

NELES

Product school – Nelprof on/off Sizing

Welcome and thank you for attending this session

Nelprof On/Off

<https://valveproducts.neles.com/download/nelprof>

Neles Valve Sizing & Selection Software

Nelprof™ 6.3

Neles valves and automated assemblies improve performance, maximize uptime, and decrease costs. And our valve sizing and selection software, Nelprof 6.3, assures you select the right configuration for the job.

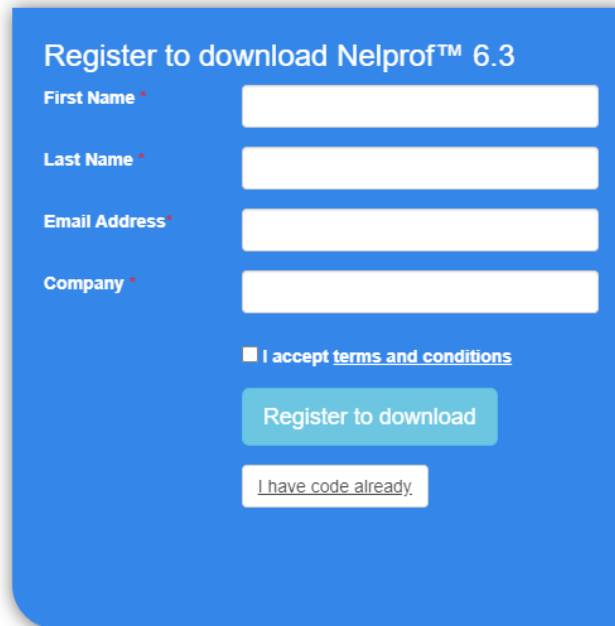
Nelprof 6.3 powerful control valve selection features include:

- Safety valve optimization
- Control valve selection with performance analysis
- Fast and reliable on/off valve selection
- Optimization of safety-critical system components

Get the valves that are reliable today, tomorrow, and every day.

Download your free copy of Nelprof 6.3 today and see for yourself the difference Neles can make. Download size: 86 Mb

Reliability lives at Neles.



Register to download Nelprof™ 6.3

First Name *

Last Name *

Email Address *

Company *

I accept [terms and conditions](#)

- You can download Nelprof online at the link above.
- If you have issues with the download, please contact me for assistance.

In session features

NELES

Waiting to view Liz Davis's screen
Talking: Liz Davis

Webinar Housekeeping

Organizer: Liz Davis | Presenter: Liz Davis

Audio: Use your microphone and speakers (VoIP) or call in using your telephone.

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Talking: Liz Davis

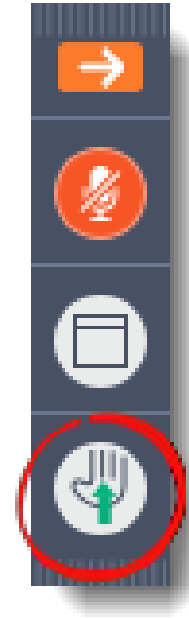
Questions

[Enter a question for staff]

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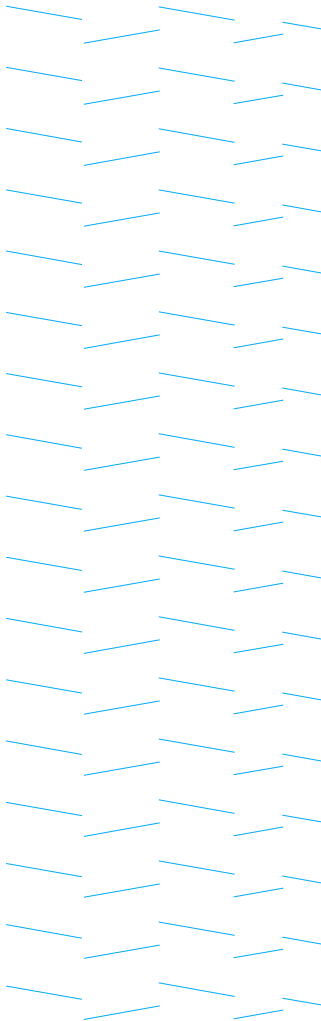


If experiencing audio issues please let us know in question field.

Introductions

Presenter / Moderator / Panelist / Guest speaker

- Steven Hocurscak
- Control Valve Product Manager
- With the company for 15 years, predominately involved with control valves.



Agenda

- Opening Nelprof / Initial Setup
- Different Components of Nelprof
- Tricks and Tips
- Information Needed to Size
- Sizing Examples
- Open / Save a File
- Print to PDF
- Contact Information



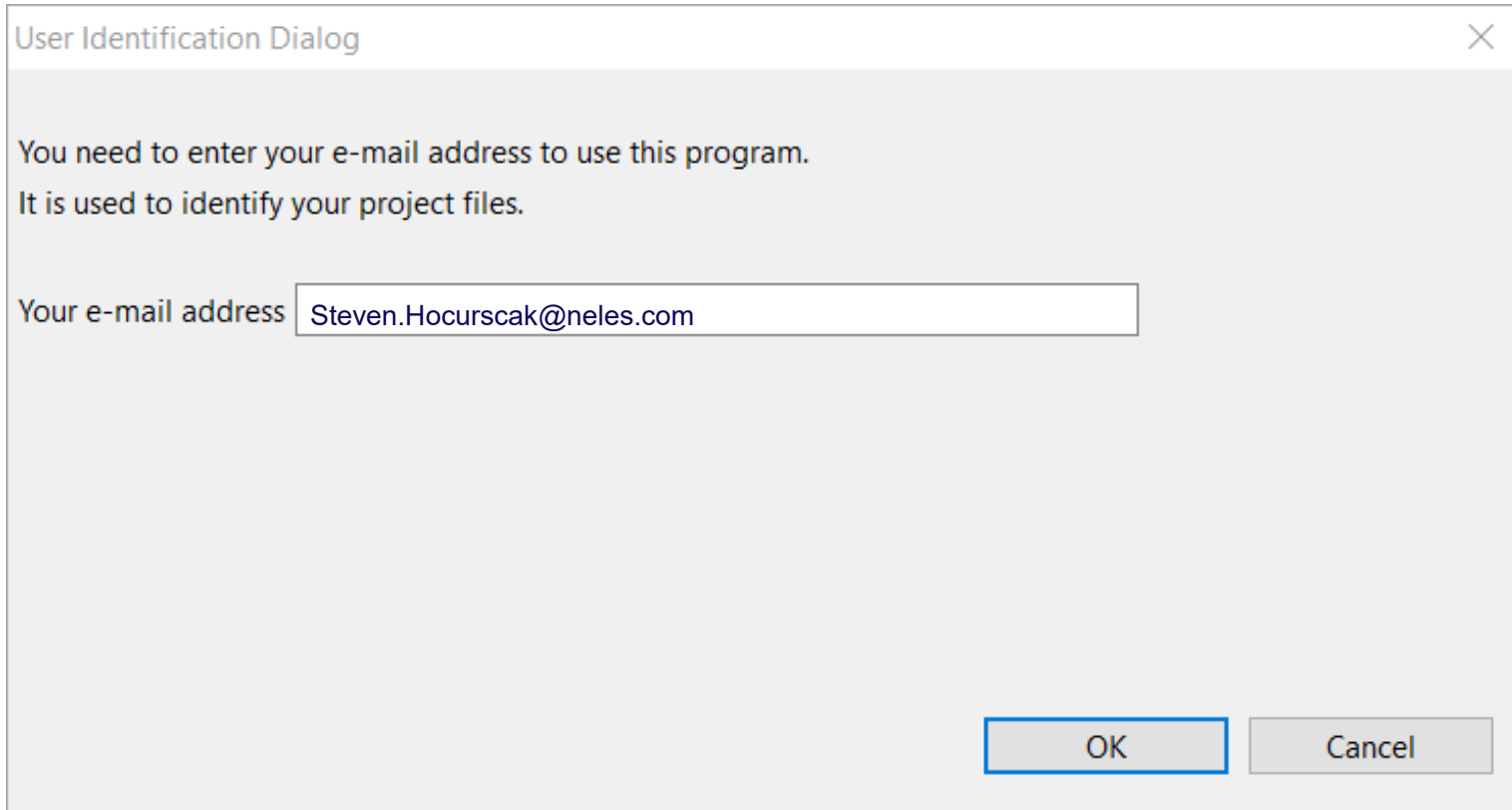
Nelprof On/Off

What is Nelprof?

- Nelprof is a software that utilizes process conditions to properly provide the correct actuator / valve size.
- Nelprof is able to output torque values for specific valves and actuators under different ranges of pressure.
- Within Nelprof, we are able to perform an On/Off and or a Control Sizing.

Nelprof On/Off

Opening Nelprof / Initial setup

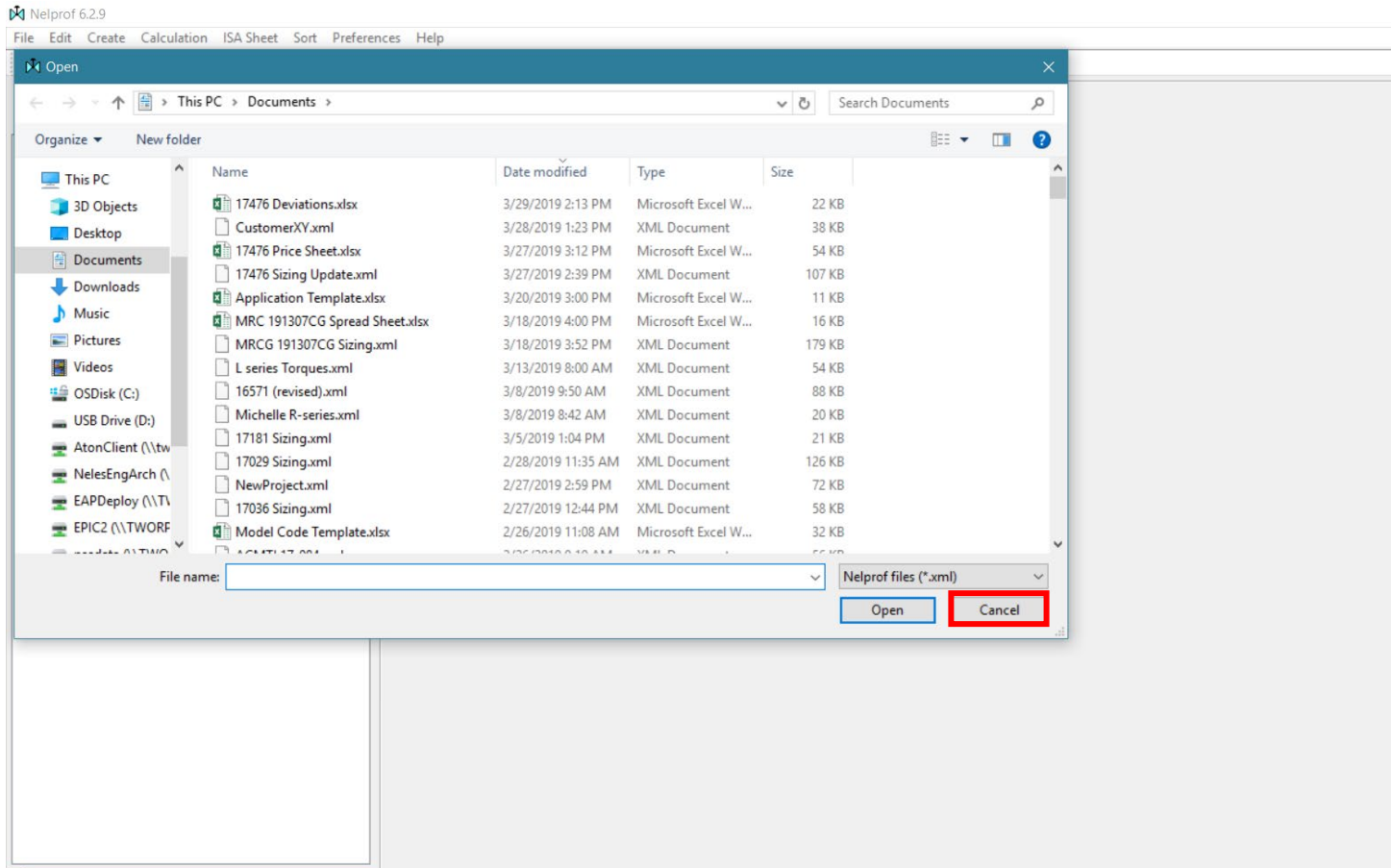


The screenshot shows a dialog box titled "User Identification Dialog" with a close button (X) in the top right corner. The text inside the dialog reads: "You need to enter your e-mail address to use this program. It is used to identify your project files." Below this text is a text input field labeled "Your e-mail address" containing the text "Steven.Hocurscak@neles.com". At the bottom of the dialog are two buttons: "OK" and "Cancel".

- One of the first screens you will see when loading Nelprof is the “User Identification Dialog”.
- Enter your email address

Nelprof On/Off

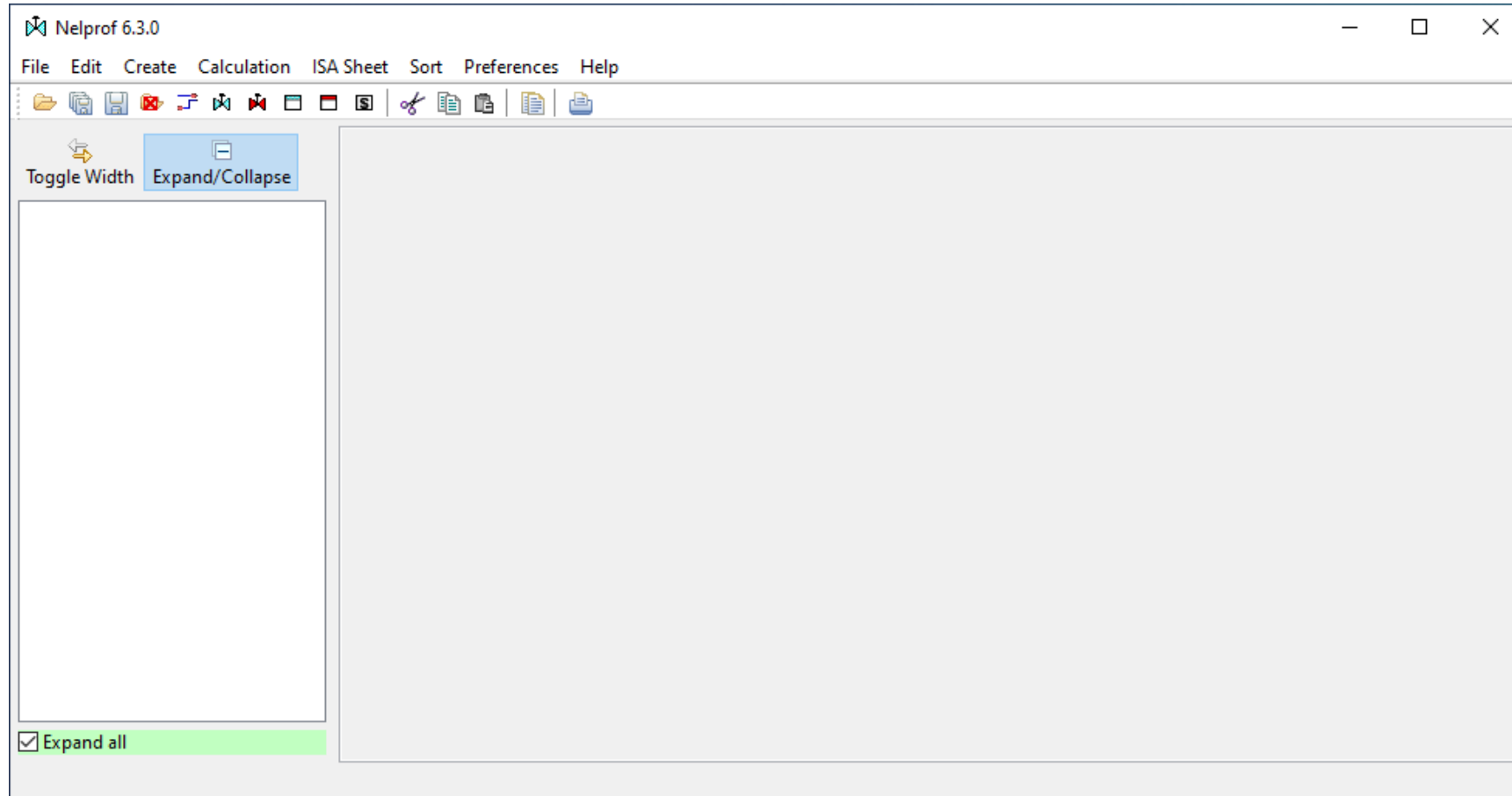
Opening Nelprof / Initial setup



- By default, Nelprof is setup to open a new project at startup. If this screen opens up for you, just close it for the time being.

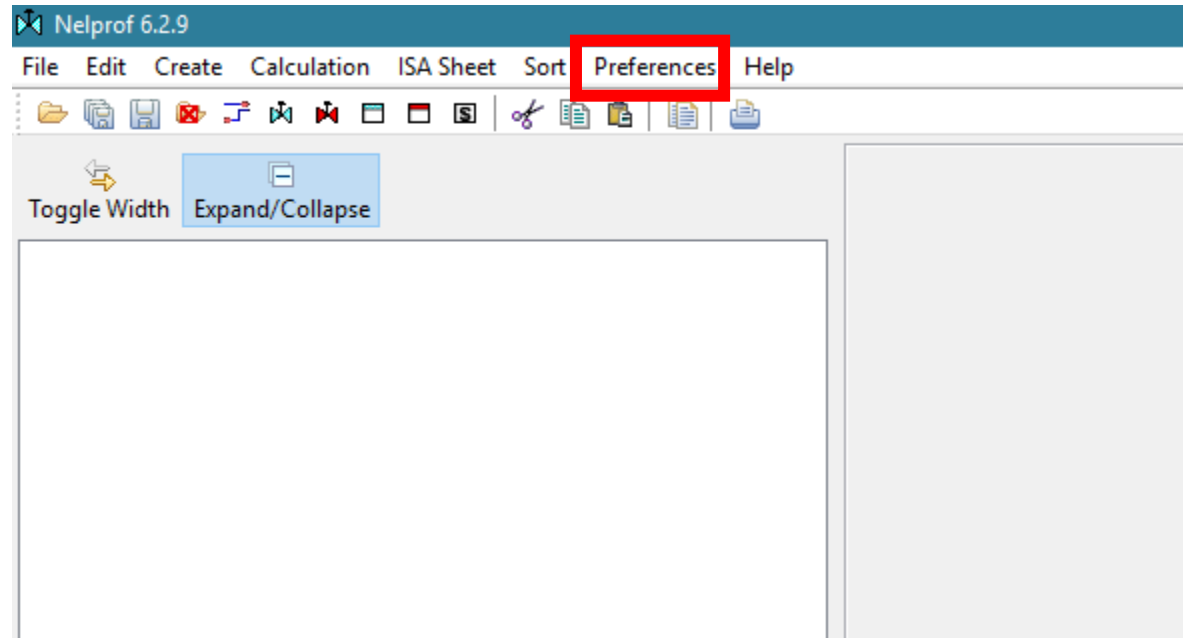
Nelprof On/Off

Opening Nelprof / Initial setup



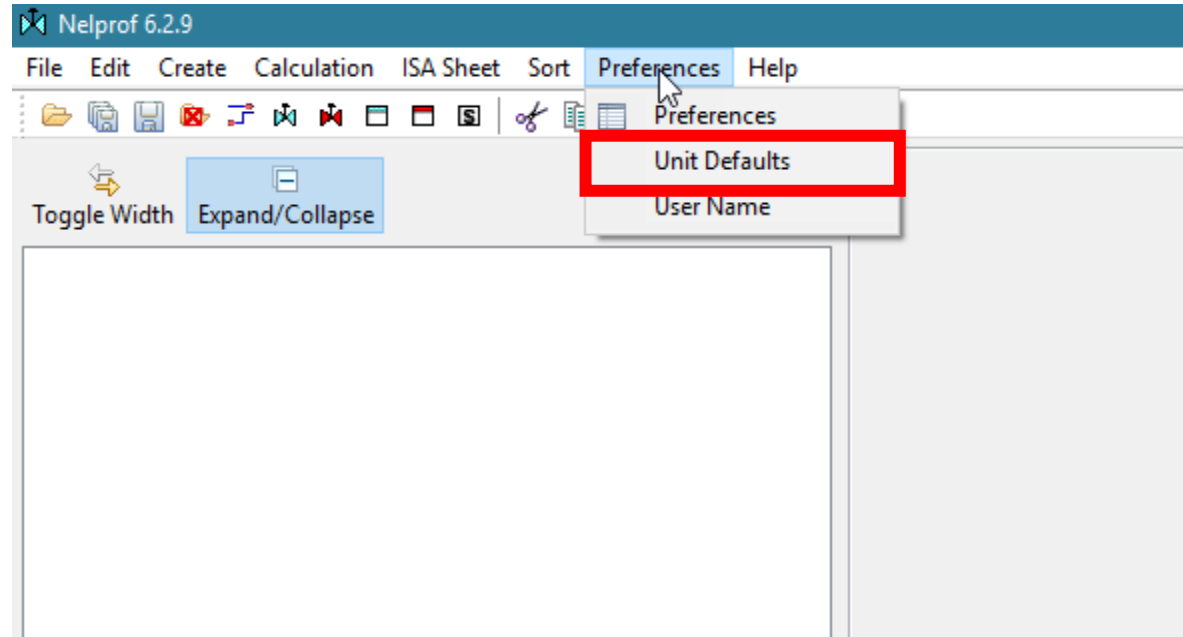
Nelprof On/Off

Opening Nelprof / initial setup (unit preferences)



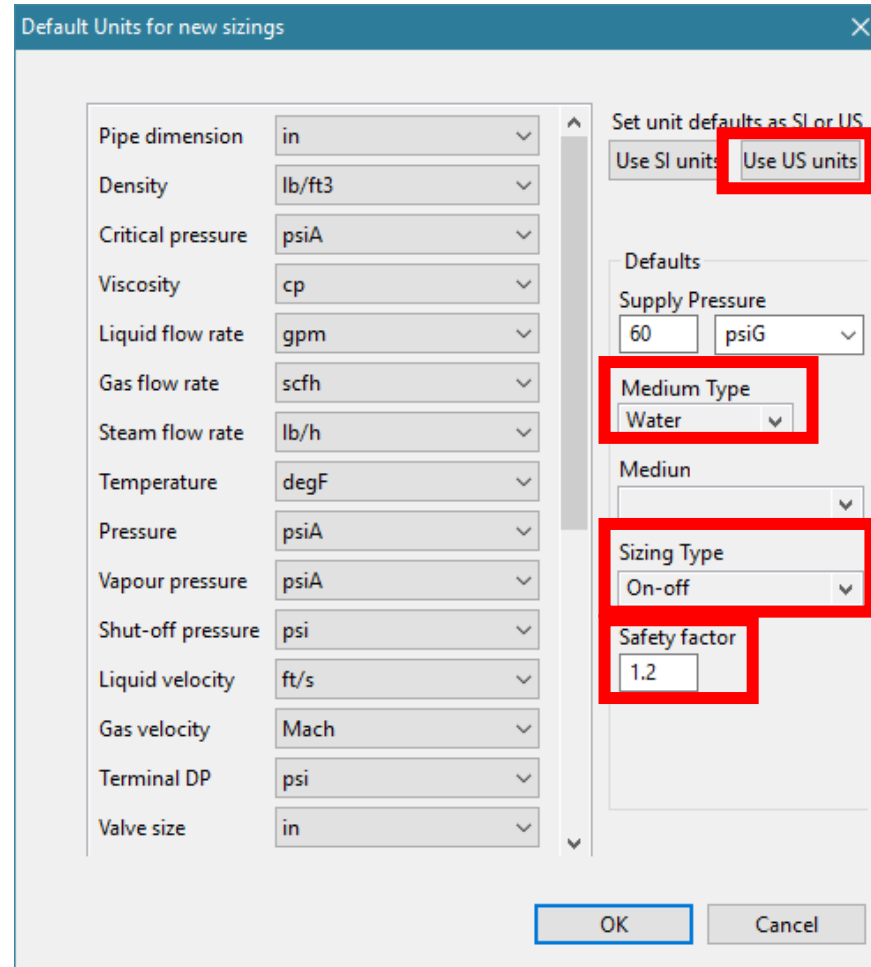
Nelprof On/Off

Opening Nelprof / initial setup (unit preferences)



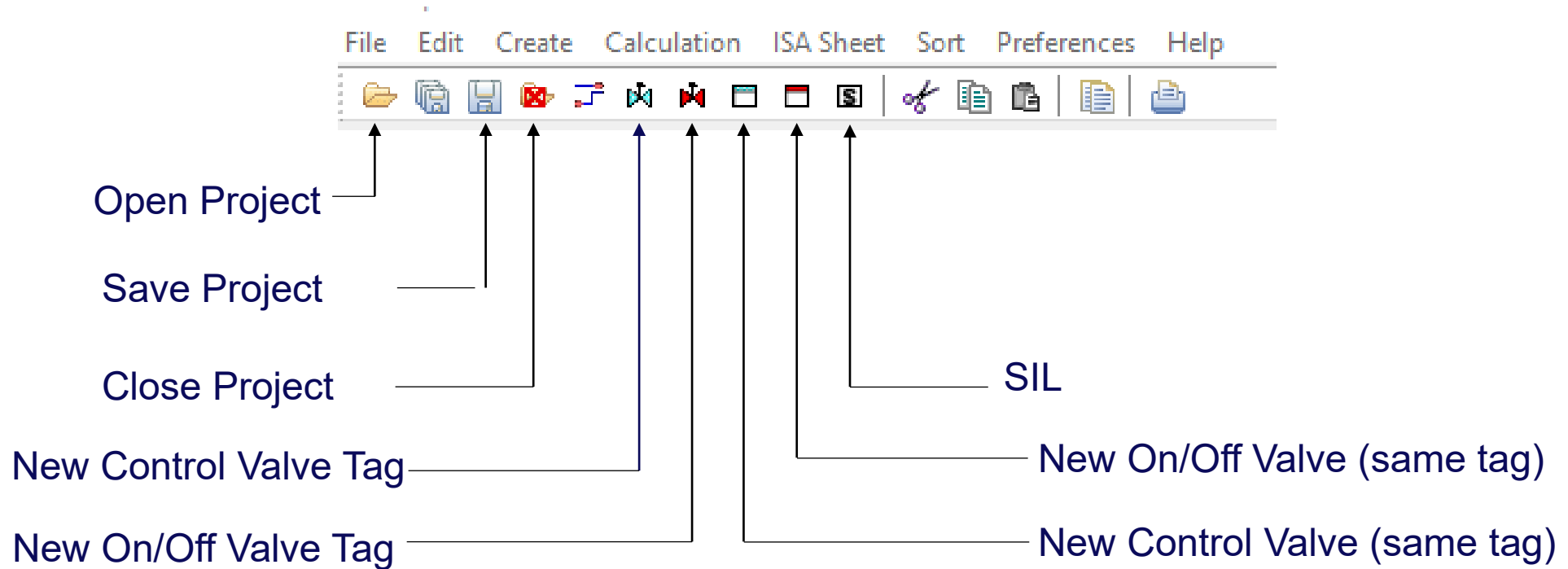
Nelprof On/Off

Opening Nelprof / initial setup (unit preferences)



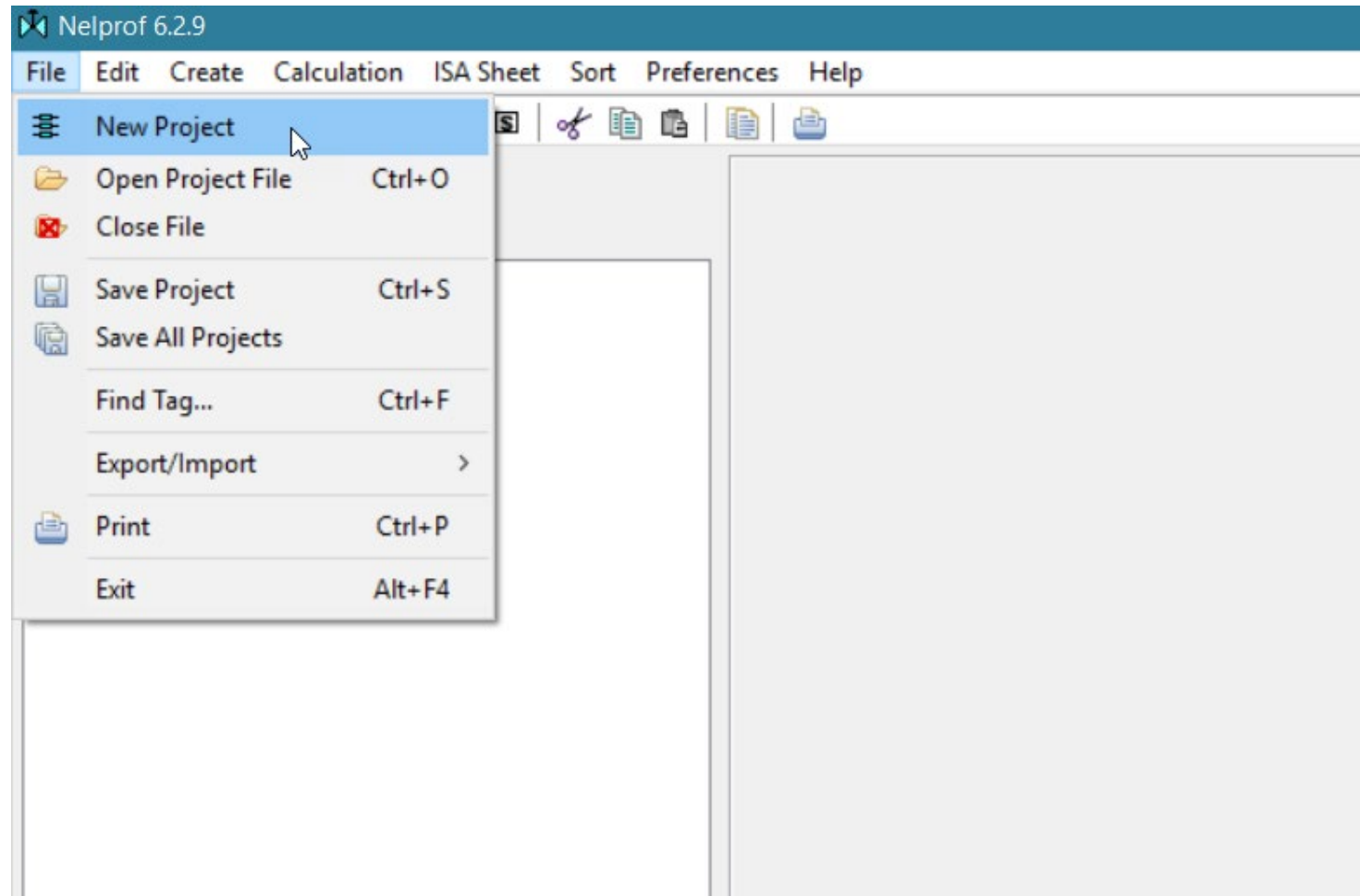
Nelprof On/Off

Opening Nelprof / Initial setup (Key items)



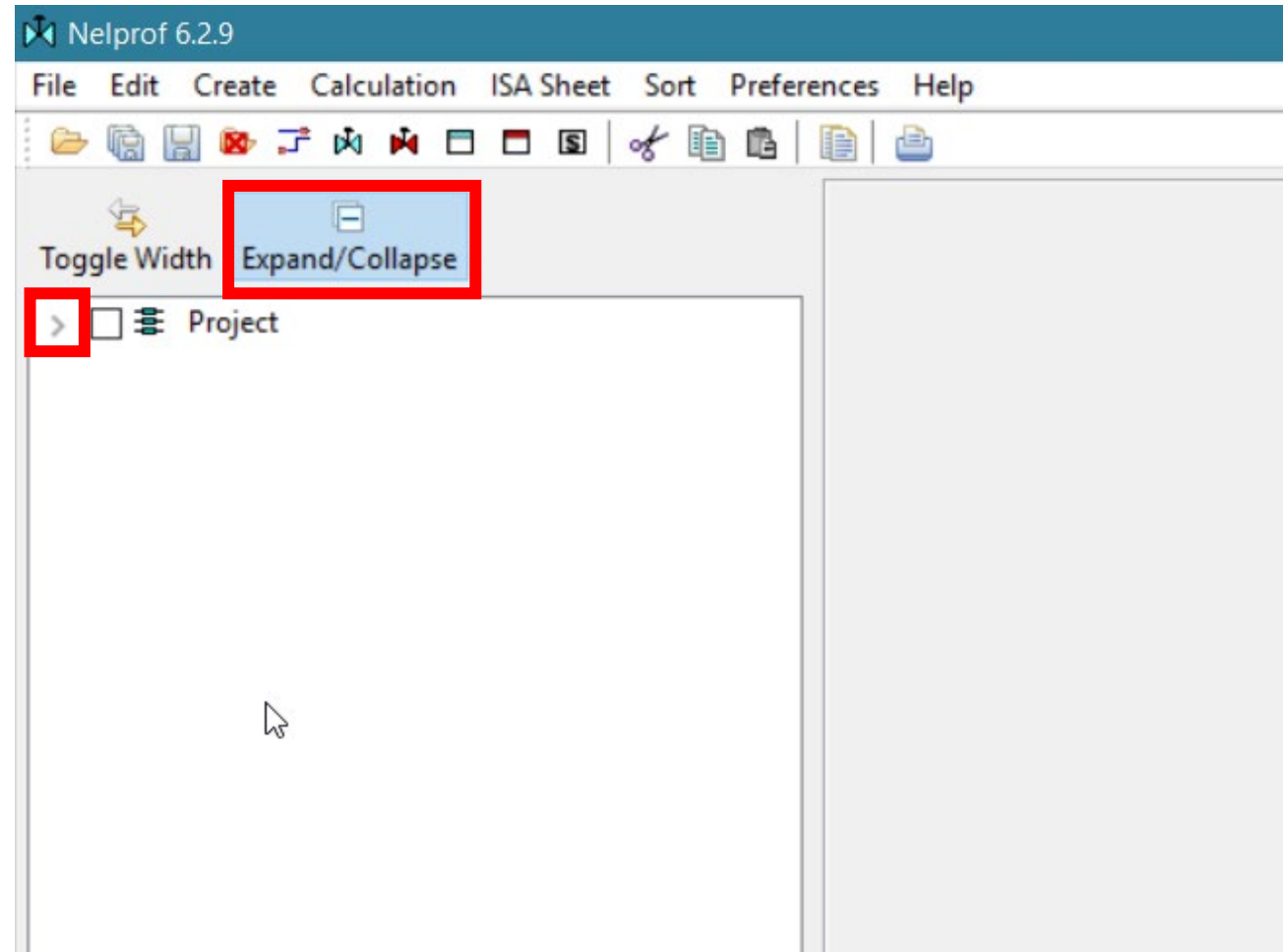
Nelprof On/Off

Different components of Nelprof (new project)



Nelprof On/Off

Different components of Nelprof (new project)



Nelprof On/Off

Different components of Nelprof (new project)

Nelprof 6.2.9

File Edit Create Calculation ISA Sheet Sort Preferences Help

Toggle Width Expand/Collapse

Project

Area

Tag

On-off

PROJECT INFO

Project name *)

PFF Project no

Revision 0

Project Manager

GENERAL INFO

Quotation number *)

Metso reference

Metso contact

End customer

Invoice customer

Contractor name

Customer reference

Creation date 2019-03-27

Created by joshua.ruiz@metso.com

Remarks

*) Fill in at least Quotation Number or Project Name

Project units and defaults (Note: this project must be SAVED first!)

Create Edit Delete

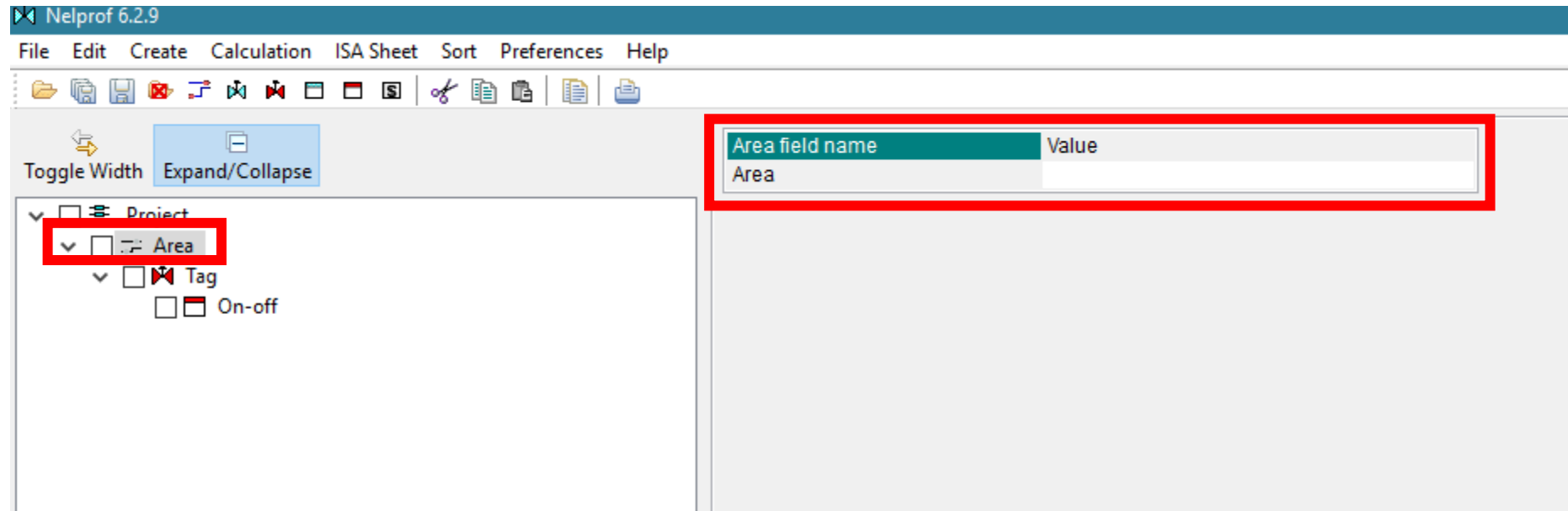
Tags: 1, Sizings: 1, Calculated: 0, NOT Calculated: 1

Project file: NewProject

Project default value file:

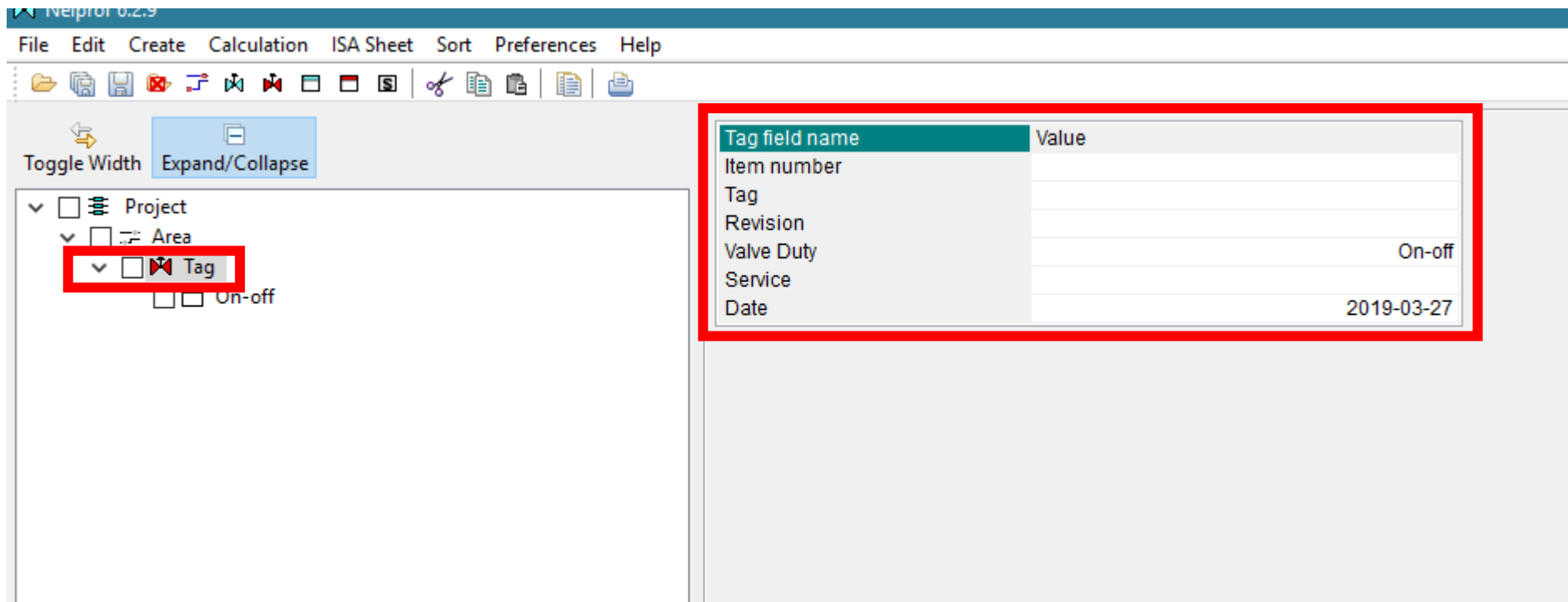
Nelprof On/Off

Different components of Nelprof (new project)



Nelprof On/Off

Different components of Nelprof (new project)



Nelprof On/Off

Different components of Nelprof (new project)

The screenshot displays the Nelprof 6.2.9 software interface. The main window is titled "Nelprof 6.2.9" and includes a menu bar (File, Edit, Create, Calculation, ISA Sheet, Sort, Preferences, Help) and a toolbar. On the left, a project tree shows "Project", "Area", and "On-off" (highlighted with a red box). The central panel, also outlined in red, is the "On-off" configuration window. It features a "Remarks" tab, a media selection grid (Liquid, Water, Pulp, Gas, Steam, 2-phase), and a "Calculate" button. Below the button are "Result:" labels for "Valve" and "Actuator" with corresponding input fields. The right side of the panel contains several data tables:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	psi	

Valve...	Unit	Type	Press rating	Code	Size
	in	ALL	ALL ANSI		
Max capacity	FpCv				

Construction	Material	Seat	Gland pack	Bearings	Safety factor
					1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
		AUTOM	psiG	60	

Valve torques	BTO	ftlb	ETC	ftlb

Actuator torques	BTO	ftlb	ETC	ftlb

Safety factors	BTO	ETC

Nelprof On/Off

Different components of Nelprof (On/Off breakdown)

The interface includes a media selection panel with icons for Liquid, Water, Pulp, Gas, Steam, and 2-phase. Below this are input fields for critical pressure (3208.214 psiA), special service (Normal), design pressure (psiA), design temperature (degF), and design minimum temperature (degF). There are checkboxes for 'Recommended safety factor' and 'Show details', and a 'Calculate' button. The 'Result' section shows 'Valve' and 'Actuator' status bars.

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	psi	

Valve...	Unit	Type	Press rating	Code	Size
	in	ALL	ALL ANSI		
Max capacity	FpCv				

Construction	Material	Seat	Gland pack	Bearings	Safety factor
					1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
		AUTOM	psiG	60	

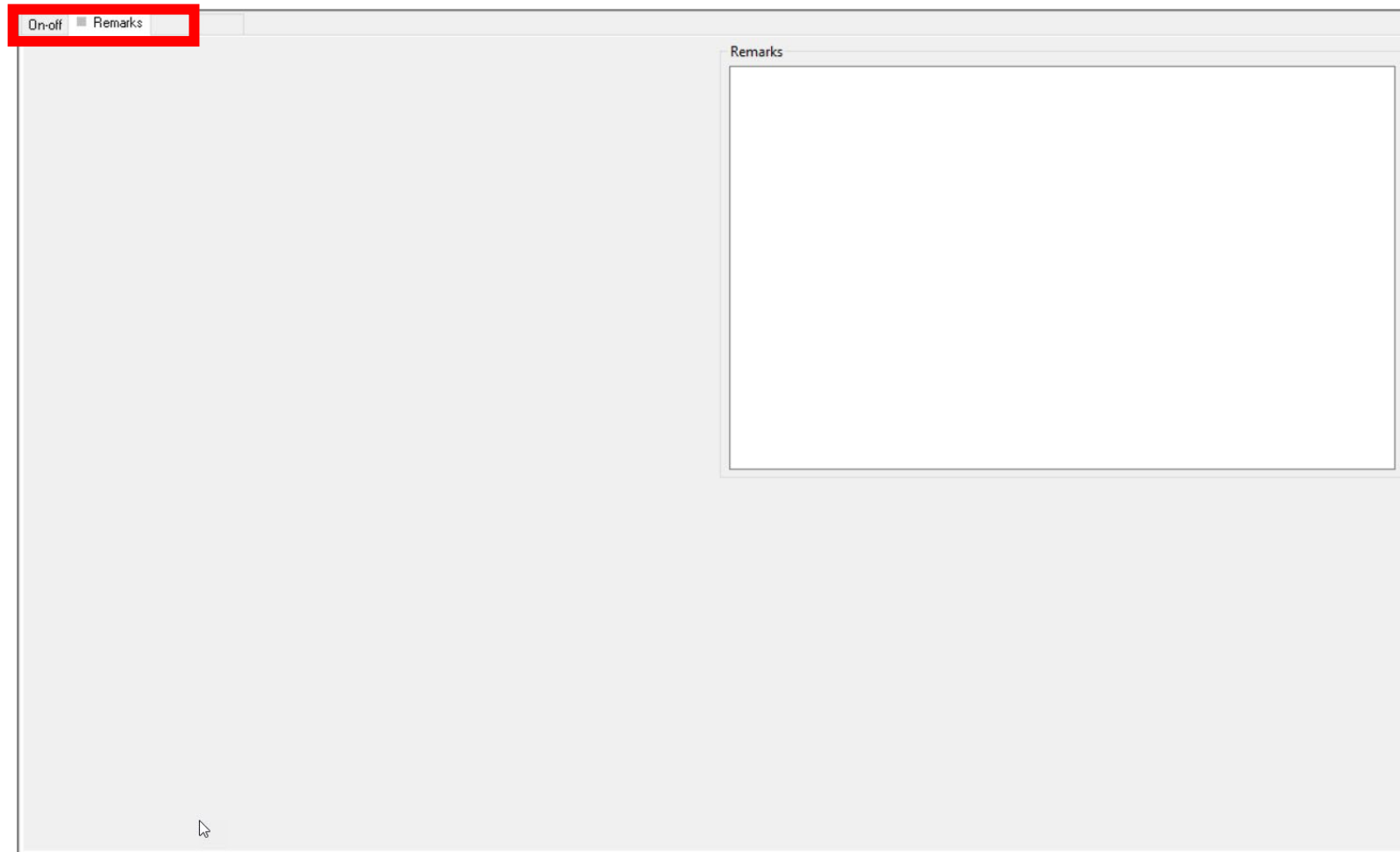
Valve torques				
BTO	ftlb	ETC	ftlb	

Actuator torques				
BTO	ftlb	ETC	ftlb	

Safety factors			
BTO		ETC	

Nelprof On/Off

Different components of Nelprof (remarks)



Nelprof On/Off

Different components of Nelprof (media options)

The screenshot displays the Nelprof software interface. On the left, there is a media selection panel with a grid of icons: Liquid, Water, Pulp, Gas, Steam, and 2-phase. Below this is a dropdown menu with a red border containing the following options: Acetone, Acetylene, Air, Ammonia, and Superheated steam. Below the dropdown are fields for 'Special servi' (set to Normal) and design parameters: Design P (psiA), DesignTmax (degF), and DesignTmin (degF). There are checkboxes for 'Recommended safety factor' and 'Show details', and a 'Calculate' button. Below the button are 'Result:' labels for 'Valve' and 'Actuator', each with a corresponding cyan bar, and a 'Valve:' label with an empty input field.

The right side of the interface contains several data tables:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	psi	

Valve...	Unit	Type	Press rating	Code	Size
		in	ALL	ALL ANSI	
Max capacity	FpCv				

Construction	Material	Seat	Gland pack	Bearings	Safety factor
					1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
		AUTOM	psiG	60	

Valve torques				
BTO	ftlb		ETC	ftlb

Actuator torques				
BTO	ftlb		ETC	ftlb

Safety factors				
BTO			ETC	

Nelprof On/Off

Different components of Nelprof (unit conversion)

On-off Remarks

Liquid **Water** **Pulp**
Gas **Steam** **2-phase**

Crit press	psiA	3208.214
Special servi		Normal
Design P	psiA	
DesignTmax	degF	
DesignTmin	degF	

Recommended safety factor
 Show details

Calculate

Result:
Valve
Actuator
Valve:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	degC	
	degF	
	K	

Valve...	Code	Size	Unit	Press rating	Code	Size
				ALL	ALL ANSI	

Max capacity FpCv

Construction	Material	Seat	Gland pack	Bearings	Safety factor
					1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
			AUTOM	psiG	60

Valve torques	BTO	ftlb	ETC	ftlb

Actuator torques	BTO	ftlb	ETC	ftlb

Safety factors	BTO	ETC

Nelprof On/Off

Different components of Nelprof (drop down information)

The screenshot displays the Nelprof software interface. On the left, there are icons for 'Liquid', 'Water', 'Pulp', 'Gas', 'Steam', and '2-phase'. Below these are input fields for 'Crit press' (3208.214 psiA), 'Special servi' (Normal), 'Design P', 'DesignTmax', and 'DesignTmin'. There are also checkboxes for 'Recommended safety factor' and 'Show details', and a 'Calculate' button. The main area contains several data tables and a dropdown menu for 'Valve...' types.

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	psi	

Valve...	Unit	Type	Press rating	Code	Size
		in	ALL	ALL ANSI	
Max capacity	FpCv				

Construction	Material	and pack	Bearings	Safety factor
				1.2

Actuator...	Code	Supply press	Spring rate
		psiG	60

Valve torques	ftlb	ftlb
BTO		

Actuator torques	ftlb	ETC	ftlb
BTO			

Safety factors	ETC
BTO	

Dropdown menu for Valve... Type:

- ALL
- BALL
- BUTTERFLY
- GLOBE
- ANGLE
- ROTARY
- SEGMENT
- GENERIC
- OBSOLETE
- OWN

Result:
Valve:
Actuator:
Valve:

Nelprof On/Off

Different components of Nelprof (drop down information)

The screenshot displays the Nelprof software interface with several sections:

- Media Selection:** Buttons for Liquid, Water, Pulp, Gas, Steam, and 2-phase.
- Design Parameters:** Crit press (psiA, 3208.214), Special servi (Normal), Design P (psiA), DesignTmax (degF), DesignTmin (degF).
- Options:** Recommended safety factor, Show details.
- Calculate:** A button labeled "Calculate".
- Result:** Labels for Valve, Actuator, and Valve with corresponding input fields.
- Tables and Dropdowns:**
 - Pipeline Table:**

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40
 - Process data Table:**

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	psi	
 - Valve... Table:**

Valve...	Unit	Type	Press rating	Code	Size
		in	ALL	ALL ANSI	
Max capacity	FpCv				
 - Construction Table:**

Construction	Material	Seat	Press rating	Code	Size
			ALL PN		
			ALL ANSI		
			PN 10	arings	Safety factor
			PN 16		1.2
			PN 25		
			PN 40	pply press	Spring rate
			PN 63		60
			PN 100		
			PN 160		
			PN 250		
			PN 420		
			ANSI 150		
			ANSI 300		
			ANSI 600		
			ANSI 900		
			ANSI 1500		
			ANSI 2500		
			ANSI 4500		
 - Actuator... Table:**

Actuator...	Code	Size
		AUTOM
 - Valve torques Table:**

Valve torques	Unit
BTO	ftlb
 - Actuator torques Table:**

Actuator torques	Unit
BTO	ftlb
 - Safety factors Table:**

Safety factors	Unit
BTO	

Nelprof On/Off

Different components of Nelprof (torque expansion)

Liquid **Water** **Pulp**

Gas **Steam** **2-phase**

Crit press psiA 3208.214
Special servi Normal

Design P psiA
DesignTmax degF
DesignTmin degF

Recommended safety factor
 Show details

Calculate

Result:
Valve:
Actuator:
Valve:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in			40

Process data	Unit	Case 1
Inlet temp	degF	
DP-shutoff	psi	

Valve...	Unit	Type	Press rating	Code	Size
	in	ALL	ALL ANSI		
Max capacity	FpCv				

Construction	Material	Seat	Gland pack	Bearings	Safety factor
					1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
		AUTOM	psiG	60	

Valve torques					
BTO		ftlb	ETC	ftlb	
RTO	ftlb		RTC	ftlb	
ETO	ftlb		BTC	ftlb	

Actuator torques					
BTO	ftlb		ETC	ftlb	
RTO	ftlb		RTC	ftlb	
ETO	ftlb		BTC	ftlb	

Safety factors					
BTO			ETC		
RTO			RTC		
ETO			BTC		

Nelprof On/Off

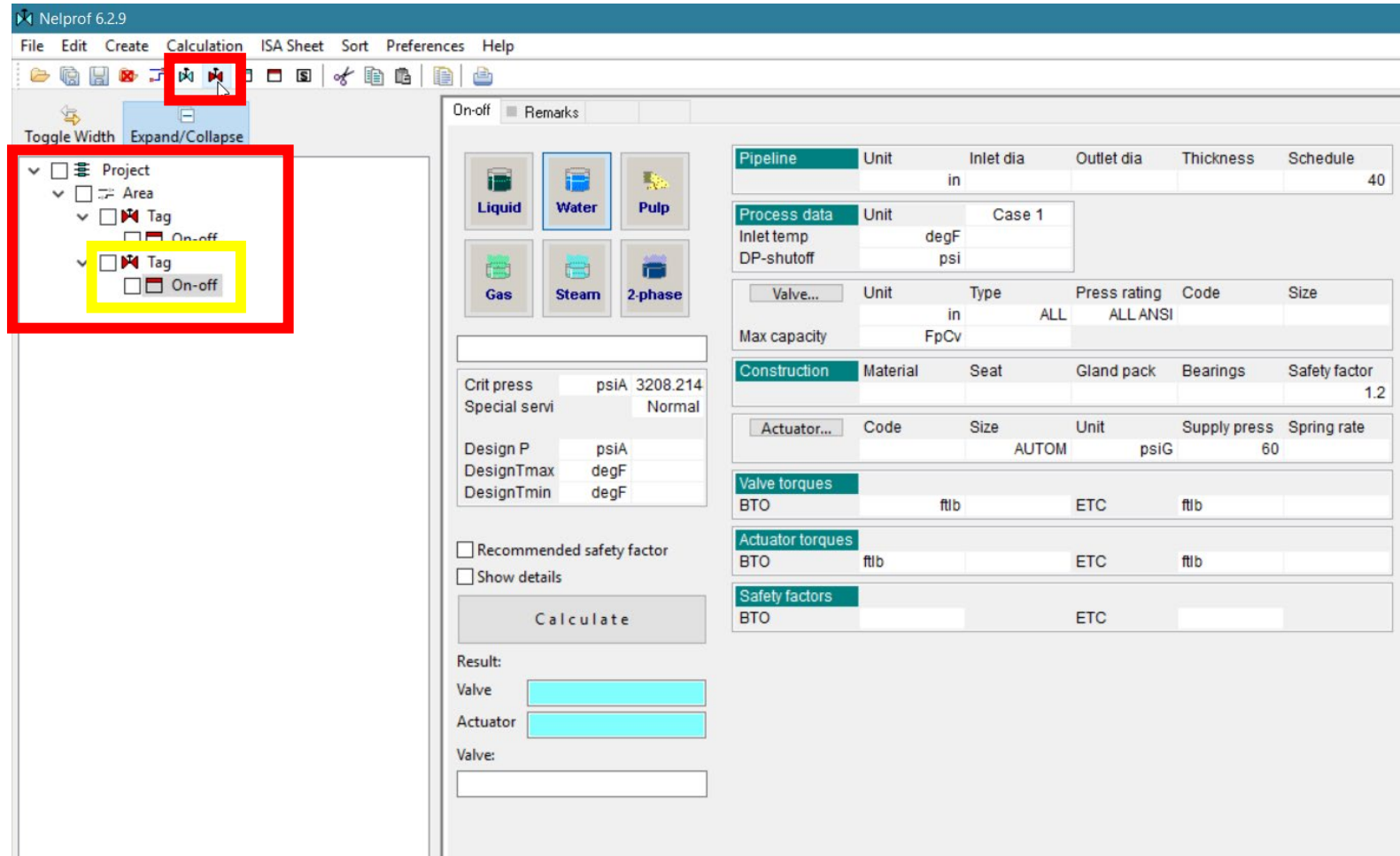
Different components of Nelprof (seat drop down)

The screenshot displays the Nelprof software interface with several configuration sections:

- Media Selection:** Buttons for Liquid, Water (selected), Pulp, Gas, Steam, and 2-phase.
- Design Parameters:** Crit press (3208.214 psiA), Special servi (Normal), Design P, DesignTmax, DesignTmin.
- Tables:**
 - Pipeline:** Unit (in), Inlet dia, Outlet dia, Thickness, Schedule (40).
 - Process data:** Unit, Case 1, Inlet temp (degF), DP-shutoff (psi).
 - Valve...:** Unit (in), Type (BALL), Press rating (ANSI 150), Code (XMBV), Size (3), Max capacity (FpCv).
 - Construction:** Material, Seat (dropdown), Gland pack (PTFE/TFE), Bearings (PTFE), Safety factor (1.2).
 - Actuator...:** Code, Metal, Type P, K, S; Metal, Type H, G, E, J; Soft, Type X, T; apply press (60), Spring rate.
 - Valve torques:** BTO (ftlb), ETC, ftlb.
 - Actuator torques:** BTO (ftlb), ETC, ftlb.
 - Safety factors:** BTO, ETC.
- Controls:** Recommended safety factor, Show details, Calculate button.
- Result:** Valve, Actuator, Valve: (output fields).

Nelprof On/Off

Different components of Nelprof (new valve tag)



Nelprof On/Off

Different components of Nelprof (safety and service factors)

The screenshot displays the Nelprof software interface for valve configuration. On the left, there are buttons for 'Liquid', 'Water', 'Pulp', 'Gas', 'Steam', and '2-phase'. The main area contains several data tables and input fields.

Input Parameters:

- Crit press: 3208.214 psiA
- Special servi: Normal (highlighted in a red box)
- Design P: psiA
- DesignTmax: degF
- DesignTmin: degF

Valve Configuration Table:

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 150	XMBV	3

Construction Table:

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Metal, Type P, F	PTFE/TFE	PTFE	1.2

Actuator Configuration Table:

Actuator...	Code	Size	Unit	Supply press	Spring rate
	B1J	AUTOM	psiG	60	

Actuator Torques Table:

Actuator	ftlb	ETC	ftlb	ETC
BTO	117	ETC	94	
RTO	77	RTC	77	
ETO	14	BTC	17	

Actuator Torques Table (continued):

Actuator	ftlb	ETC	ftlb	ETC
BTO	266	ETC	138	
RTO	152	RTC	125	
ETO	121	BTC	164	

Safety Factors Table:

Actuator	Safety factor	ETC	Safety factor
BTO	2.3	ETC	1.5
RTO	2	RTC	1.6
ETO	8.8	BTC	9.6

Recommended safety factor: 1.2 (highlighted in a red box)

Result:

- Valve: XMBV, 3 in
- Actuator: B1J10

Nelprof On/Off

Sizing Example 1 (Basic Sizing X-MBV)

- Customer Inquiry:
- Pipe Line Size – 3”
- Media – Dirty Liquid (Size a metal seated and soft seated alternate)
 - Pressure = 200 psi
 - Temperature = 100°F
- Valve – 3” X-MBV Ball Valve with Metal Seats
- Actuator – B1J with 60 psi supply

Nelprof On/Off

Different components of Nelprof (safety and service factors)

The screenshot displays the Nelprof software interface with the following sections:

- Media Selection:** Liquid, Water, Pulp, Gas, Steam, 2-phase.
- Properties Table:**

L spec grav		1
Density	kg/m3	
Crit press	psiA	3208.214
Viscosity	cp	
Sound vel	ft/s	1400
Special servi		Dirty
Design P	psiG	
DesignTmax	degF	
DesignTmin	degF	
- Recommended safety factor:** Recommended safety factor, Show details, **Calculate**
- Result:** Valve: XMBV, 3 in; Actuator: B1J12
- Pipeline Table:**

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	3	3	40
- Process data Table:**

Process data	Unit	Case 1
Inlet temp	degF	100
DP-shutoff	psi	200
- Valve... Table:**

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 150	XMBV	3
Max capacity	FpCv	1160			
- Construction Table:**

Construction	Material	Seat	Gland pack	Bearings	Safety factor
	WCB	Metal, Type H,	PTFE/TFE	Metal	1
- Actuator... Table:**

Actuator...	Code	Size	Unit	Supply press	Spring rate
	B1J	AUTOM	psiG	60	
- Valve torques Table:**

Valve torques					
BTO	ftlb	151	ETC	ftlb	121
RTO	ftlb	104	RTC	ftlb	104
ETO	ftlb	41	BTC	ftlb	51
- Actuator torques Table:**

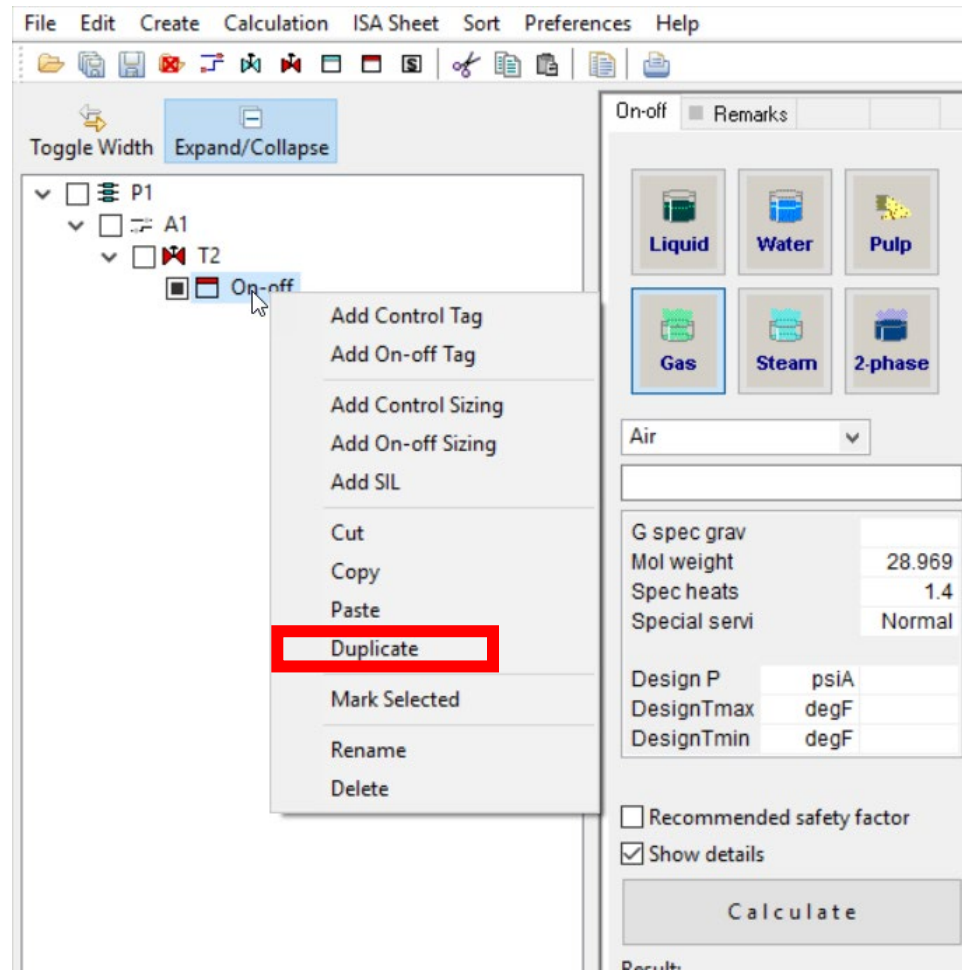
Actuator torques					
BTO	ftlb	529	ETC	ftlb	290
RTO	ftlb	300	RTC	ftlb	264
ETO	ftlb	237	BTC	ftlb	342
- Safety factors Table:**

Safety factors				
BTO	3.5	ETC	2.4	
RTO	2.9	RTC	2.5	
ETO	5.8	BTC	6.7	
- Recommended safety factor Table:**

Recommended safety factor	
Open / Close	1.5

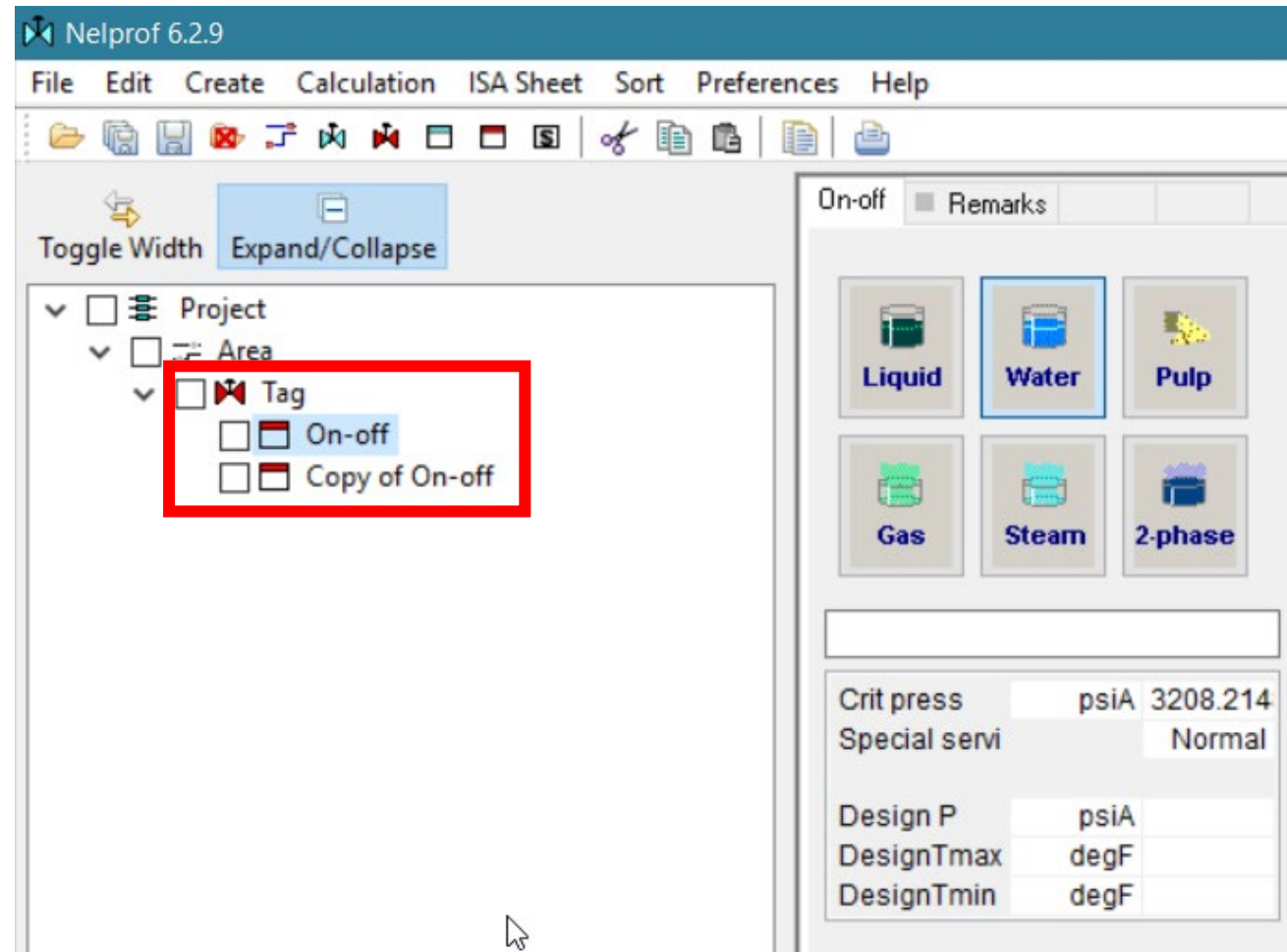
Nelprof On/Off

Tricks and tips (duplicate)



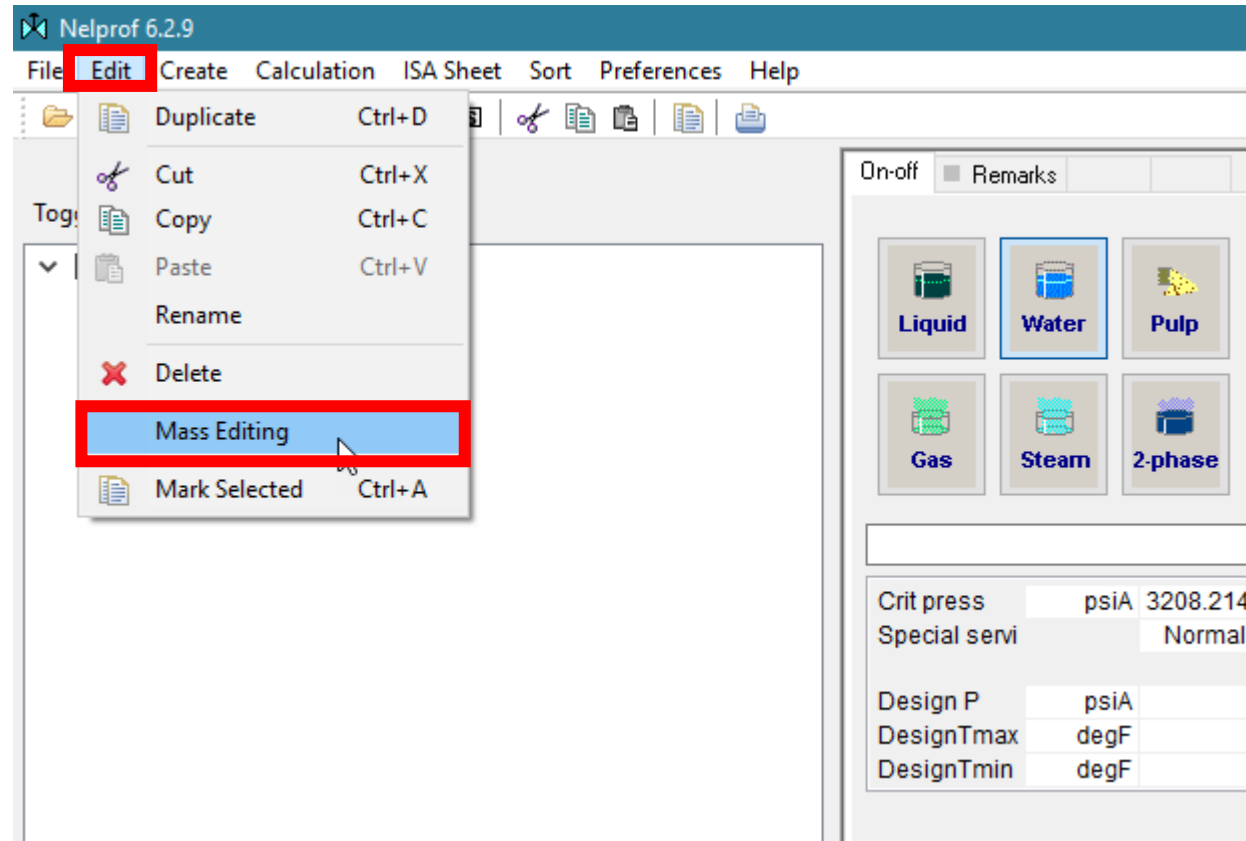
Nelprof On/Off

Tricks and tips (duplicate)



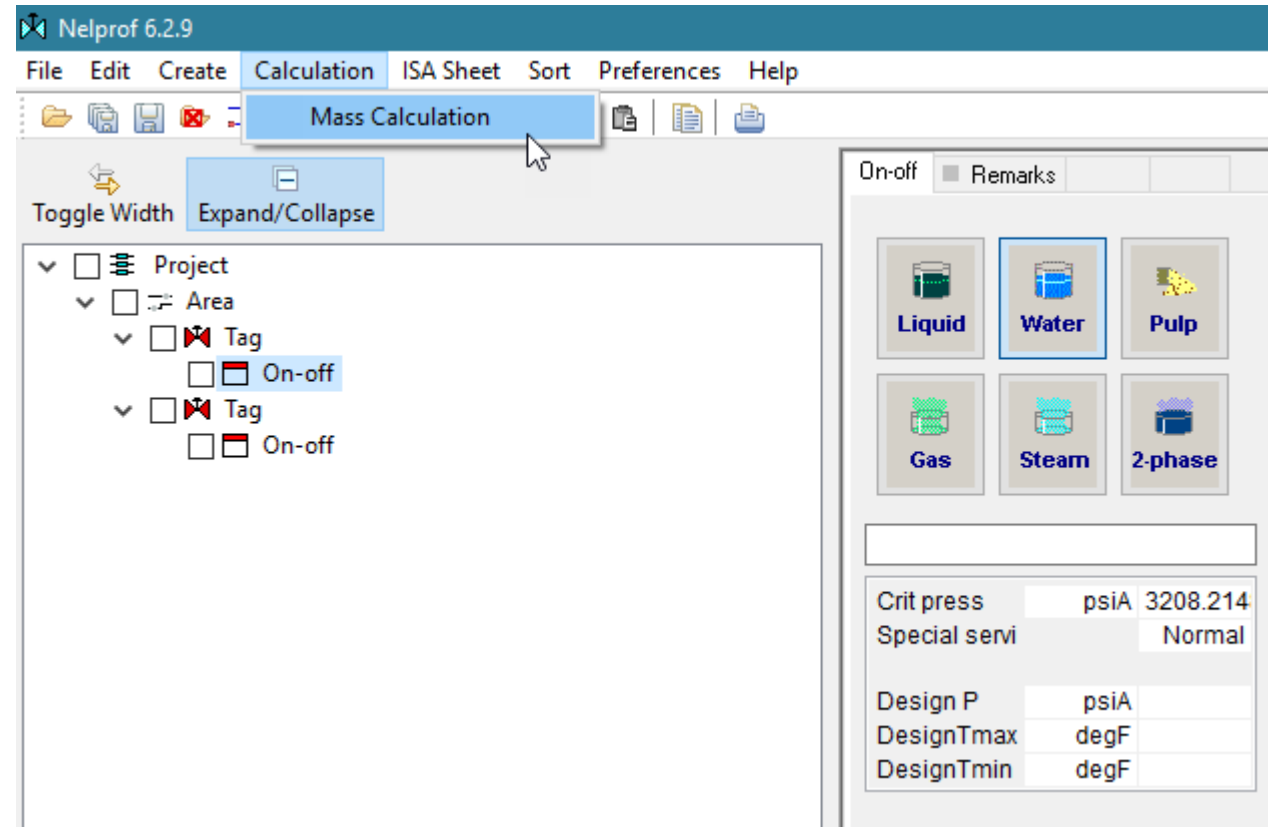
Nelprof On/Off

Tricks and tips (mass edit)



Nelprof On/Off

Tricks and tips (mass calc)



Nelprof On/Off

Tricks and tips (spring rate)

Liquid

Water

Pulp

Gas

Steam

2-phase

Air ▼

G spec grav	
Mol weight	28.969
Spec heats	1.4
Special servi	Normal
Design P	psiA
DesignTmax	degF
DesignTmin	degF

Recommended safety factor

Show details

Calculate

Result:

Valve

Actuator

Valve:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	4	4	40

Process data	Unit	Case 1
Inlet temp	degF	600
DP-shutoff	psi	300

Valve...	Unit	Type	Press rating	Code	Size
		in	BALL	ANSI 300	XMBV
Max capacity	FpCv				4

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Metal, Type H,	PTFE/TFE	PTFE	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	VPVL SR	200	psiG	60	59.461

Valve torques				
	59.461 (4/5)			
	79.766 (6)			

Actuator torques				
BTO	ftlb		ETC	ftlb
RTO	ftlb		RTC	ftlb
ETO	ftlb		BTC	ftlb

Safety factors				
BTO			ETC	
RTO			RTC	
ETO			BTC	

Nelprof On/Off

Tricks and tips (spring rate)

Liquid

Water

Pulp

Gas

Steam

2-phase

Air ▼

G spec grav 28.969

Mol weight 1.4

Spec heats Normal

Special servi Normal

Design P psiA

DesignTmax degF

DesignTmin degF

Recommended safety factor

Show details

Calculate

Result:

Valve

Actuator

Valve:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	4	4	40

Process data	Unit	Case 1
Inlet temp	degF	600
DP-shutoff	psi	300

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 300	XMBV	4
Max capacity	FpCv				

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Metal, Type H,	PTFE/TFE	PTFE	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	B1J	12	psiG	60	58.01

Valve torques				
BTO	ftlb	ETC	ftlb	43.507 (K) 58.01 (STD) 79.766 (V)
ETO	ftlb	BTC	ftlb	

Actuator torques			
BTO	ftlb	ETC	ftlb
RTO	ftlb	RTC	ftlb
ETO	ftlb	BTC	ftlb

Safety factors			
BTO		ETC	
RTO		RTC	
ETO		BTC	

Nelprof On/Off

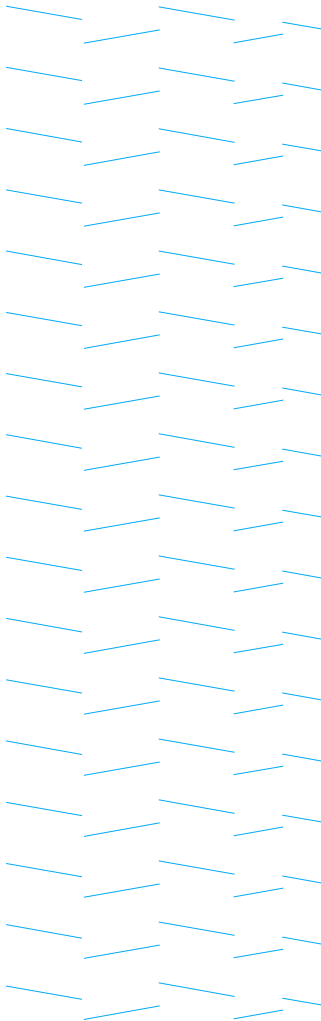
Information needed to size

- Inlet and Outlet size of the pipe
- Media
 - Type
 - Phase
 - Specific Gravity or Mol Weight if media is not defined in Nelprof
- Temperature of Media
- Pressure for the system
- Valve Type, Pressure Class, Size and Construction
- Actuator Type, Supply Pressure and Safety Factor*
 - *Default safety factor will be 1.2

Nelprof On/Off

Sizing Example 2 (7150)

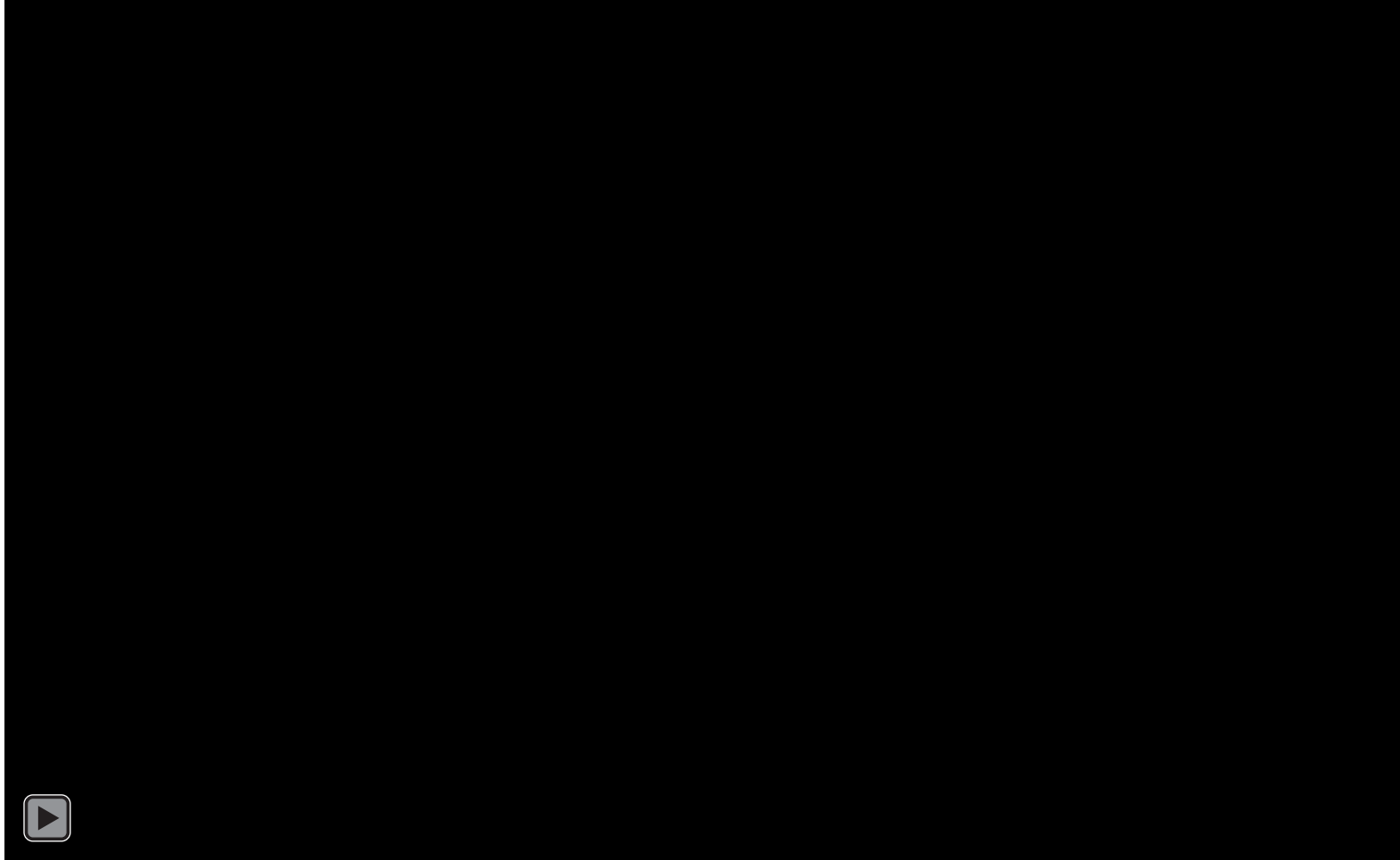
- Customer Inquiry:
- Pipe Line Size – 2”
- Media – Air
 - Pressure = 100 psi
 - Temperature = 70F
- Valve – 2” 7150 Ball Valve with Xtreme Seats
- Actuator – VPVL with 60 psi supply



Nelprof On/Off

Sizing Examples (7150)

NELES



Nelprof On/Off

Sizing Examples (7150)

The screenshot displays a software interface for valve sizing. On the left, there are buttons for 'Liquid', 'Water', 'Pulp', 'Gas', 'Steam', and '2-phase', with a dropdown menu set to 'Air'. Below these are fields for 'G spec grav', 'Mol weight' (28.969), and 'Spec heats' (1.4). The main area contains several tables and input fields:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	2	2	40

Process data

Process data	Unit	Case 1
Inlet temp	degF	70
DP-shutoff	psi	100

Valve...

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 150	7150	2

Max capacity

Max capacity	FpCv	165

Construction

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Xtreme		Non_Trunion	1.2

Actuator...

Actuator...	Code	Size	Unit	Supply press	Spring rate
	VPVL SR	AUTOM	psiG	60	

Nelprof On/Off

Sizing Examples (7150)

Liquid

Water

Pulp

Gas

Steam

2-phase

Air ▼

G spec grav 28.969

Mol weight 1.4

Spec heats Normal

Special servi

Design P psiA

DesignTmax degF

DesignTmin degF

Recommended safety factor

Show details

Calculate

Result:

Valve 7150, 2 in

Actuator VP300SR4/5

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	2	2	40

Process data	Unit	Case 1
Inlet temp	degF	70
DP-shutoff	psi	100

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 150	7150	2
Max capacity	FpCv	165			

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Xtreme		Non_Trunion	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	VPVL SR	AUTOM	psiG	60	

Valve torques					
BTO	ftlb	24	ETC	ftlb	24
RTO	ftlb	17	RTC	ftlb	17
ETO	ftlb	22	BTC	ftlb	22

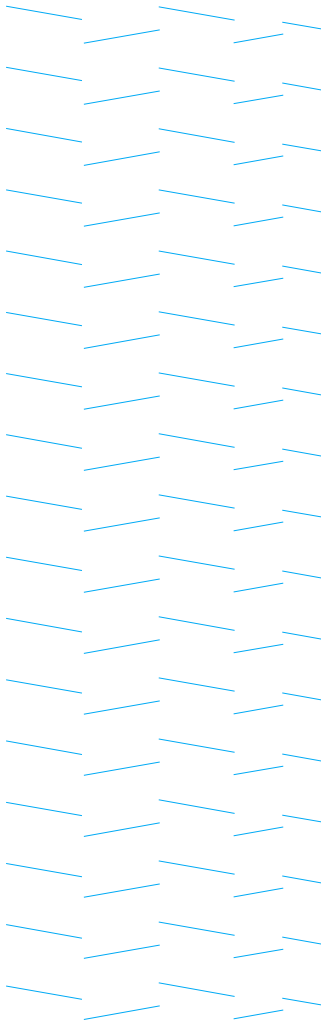
Actuator torques					
BTO	ftlb	48	ETC	ftlb	34
RTO	ftlb	38	RTC	ftlb	43
ETO	ftlb	29	BTC	ftlb	53

Safety factors					
BTO		2	ETC		1.4
RTO		2.3	RTC		2.5
ETO		1.3	BTC		2.4

Nelprof On/Off

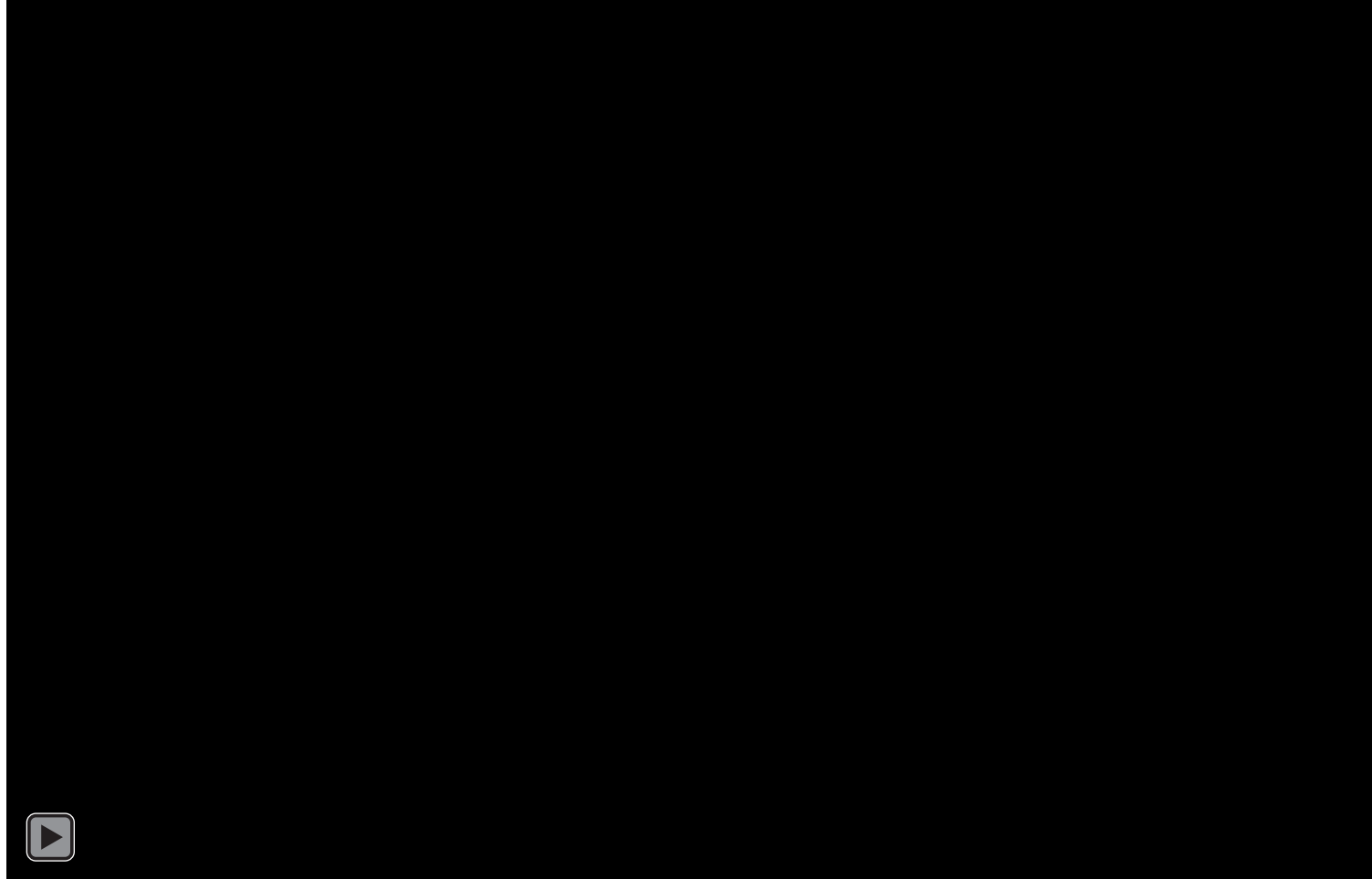
Sizing Example 3 (830)

- Customer Inquiry:
- Pipe Line Size – 6”
- Media – Water
 - Pressure = 200 psi
 - Temperature = 100F
- Valve – 6” 830 SH-DWN with the standard seat option
- Actuator – QPX with 60 psi supply



Nelprof On/Off

Sizing Examples (830)



Nelprof On/Off

Sizing Examples (830)

The screenshot shows a software interface for valve sizing. On the left, there is a material selection panel with six options: Liquid, Water, Pulp, Gas, Steam, and 2-phase. The 'Water' option is selected. Below this panel, there are input fields for 'Crit press' (3208.214 psiA) and 'Special servi' (Normal). The main area contains several data tables:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	6	6	40

Process data	Unit	Case 1
Inlet temp	degF	100
DP-shutoff	psi	200

Valve...	Unit	Type	Press rating	Code	Size
	in	BUTTERFLY	ANSI 300	830-SH-DWN	6

Max capacity: FpCv 1050

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		std_Soft	PTFE/TFE	PTFE	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	QP	AUTOM	psiG	60	

Nelprof On/Off

Sizing Examples (830)

Liquid

Water

Pulp

Gas

Steam

2-phase

Crit press psiA 3208.214

Special servi Normal

Design P psiA

DesignTmax degF

DesignTmin degF

Recommended safety factor
 Show details

Calculate

Result:

Valve 830-SH-DWN, 6 in

Actuator QP3C

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	6	6	40

Process data	Unit	Case 1
Inlet temp	degF	100
DP-shutoff	psi	200

Valve...	Unit	Type	Press rating	Code	Size
	in	BUTTERFLY	ANSI 300	830-SH-DWN	6
Max capacity	FpCv	1050			

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		std_Soft	PTFE/TFE	PTFE	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	QP	AUTOM	psiG	60	

Valve torques					
BTO	ftlb	100	ETC	ftlb	100
RTO	ftlb	30	RTC	ftlb	30
ETO	ftlb	30	BTC	ftlb	30

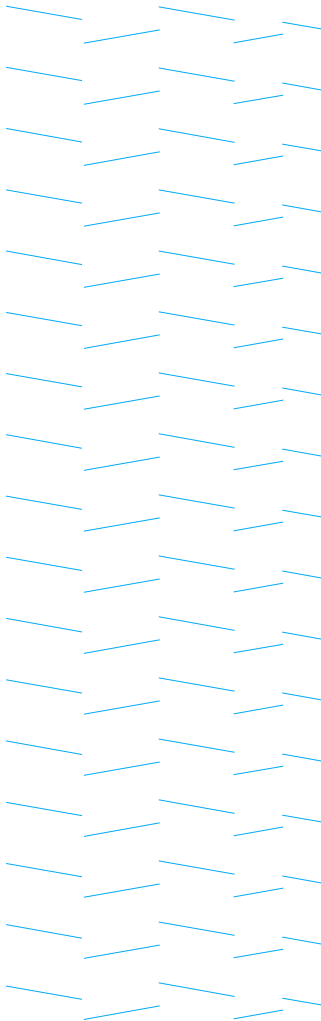
Actuator torques					
BTO	ftlb	184	ETC	ftlb	116
RTO	ftlb	201	RTC	ftlb	215
ETO	ftlb	104	BTC	ftlb	195

Safety factors					
BTO	1.8	ETC	1.2		
RTO	6.7	RTC	7.2		
ETO	3.5	BTC	6.5		

Nelprof On/Off

Sizing Example 4 (XMBV)

- Customer Inquiry:
- Pipe Line Size – 4”
- Media – Air
 - Pressure = 300 psi
 - Temperature = 600F
- Valve – 300# XA (XMBV) with graphite packing and metal bearings
- Actuator – B1J with 60 psi supply



Nelprof On/Off

Sizing Examples (XMBV)

The screenshot displays a software interface for valve sizing. On the left, there is a selection panel with icons for 'Liquid', 'Water', 'Pulp', 'Gas', 'Steam', and '2-phase'. The 'Gas' option is selected. Below this is a dropdown menu set to 'Air'. The main area contains several data tables and input fields, all of which are highlighted with red boxes:

- Pipeline Table:**

Unit	Inlet dia	Outlet dia	Thickness	Schedule
	in	4	4	40
- Process data Table:**

Unit	Case 1
Inlet temp	degF 600
DP-shutoff	psi 300
- Valve... Table:**

Unit	Type	Press rating	Code	Size
in	BALL	ANSI 300	XMBV	4
- Construction Table:**

Material	Seat	Gland pack	Bearings	Safety factor
	Metal, Type H,	Graphite	Metal	1.2
- Actuator... Table:**

Code	Size	Unit	Supply press	Spring rate
B1J	AUTOM	psiG	60	

Additional fields include 'Max capacity' set to 'FpCV' and a table for material properties:

G spec grav	
Mol weight	28.969
Spec heats	1.4

Nelprof On/Off

Sizing Examples (XMBV)

Liquid

Water

Pulp

Gas

Steam

2-phase

Air ▼

G spec grav 28.969

Mol weight 1.4

Spec heats Normal

Special servi

Design P psiA

DesignTmax degF

DesignTmin degF

Recommended safety factor

Show details

Calculate

Result:

Valve XMBV, 4 in

Actuator B1J16

Valve:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	4	4	40

Process data	Unit	Case 1
Inlet temp	degF	600
DP-shutoff	psi	300

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 300	XMBV	4
Max capacity	FpCv	2200			

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Metal, Type H,	Graphite	Metal	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	B1J	AUTOM	psiG	60	

Valve torques					
BTO	ftlb	419	ETC	ftlb	336
RTO	ftlb	283	RTC	ftlb	283
ETO	ftlb	94	BTC	ftlb	117

Actuator torques					
BTO	ftlb	1061	ETC	ftlb	570
RTO	ftlb	604	RTC	ftlb	519
ETO	ftlb	482	BTC	ftlb	670

Safety factors					
BTO	2.5	ETC	1.7		
RTO	2.1	RTC	1.8		
ETO	5.2	BTC	5.7		

Nelprof On/Off Sizing Examples (XMBV)

Input Parameters:

- Pipeline: Unit, Inlet dia (in), Outlet dia (4), Thickness (4), Schedule (40)
- Process data: Unit, Case 1, Inlet temp (degF, 600), DP-shutoff (psi, 300)
- Valve: Unit, Type (BALL), Press rating (ANSI 300), Code (XMBV), Size (4)
- Max capacity: FpCv (2200)
- Construction: Material, Seat (Metal, Type H), Gland pack (Graphite), Bearings (Metal), Safety factor (1.2)
- Actuator: Code (B1J), Size (AUTOM), Unit (psiG), Supply press (60), Spring rate (60)

Valve torques:

	ftlb	ETC	ftlb	
BTO	419			336
RTO	283	RTC		283
ETO	94	BTC		117

Actuator torques:

	ftlb	ETC	ftlb	
BTO	1061			570
RTO	604	RTC		519
ETO	482	BTC		670

Safety factors:

		ETC		
BTO	2.5			1.7
RTO	2.1	RTC		1.8
ETO	5.2	BTC		5.7

Result: Valve: XMBV, 4 in; Actuator: B1J16

VS

Input Parameters:

- Pipeline: Unit, Inlet dia (in), Outlet dia (4), Thickness (4), Schedule (40)
- Process data: Unit, Case 1, Inlet temp (degF, 600), DP-shutoff (psi, 300)
- Valve: Unit, Type (BALL), Press rating (ANSI 300), Code (XMBV), Size (4)
- Max capacity: FpCv (2200)
- Construction: Material, Seat (Metal, Type H), Gland pack (PTFE/TFE), Bearings (PTFE), Safety factor (1.2)
- Actuator: Code (B1J), Size (AUTOM), Unit (psiG), Supply press (60), Spring rate (60)

Valve torques:

	ftlb	ETC	ftlb	
BTO	400			320
RTO	270	RTC		270
ETO	78	BTC		97

Actuator torques:

	ftlb	ETC	ftlb	
BTO	1061			570
RTO	604	RTC		519
ETO	482	BTC		670

Safety factors:

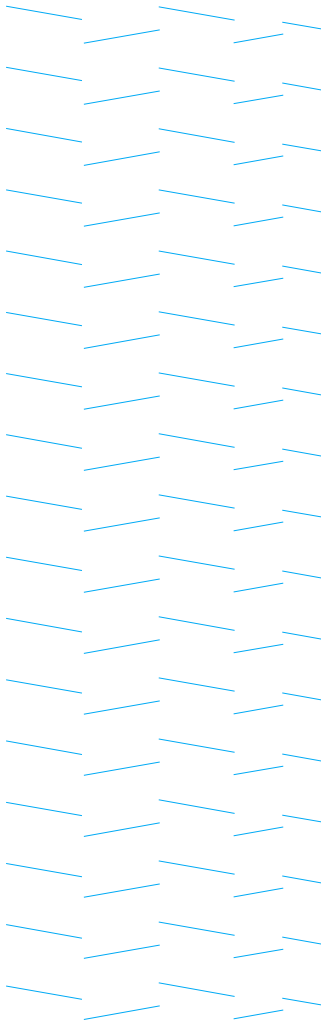
		ETC		
BTO	2.7			1.8
RTO	2.2	RTC		1.9
ETO	6.2	BTC		6.9

Result: Valve: XMBV, 4 in; Actuator: B1J16

Nelprof On/Off







Sizing Example 5 (Manual Gear)

- Customer Inquiry:
- Pipe Line Size – 10”
- Media – Hexane
 - Pressure = 30 psi
 - Temperature = 300F
- Valve – 10” 9150 Trunnion with Xtreme Seats
- Actuator – Manual Gear



Nelprof On/Off

Sizing Examples (Manual Gear)

 Liquid	 Water	 Pulp
 Gas	 Steam	 2-phase

Hexane ▼

L spec grav		1
Density	kg/m3	659
Crit press	psiA	435.111

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	10	10	40

Process data	Unit	Case 1
Inlet temp	degr	300
DP-shutoff	psi	30

valve...	Unit	Type	Press rating	Code	Size
		in	BALL	ANSI 150	9150-TRUN
Max capacity		FpCv	15200		

Construction	Material	Seat	Grand pack	Bearings	Safety factor
		Xtreme		Trunnion	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
		B1J	AUTOM	psiG	60

Nelprof On/Off

Sizing Examples (Manual Gear)

Liquid

Water

Pulp

Gas

Steam

2-phase

Hexane ▼

L spec grav		1
Density	kg/m3	659
Crit press	psiA	435.111
Viscosity	cp	
Sound vel	ft/s	4593.175
Special servi		Normal
Design P	psiA	
DesignTmax	degF	
DesignTmin	degF	

Recommended safety factor

Show details

Calculate

Result:

Valve 9150-TRUN, 10 in

Actuator B1J20

Valve:

Pipeline	Unit	Inlet dia	Outlet dia	Thickness	Schedule
		in	10	10	40

Process data	Unit	Case 1
Inlet temp	degF	300
DP-shutoff	psi	30

Valve...	Unit	Type	Press rating	Code	Size
	in	BALL	ANSI 150	9150-TRUN	10
Max capacity	FpCv	15200			

Construction	Material	Seat	Gland pack	Bearings	Safety factor
		Xtreme		Trunnion	1.2

Actuator...	Code	Size	Unit	Supply press	Spring rate
	B1J	AUTOM	psiG	60	

Valve torques					
BTO	ftlb	709	ETC	ftlb	709
RTO	ftlb	496	RTC	ftlb	496
ETO	ftlb	638	BTC	ftlb	638

Actuator torques					
BTO	ftlb	2128	ETC	ftlb	1096
RTO	ftlb	1222	RTC	ftlb	999
ETO	ftlb	989	BTC	ftlb	1290

Safety factors					
BTO		3	ETC		1.5
RTO		2.5	RTC		2
ETO		1.5	BTC		2

Nelprof On/Off

Sizing Examples (Manual Gear)

Valve Torques

Valve torques					
BTO	ftlb	709	ETC	ftlb	709
RTO	ftlb	496	RTC	ftlb	496
ETO	ftlb	638	BTC	ftlb	638

Actuator torques					
BTO	ftlb	2128	ETC	ftlb	1096
RTO	ftlb	1222	RTC	ftlb	999
ETO	ftlb	989	BTC	ftlb	1290

10" 9150 Max Torque = 709 ft-lbs
 Standard Practice 20% Safety Factor

$$709 * 1.2 = 851 \text{ ft-lbs}$$

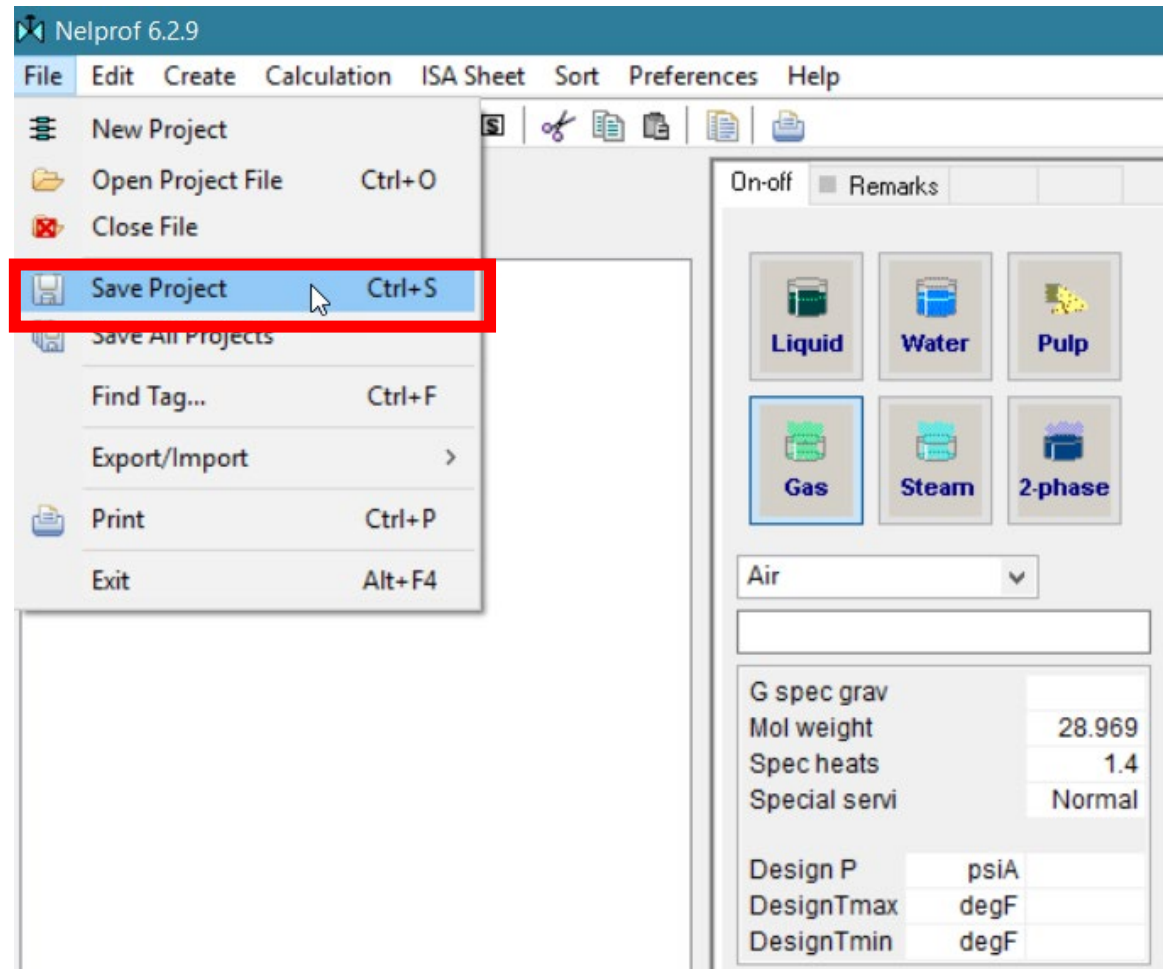
Manual Actuator Torques

Actuator				Operating Values - per API 608 & 609			Operating Values - MAX		
	Approx. Weight	Handwheel Diameter	Turns to Open	Rim Pull	Max. Input Torque	Max. Output Torque	Rim Pull	Max. Input Torque	Max. Output Torque
	lbs	inches	-	lbs	ft-lbs	ft-lbs	lbs	ft-lbs	ft-lbs
MGR5/Q	5	8	10	35	12	111	35	12	111
MGR7/Q	8	8	9	63	21	243	63	21	243
MGR10/Q	8	12	9	64	32	369	64	32	369
MGR12/Q	19	20	9	74	61	738	74	61	738
MGR14/Q	31	32	10	80	107	1408	84	112	1475
MGR15/Q	49	32	14	80	107	2027	95	126	2397
MGR16/Q	53	32	27	75	101	3319	75	101	3319
MGR20/K85	108	24	61	80	80	6480	82	82	6638
MGR30/K105	142	28	81	77	90	12539	77	90	12539
MGR40/K135	296	28	182	78	91	19177	78	91	19177

The best option would be an
 MGR14/QA

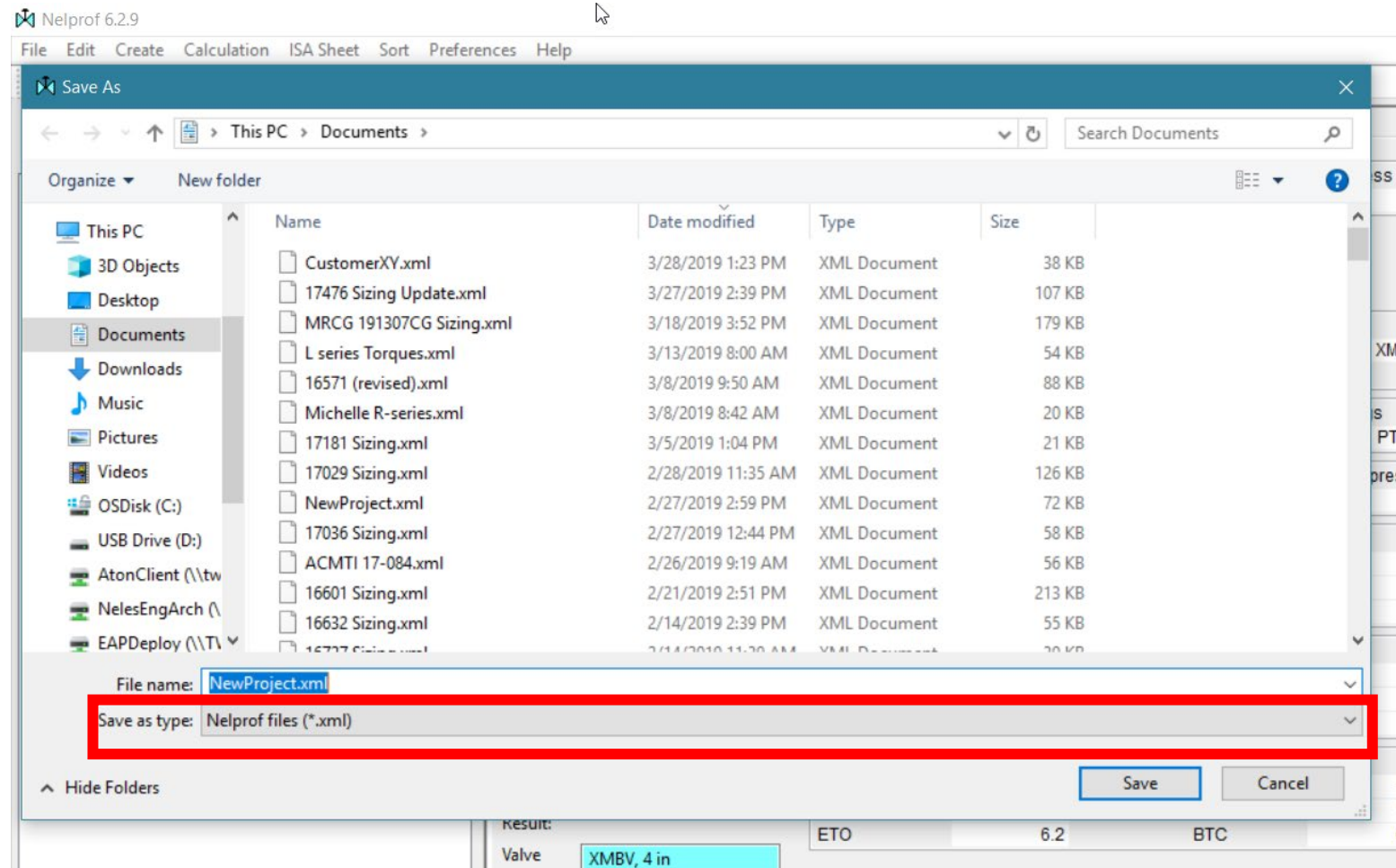
Nelprof On/Off

Open / Save a File



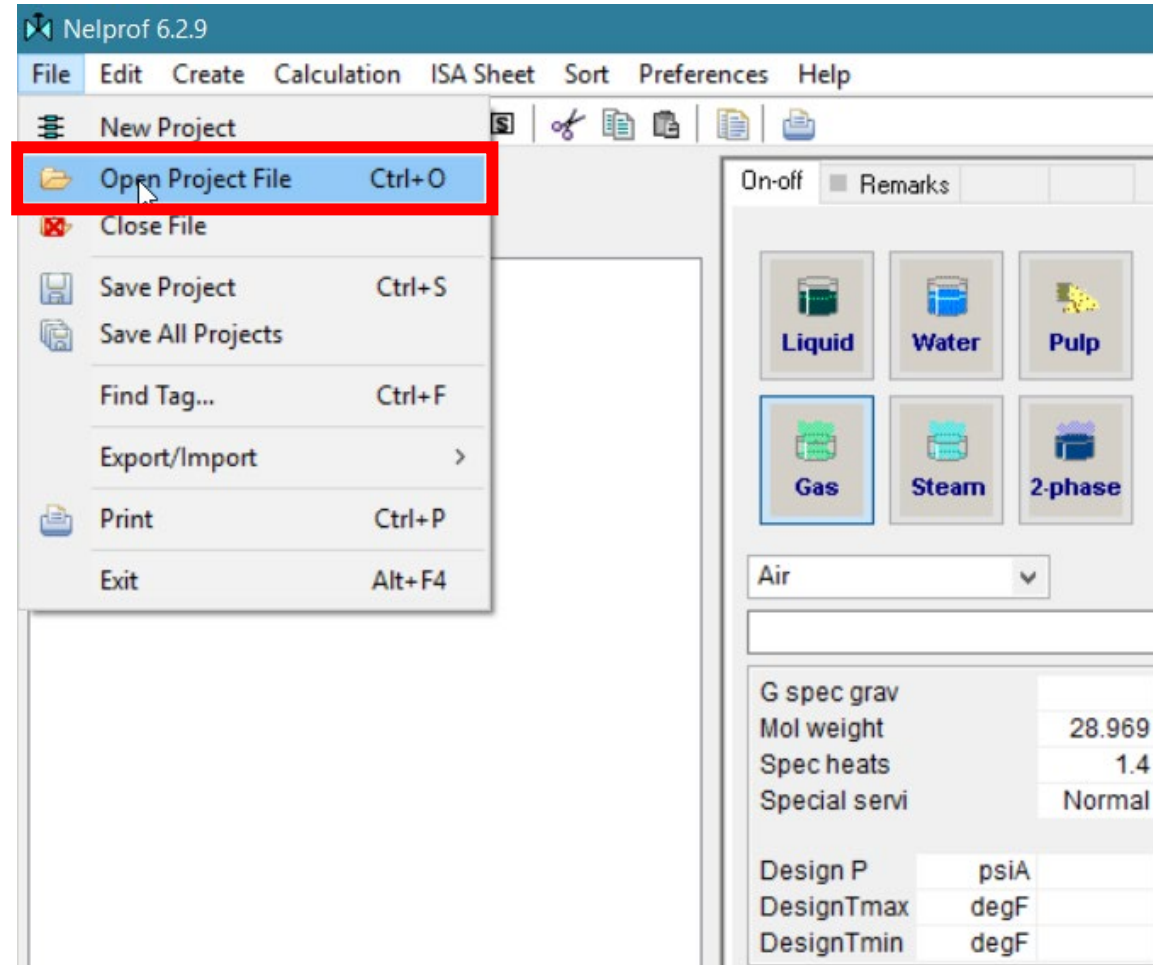
Nelprof On/Off

Open / Save a File



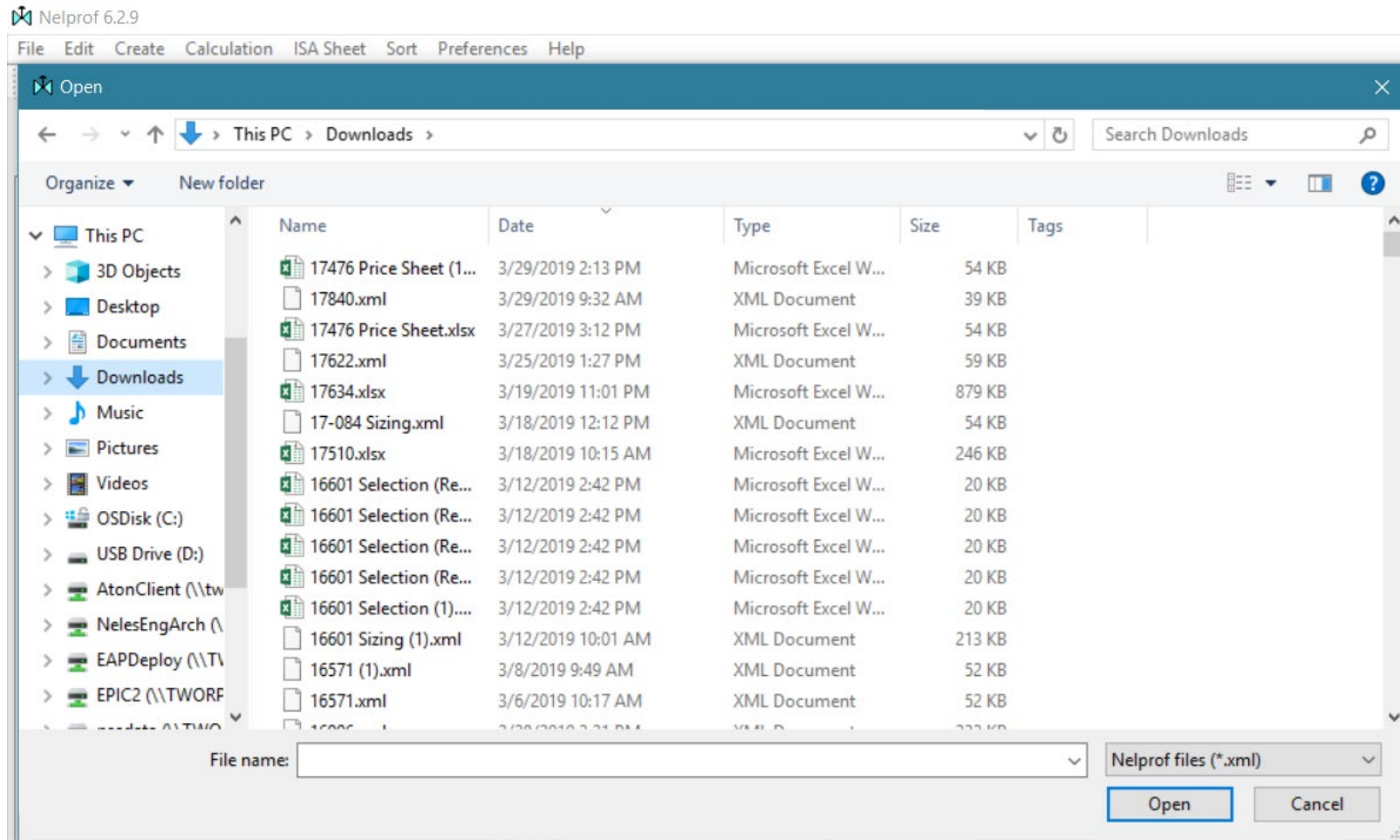
Nelprof On/Off

Open / Save a File

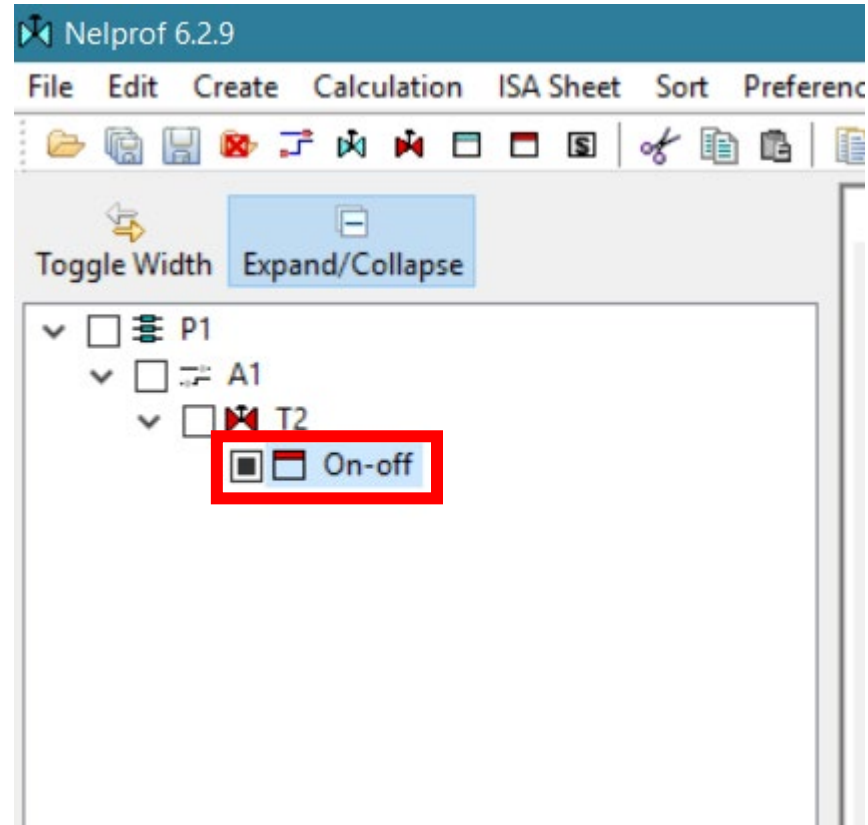


Nelprof On/Off

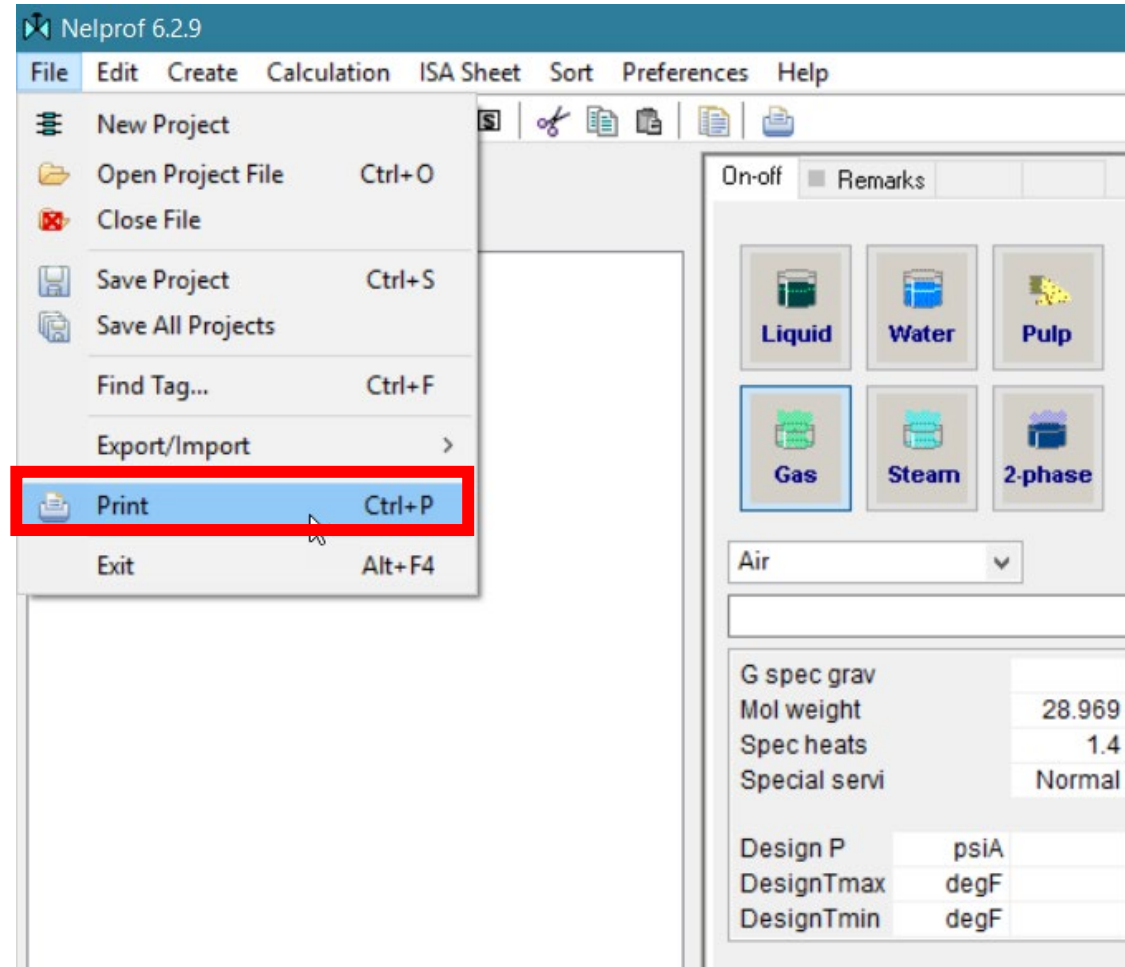
Open / Save a File



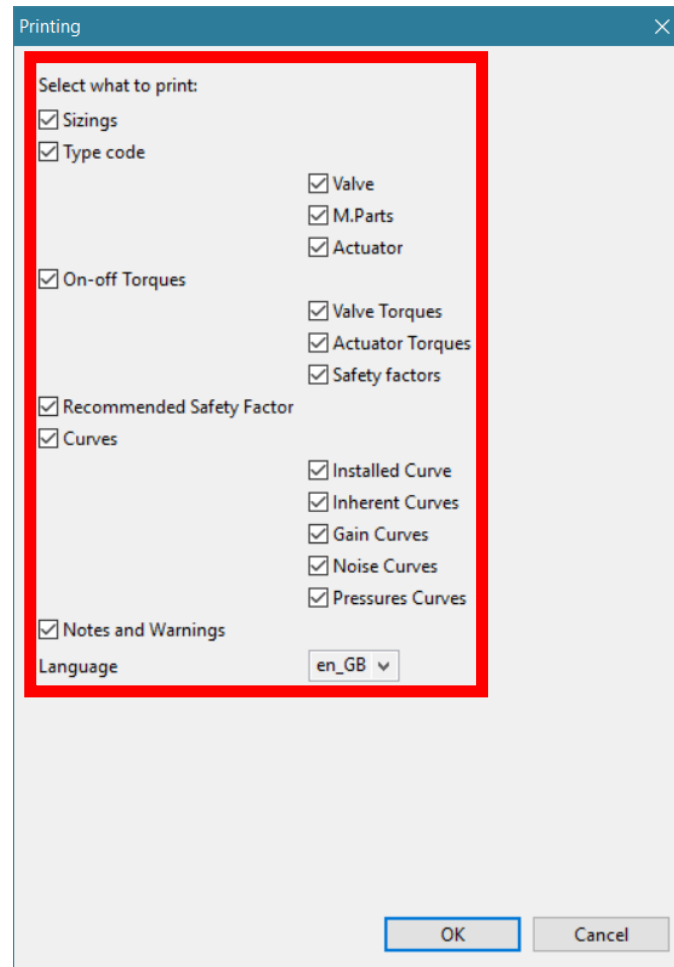
Nelprof On/Off Print to PDF



Nelprof On/Off Print to PDF



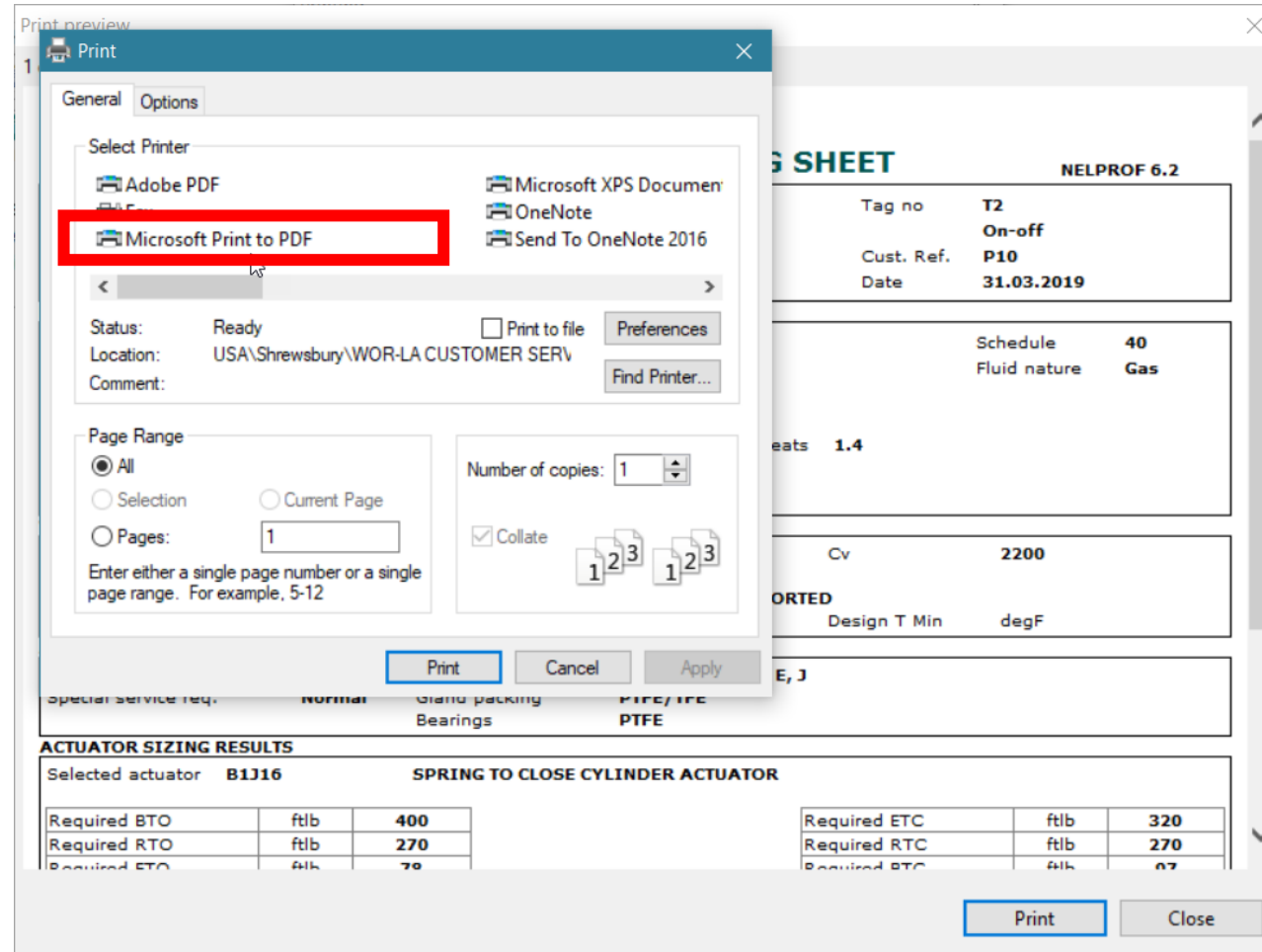
Nelprof On/Off Print to PDF



Nelprof On/Off

Print to PDF

NELES



- Q: Does the recommended Safety Factor take priority over the normal SF box?
 - A: Nelprof will use whatever safety factor is larger between the recommended safety factor from Nelprof, or the user entered safety factor.
- Q: How to size globe valve for on/off tag?
 - A: Nelprof does not have globe valves in the on/off module currently. If you do need to size a globe valve for an on/off application, you can do so in a control tag.
- Q: When will Nelprof X be available?
 - A: We hope to launch Nelprof X either later this year, or early next year. Nelprof X will be a web based version of Nelprof, that you will not have to download / install.
- Q: Does Nelprof also provide MAST values ?
 - A: Not currently. If MAST values are needed, please contact application engineering.

- Q: If customer already calculated 1.5 safety factor for ESD, multiplying design pressure with coefficient 1.5- do we size the actuator than with safety factor 1?
 - A: Yes. For example if we added a 1.5x safety factor to process conditions the customer has already added a 1.5x safety factor to would give the customer a 3x safety factor, which is not what they wanted.
- Q: What is the difference when you directly select "steam" selecting the "steam button" or select if from the medium menu?
 - A: There is no difference. You can select "steam" either way. The same is true for water.
- Q: If we do sizing in Nelprof 6.3 and Nelprof X for the same case, will we get exactly the same results?
 - A: We are constantly updating our information in Nelprof to provide the most accurate ISA factors and torques for our products. So, it is possible for sizings done in different versions of Nelprof to be slightly different.

Contact us

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