

# NEOS AWARE

## Neos Challenger Optimization Algorithm

Do you have your best raw materials in your composition?

Imagine that you have at your disposal 20 raw materials and only 6 hoppers or boxes,

**How do you decide which raw materials are the best?**

Challenger Optimization Algorithm, integrated in the Optimization module of Neos Aware, can manage with hundreds of constraints to solve this typical problem in the ceramic industry.

optimization terms | notes

objective optimization

Minimize    object attribute: [ COST - Cost ]  
 Maximize

EDIT OBJECTIVE

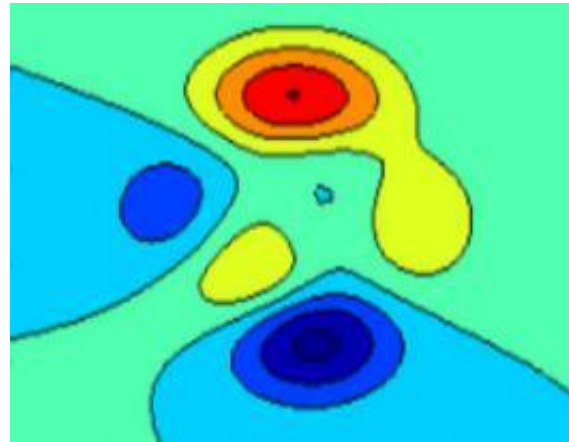
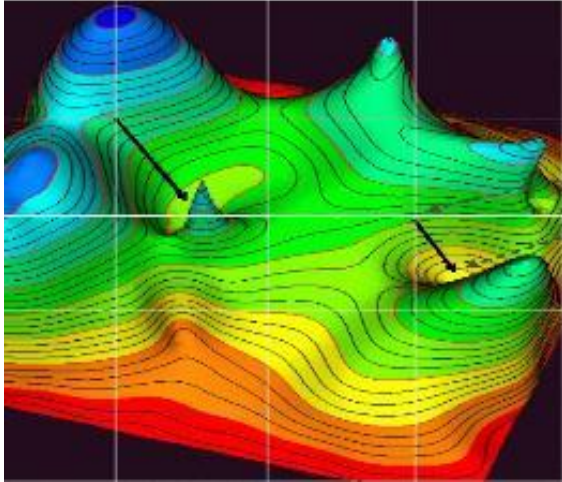
optimization constraints

weight	object	constraint	ATT Comp
10	attribute: [ T - Temperature ]	$\leq 1210$	WA - Water absorption = 0.1
5	attribute: [ DM - Dry mechanical strength ]	$\geq 30$	
5	attribute: [ L - Colour: L ]	$\geq 74$	WA - Water absorption = 0.1
5	attribute: [ SD - Density ]	$\geq 1.8$	
1	attribute: [ LS - Lineal Shrinkage ]	between 6 and 6.7	P - Pyroplasticity = 1.5
1	attribute: [ P - Pyroplasticity ]	$< 1.5$	WA - Water absorption = 0.1
1	attribute: [ GAD - Green apparent density ]	$\geq 2.03$	
1	attribute: [ GM - Green mechanical strength ]	$\geq 13$	
1	attribute relationship: [ SiO2 / Al2O3 ]	$\geq 3$	
1	slope of the line: [ LS - Lineal Shrinkage ] vs [ T - Temperature ]	between 0 and -0.8	WA - Water absorption in [ 0.2; 0.6 ]
1	delta-E in a section	$< 2$	WA - Water absorption in [ 0.1; 0.5 ]
1	delta-E vs standar value: [ L: 72, a: 1.41, b: 11.94 ]	$< 2$	T - Temperature = 1210
	raw material %: [ MP07 Binder - Organic Binder ]	$\leq 0.25$	
	raw material %: [ MP02 Clay - Clay ]	$= 0$	
	raw material % relationship [ + MP06 Feldspar + MP08 Feldspar + MP09 Feldspar ]	$= 38$	

Raw materials constraints should always meet and therefore have no associated weight!!!

NEW CONSTRAINT    EDIT CONSTRAINT    DELETE CONSTRAINT

With all these constraints, finally the optimization seems like a dense network where it is very difficult to enter and find the solution, which is the optimized composition.



However, with the new Challenger Optimization Algorithm after a short period of time the best composition that fulfill the objective function and all these constraints is obtained

This tool saves you a lot of time doing experimental compositions in the laboratory, at the same time that allows you to reach the best composition in each inconceivable situation.

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*Know the economic advantages in our Cloud.*

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Neos Ceramics Body Solutions  
[www.neos-ceramics.com](http://www.neos-ceramics.com)  
[customerservice@neos-ceramics.com](mailto:customerservice@neos-ceramics.com)  
Tel.: +34 964 33 19 62  
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