# The components design window (component properties)

Most of the design work in NextGen happens within the component designer. In this article we see how it is organized.

Online version: https://nextgen.sant-ambrogio.it/KB423266 Latest update: 13 nov 2024

With NextGen 2019 we've introduced a revised version of one of the most important windows in our software, the one used to design components. In this article you'll find information about how to find previously available features in the new format as well as new features.

Note: for a limited amount of time, the old version will be mantained in parallel. To revert to the previous version, head to Tools > Options > Appearance > Revert to old Components window style.

## Variations between the two versions

What follows is a brief list of commands we've moved.

- A. The active component, available when more components are logically related to each other (e.g.: flanges, shell and nozzle, tubesheet and tubes bundle) has been moved from the left to the top side.
- B. The categories have been moved from the top to the left side. This area has been redesigne to make all the categories visible all the time.
- C. Confirmation, cancellation button and semaphore can be found in the lower-right corner of the window. Semaphore and OK button have been merged in a single command.
- D. When more than one operating conditions are available, these are now visible in the top area of the window. They were previously placed above the validation errors.
- E. The lower-left table showing some of the validation results has been removed. These results are now available in the preliminary report.
- F. A new, revised preliminary report is now available for some calculation codes (ASME VIII Div. 1 and AD2000). More codes will follow in the next update.

Previous version:

#### Version: 18 nov 2024

R No	zzle "Nozzle #1"		В								- 0	53
#1	General 👔 Design condition	ons 🛛 🐯 Geome	try 🛱 Positic	n 🛃 Weld	ds 🛄 Pad	掛 WRC	<i>f</i> <b></b> ∉ Exter	> ₹				
Nozzle #1	Name / Position		Nozzle #1									
<u>.</u>	Nozzle material		SA-106 B			Database	Edit			- 2*(Rn+tn) -		
el #1	Undertolerance 0.7		0,7525	🖨 mm							• • tn	
cal sh	Overpressure due to static head - internal		0	🗘 MPa								
Cylindrical shell #1	Overpressure due to static head -	Hydraulic test	0	🗘 MPa					to			1
	Overpressure due to static head -	external	0	🖨 MPa								ho
Α	Skip opening check											•
	Skip UG-45 check (nozzle neck th	nickness):							t			
	Consider undertolerance in areas	calculation?										
	Consider undertolerance in minim calculation?	um welds size	$\checkmark$					0				
	Consider corrosion on welds in ar	eas calculation?	$\checkmark$									
	Fitting according to UW-16(f)(3)											
									ОК	Cancel		
										C		·
	D									U		
	U											
	Design conditions IP Design conditions	onditions #2			F_						=	7 X
× 1	nternal pressure	Errors (3) Wa	arnings (0) N	1essage (0)	Report	Relationshi	os (0)				Q, Exp	band
	MAP N&C 0.001 MPa Propert	Property	De	scription					Required	Actual	Reference	^
tr	r 1.24 mm	Leg of nozzle t fillet	to wali Ins	ernal press sufficient ou ozzle #1]		le fillet weld	length - [N	Nozzle:	5.21 mm	5.00 mm	UW-16.1	
MILLI				ernal press ernal press		IPa is greate	er than ma	aximum	0.001 MD	1.00 MD		~

#### Current version:

ange active design	conditions:	🏴 Design conditions #2	Change active component.	Mozzle #1	🏴 Cylindrical she	ell #1	_	
😭 Essentials	General				🔏 Helper imag	ge 🚺 Prelin	inary report	
🚰 General	Name / Position	Nozzle #1						
Design conditions	Nozzle material	SA-106 B - Pipe / t	ube - UNS: K03006 Data	base Edit				
🕏 Geometry	Undertolerance	0,7525	mm					
Desition	Geometry							
- Welds	Nozzle type	Set in		~ < >				
Pad	Standard pipe	Pipes databas					2*(Rn+tn)	
WRC	Nozzle height	Н 100 🜩	mm					— tn
External loads	Nozzle thickness	tn 6,02 🗘	mm		<b>•</b>			
Weight	Inside diameter	102,26	mm					
	Outside diameter	114,3	mm		H tp	🖕 lp 🛶		- lo ho
d Reporting	Welds				-•			
В	Leg of nozzle to wall fillet	W1 5	mm					
	Position				t			
	Nozzle position	Radial		~ < >				
	Angular offset	0						
	Offset from shell border	250 🔹	mm Center					
	Pad							
	Pad							
								Q Expa
Errors (3) 🔒 War perty	rnings (0) 🕦 Message (0) 📾 Relation	onships (0)				Required	Actual	Reference
of nozzle to wall	Internal pressure:							
1	Insufficient outside nozzle fillet we Internal pressure:	eld length - [Nozzle: Noz	zle #1]			5.21 mm	5.00 mm	UW-16.1
	Listorial processor 1/WMDa is are	storthon movimum alla	uable proseure of the apon		oleral of the second	Load		

### Improvements

• "Essentials" category: main properties for each component are now grouped in a single category, named "Essentials". For the supported components, this category allows a faster design, without moving between different tabs. Advanced details are always available by switching to different categories.

😪 Essentials	General	
😭 General	Name / Position	Nozzle #1
Jesign conditions	Nozzle material	SA-106 B - Pipe / tube - UNS: K03006 Database Edit
🔀 Geometry	Undertolerance	0,7525 ਦ mm
中 Position	Geometry	
- Welds	Nozzle type	Set in v <>
Pad	Standard pipe	Pipes database Threaded couplings
WRC	Nozzle height	H 100 🗭 mm
∫ External loads	Nozzle thickness t	n 6,02 🗭 mm
	Inside diameter	102,26 💼 mm
🐞 Weight	Outside diameter	114,3 🗭 mm
Reporting	Welds	
	Leg of nozzle to wall fillet W	1 5 💼 mm 💿
	Position	
	Nozzle position	Radial V < >
	Angular offset	0 •
	Offset from shell border	250 🗭 mm Center
	Pad	
	Pad	

• Information density: property rows are now more compact, allowing more information to be displayed in the same vertical space

Nozzle type	S	et in	Nozzle type		Set in
Standard pipe		Pipes database	Standard pipe		Pipes database
Reference height	N	ozzle height	Reference height		Nozzle height
			Nozzle height	Н	100 🌻 n
Nozzle height	H 10	0 😫 1	Nozzle thickness	tn	6,02 🌻 n
Nozzle thickness	<b>tn</b> 6,0		Unsupported length for external pressure calculation		r n
Unsupported length for external pressure calculation		÷.	Inside diameter		102,26 🌲 n
Inside diameter	10	2,26	Outside diameter		114,3 🗘 n
Outside diameter	11	4,3	Reference diameter		Outside diameter
Reference diameter	0	utside diameter	Nominal size		100
Standard schedule	S	TD	Standard schedule		STD
Nominal size		00	Blind flange connected		Check head size
			Useful length of the vessel wall	lo	÷ n
Blind flange connected		Check head size	Useful length on nozzle		- n
Useful length of the vessel wall	lo	×	Wall thickness	t	÷ n
Useful length on nozzle			Use Figure UG-40 sketch		
Wall thickness	t		Threaded end		
Use Figure UG-40 sketch					
Threaded end					

• Quick materials search: when typing a keyword (material name, UNS, etc.), the pop-up window allowing the quick selection of a material has been redesigned to display more material properties.

Name / Position	Nozzle #1	Nozzle #1				
Nozzle material	516	Database Edit				
Undertolerance Geometry	SA-516 60 -	Plate - UNS: K01800 Plate - UNS: K02100 Plate - UNS: K02403				
Nozzle type		SA-516 70 - Plate - UNS: K02700 SB-516 Annealed (high allowable stress) - Wld. tube - UNS: N06025				
Standard pipe	SB-516 Anne	aled - Wld. tube - UNS: N06025				
Nozzle height		tion ann. (high allowable stress) - Wld. tube - UNS: N06045 tion ann Wld. tube - UNS: N06045				
Nozzle thickness	un	ealed - Wld. tube - UNS: N06600 ealed (high allowable stress) - Wld. tube - UNS: N06600				
Inside diameter		and (ingh anowable stress) wid, tabe ons, house				

• Preliminary report: important information about the calculation are displayied in a revised preliminary report. This report can be printed by right clicking on it.

🔏 Helper image 🔯 Preliminary report								
Preliminary report: Nozzle								
According to: Asme VIII Div. 1 Ed. 2017 UG-27, UG-28, Appendix 1.1								
Internal pressure								
Material								
Allowable stress	S	118.00 MPa						
Allowable stress at room temperature	ST	118.00 MPa						
Geometry	0							
Outside diameter	Do	114.30 mm						
Adopted thickness	t	6.02 mm						
Corrosion allowance	с	0 mm						
Wall undertolerance	c'	0.75 mm						
Joint efficiency	E	1.00						
Internal pressure								
Minimum required thickness	tr	1.24 mm						
		t ≥ tr: Ok						
Area								
Area available in shell	A1	653.7 mm <sup>2</sup>						
Area available in outward nozzle	A2	142.5 mm <sup>2</sup>						
Area available in inward nozzle	A3	0 mm²						
Area available in outward weld	A41	21.4 mm <sup>2</sup>						
Area available in inward weld	A43	0 mm²						
Area required	Ar	190.9 mm²						
Total available area	At	817.6 mm²						
		$At \ge A: Ok$						
Welds								
		5.21 mm						
Minimum leg length of the outside nozzle fillet weld	twor	5.21 mm						
Nozzle neck thickness (according to UG-45)								
Minimum required nozzle neck thickness	tr(UG-	45) 2.59 mm						

## New features

Components clipboard: a component can now be saved in a new clipboard, even when its properties
are partially defined. This "parked" version of the component can be later reloaded. This allows
both copy-paste of components and the ability to close the component form without loosing the
filled information.\



0	Components Clipboard	23
	Show only compatible components	
	12:27 Nozzle "Nozzle #1"	
	X Remove selected OC Clear clipboard OC Cancel	
L		ļ

## Reverting to the old version

We thoroughly tested this new interface to make it reliable and usable. If for any reason, a return to the old version is needed, this can be achieved via the appropriate option under Tools > Options as shown below. The old window will stay available for some versions and later decommissioned.

Constructions	23
🚰 General 🔝 Appearance 🖃 Communications 📝 Reporting 🤣 Updates 🧩 Components 😽 Data 📳 Units	₹
Skin Application palette Office 2010 - Blue V	
3D Models	
Component Additional weight ~ Color	
Graphics	
Hardware acceleration Force acceleration Renderer: OpenGL V	
Other settings	
Revert to old Component window style	
Show tooltips on properties controls	
Save 🧐 Cancel	