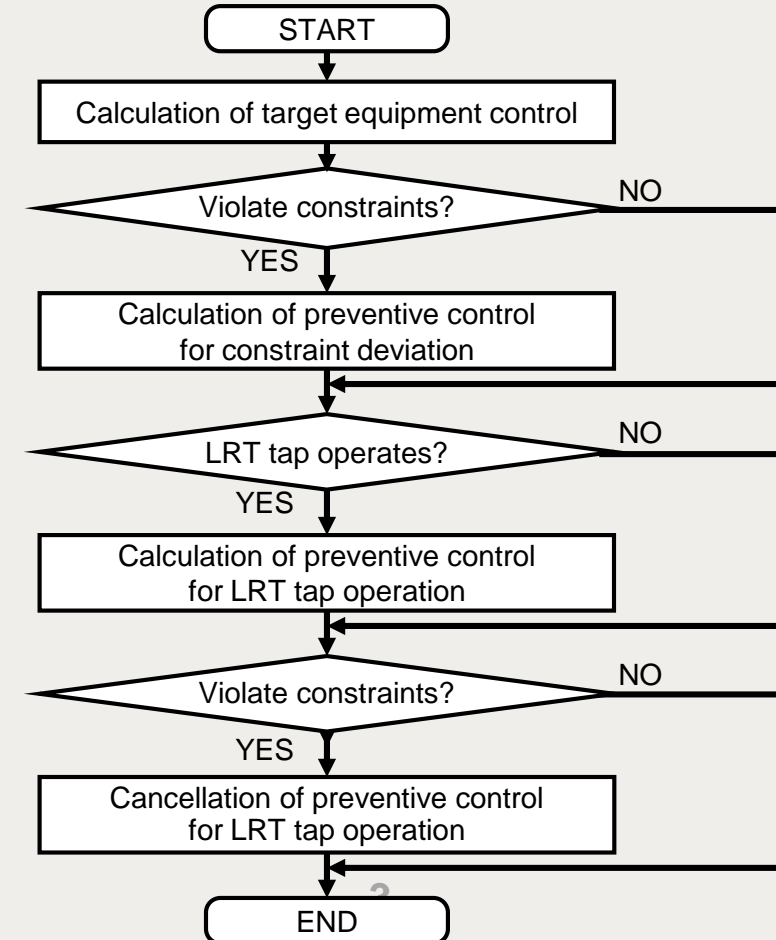
The release of information about a new ISC system

- Adopt voltage reactive power control method utilizing AI in a new ISC system.
- Release off-line learning data making method and online control flowchart in the control algorithm in the treatise.

Off-line learning data making method

#	Constraint condition	Objective function
1	Prevent over-voltage in a route cut-off fault	Amount of voltage deviation from an over-voltage threshold
2	Maintain steady-state stability	Time difference between out of step of generators and the end of stability simulation
3	Maintain operating points of generators within their operational range	Amount of the operating point deviation from its operational range
4	Maintain bus voltages of 500 kV, 275 kV, 154 kV, and 77 kV classes within their operational range	Amount of voltage deviation from its operational range
5	Maintain bus voltages of 154 kV and 77 kV classes within their target range	Amount of voltage deviation from its target range
6	Prevent LRT taps from reaching their operational limit	Amount of voltage deviation from dead band of the LRT tap that reaches its operational limit

On-line control flowchart



Objective function

$$E = \sum_{i=1}^6 w_i f_i$$

Group Discussion Meeting

Weight coefficient

objective function

Method to protect the intellectual property of algorithm researchers

- The functions which are recognized as novel and inventive in algorithms.
- The parts which are researchers' know-how, such as detailed algorithms for the optimization calculations themselves.



Protect the intellectual property by acquiring rights as a patent beforehand.