

Dendrit



Software for calculation of drinking water

Guided workflow

Dendrit



draw



edit



calculate



analyze



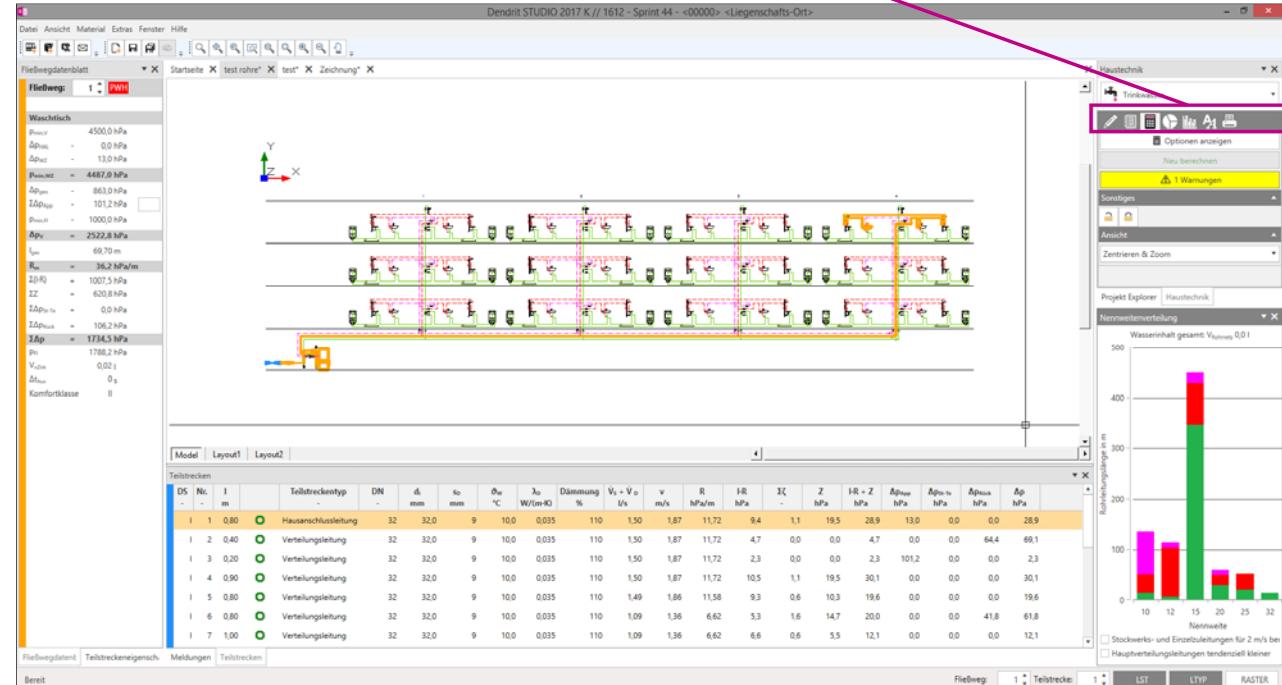
simulate



annotate



report



Generator for schematic drawings

Dendrit

- generates a calculable drawing in a few clicks

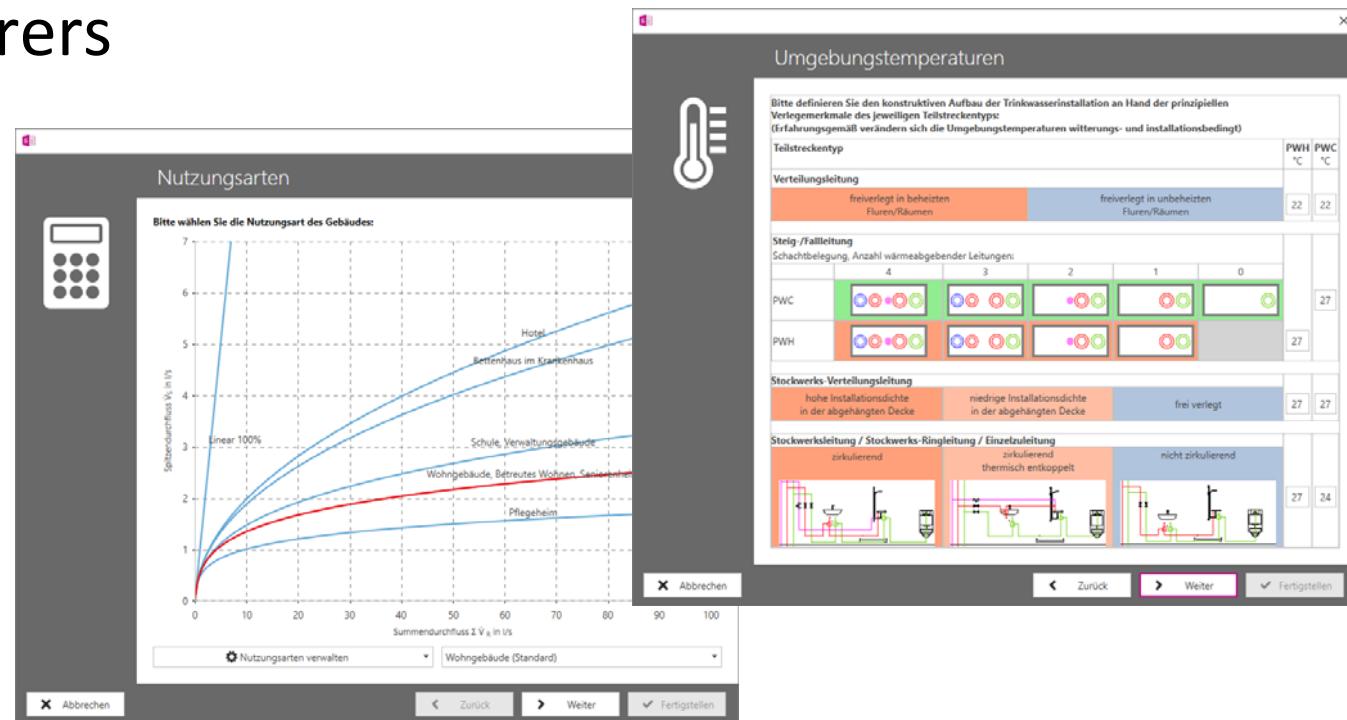


Guide for calculation parameters

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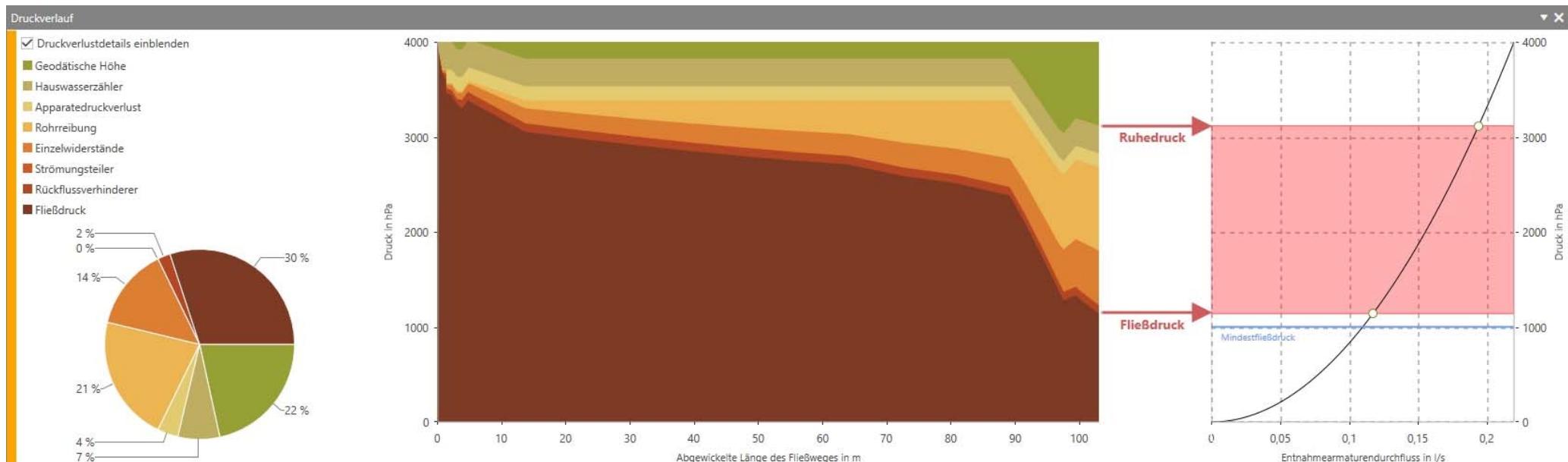


- usage of the building and simultaneity
- supply pressure of drinking water
- definition of manufacturers
 - valves
 - pipework
- ambient temperatures
 - hot water (PWH)
 - cold water (PWC)



Calculation – pressure loss

- visualization of equation of Bernoulli
- detailed information of pressure components along the pathway



Calculation – pressure loss



- list of legs
 - detailed informations of content and pressure loss
 - tooltip with reason for chosen diameter

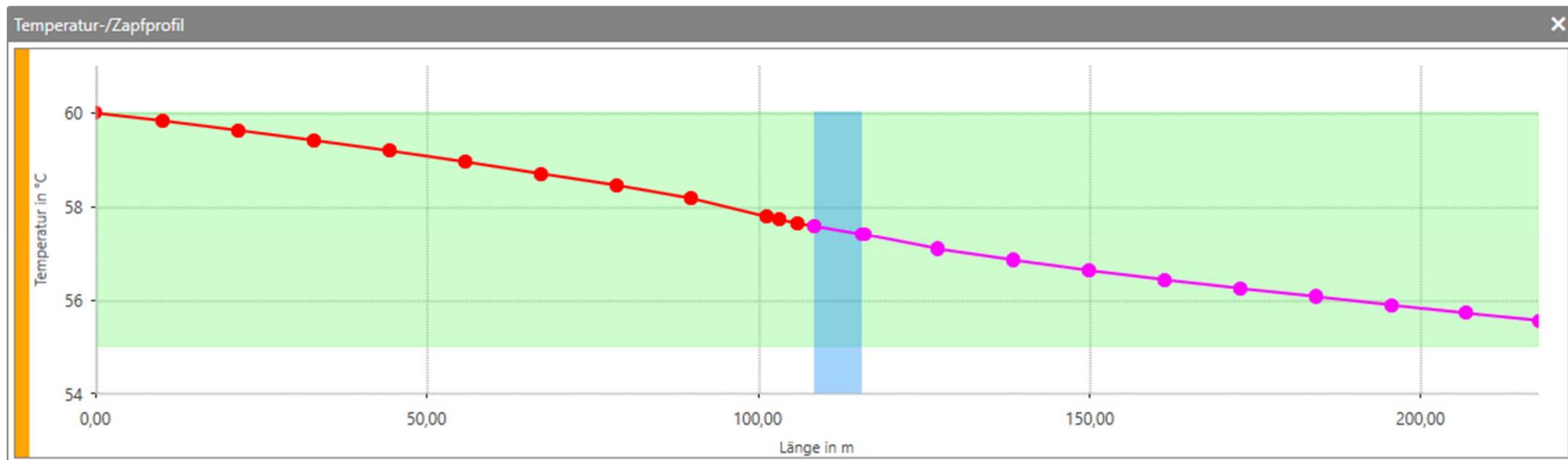
Teilstrecken																						
DS -	Nr. -	I m		Teilstreckentyp -	DN -	d _i mm	s _D mm	ϑ _w °C	λ ₀ W/(m·K)	Dämmung %	̄V _s + ̄V _b l/s	v m/s	R hPa/m	I-R hPa	Σζ -	Z hPa	I-R + Z hPa	Δp _{App} hPa	Δp _{St-Te} hPa	Δp _{Rück} hPa	Δp hPa	
1	1	0,80	○	Hausanschlussleitung	50	51,4	0	10,0	0,000	0	1,95	0,04	1,95	1,6	2,7	12,1	13,7	341,1	0,0	0,0	13,7	
1	2	0,40	○	Verteilungsleitung	50	50,0	13	10,0	0,035	11	Anz.	Bezeichnung	ζ	Σζ	0,0	0,0	0,9	0,0	0,0	33,5	34,4	
1	3	0,20	○	Verteilungsleitung	50	50,0	13	10,0	0,035	11		1 Schrägsitzventil o. Entleerung DN 50	1,5	1,5	,0	9,8	10,3	146,7	0,0	0,0	10,3	
1	4	0,90	○	Verteilungsleitung	50	50,0	13	10,0	0,035	11		1 Reduzierstück DN50/40	0,2	0,2	,4	6,8	8,8	0,0	0,0	0,0	8,8	
1	5	0,80	○	Verteilungsleitung	50	50,0	13	10,0	0,035	11		1 Reduzierstück DN50/40 (Diffusor)	0,0	0,0	,9	4,4	6,1	0,0	0,0	0,0	6,1	
1	6	0,80	○	Verteilungsleitung	40	39,0	13	10,0	0,035	11		1 Kupplung DN50	0,9	0,9	,9	10,4	13,0	0,0	0,0	26,4	39,4	
1	7	1,00	○	Verteilungsleitung	40	39,0	13	10,0	0,035	11		1 Kupplung DN50	0,1	0,1	,8	4,4	7,6	0,0	0,0	0,0	7,6	
1	8	0,20	○	Verteilungsleitung	40	39,0	13	10,0	0,035	11		Summe Σζ		2,7	,0	10,9	11,6	0,0	0,0	0,0	11,6	
1	9	10,20	○	Verteilungsleitung	40	39,0	44	60,0	0,035	107		1,25	1,04	2,57	26,2	3,0	16,0	42,3	0,0	0,0	0,0	42,3
1	10	11,40	○	Verteilungsleitung	32	32,0	32	60,0	0,035	104		1,20	1,49	6,20	70,7	2,7	29,5	100,3	0,0	0,0	0,0	100,3
1	11	11,40	○	Verteilungsleitung	32	32,0	32	60,0	0,035	104		1,15	1,43	5,71	65,1	2,1	21,0	86,1	0,0	0,0	0,0	86,1
1	12	11,40	○	Verteilungsleitung	32	32,0	32	60,0	0,035	104		1,09	1,35	5,18	59,1	2,1	18,8	77,9	0,0	0,0	0,0	77,9
1	13	11,40	○	Verteilungsleitung	32	32,0	32	60,0	0,035	104		1,02	1,26	4,61	52,5	2,1	16,5	69,0	0,0	0,0	0,0	69,0
1	14	11,40	○	Verteilungsleitung	22	22,0	22	60,0	0,025	104		0,04	1,16	2,07	45,2	2,1	14,0	50,2	0,0	0,0	0,0	50,2

Calculation – circulationsystems

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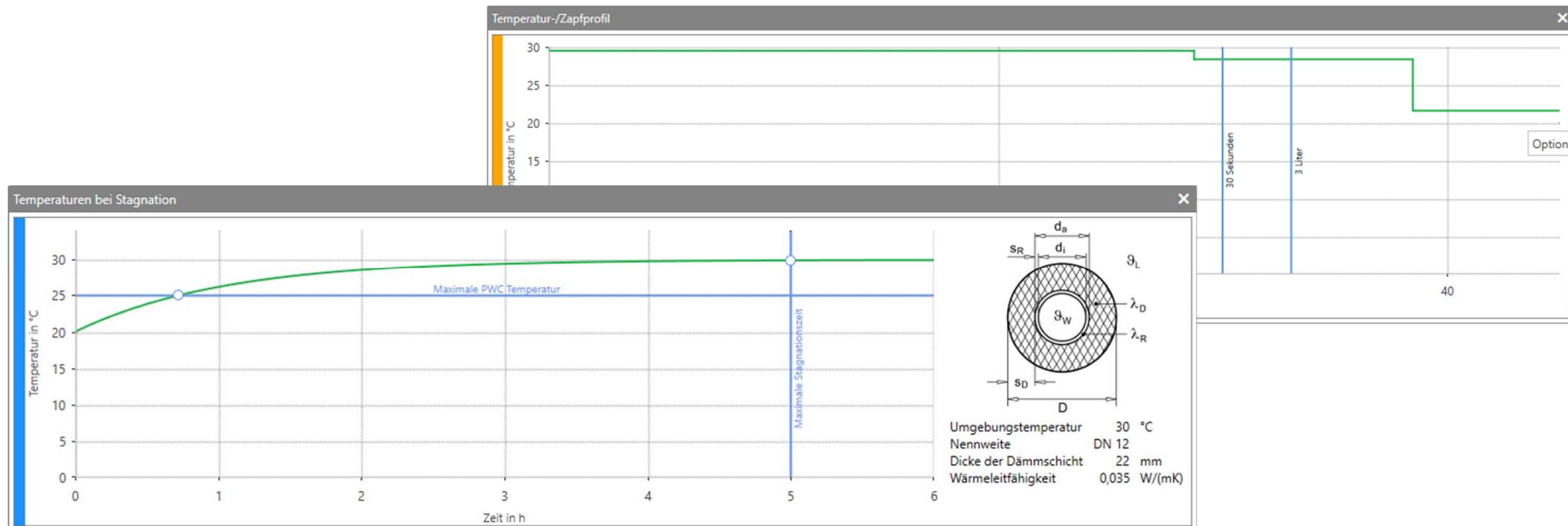
- diagramm of temperature in circulationsystems
 - temperature loss in every leg with bidirectional connection to drawing



Calculation – cold water temperature

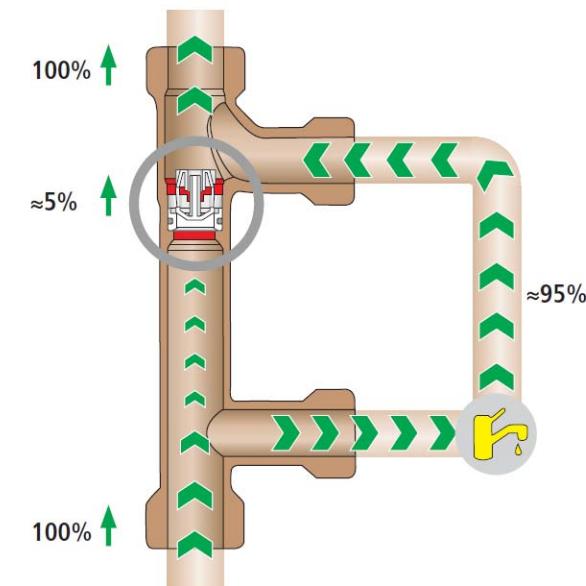
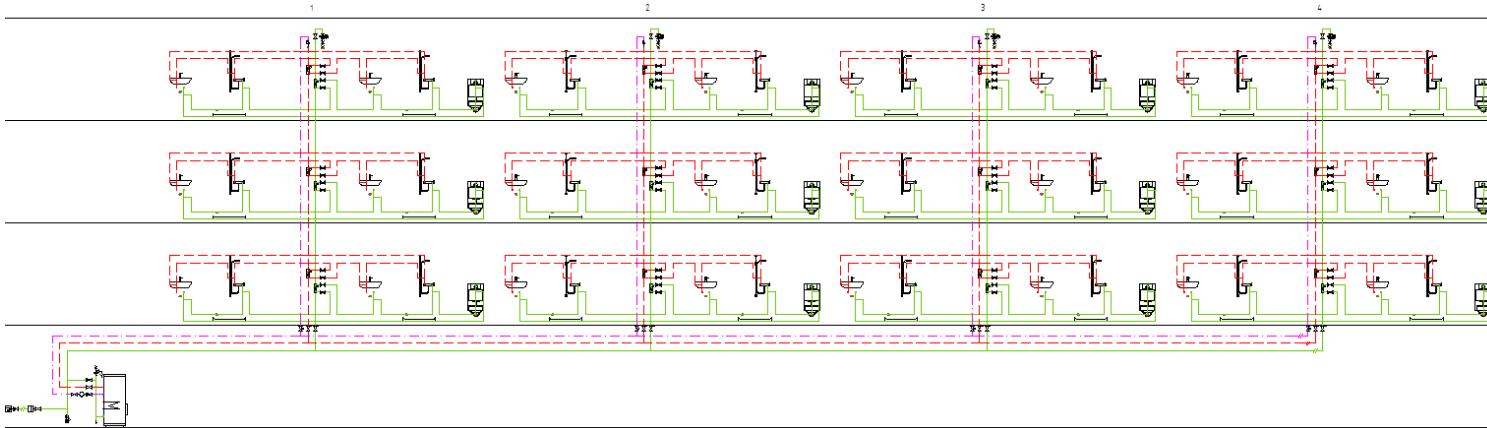
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- calculation of temperatures while stagnation
- calculation of estimated tapping profile after stagnation



Calculation – calculation of loops

- calculation of loop systems and KEMPER flowsplitter with a modified calculation of Hardy-Cross
- available for hot and cold water

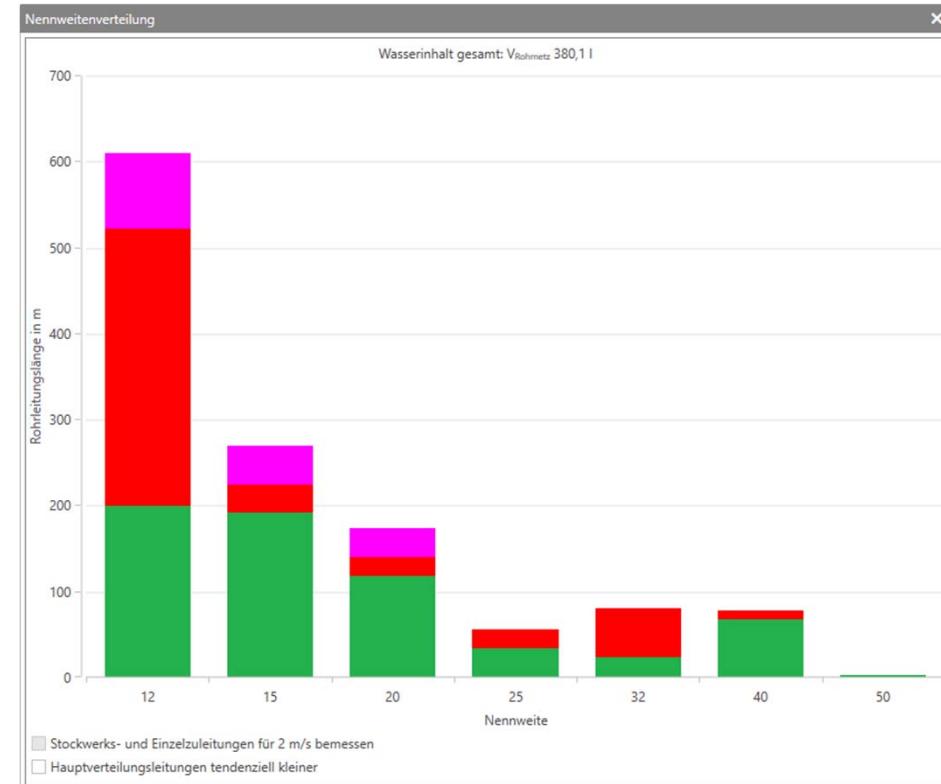


Calculation – summary

- statistics of diameters
- volume of network
 - non circulating volume
- velocity min-max
- connections and fittings

Statistik Druckstufe 1

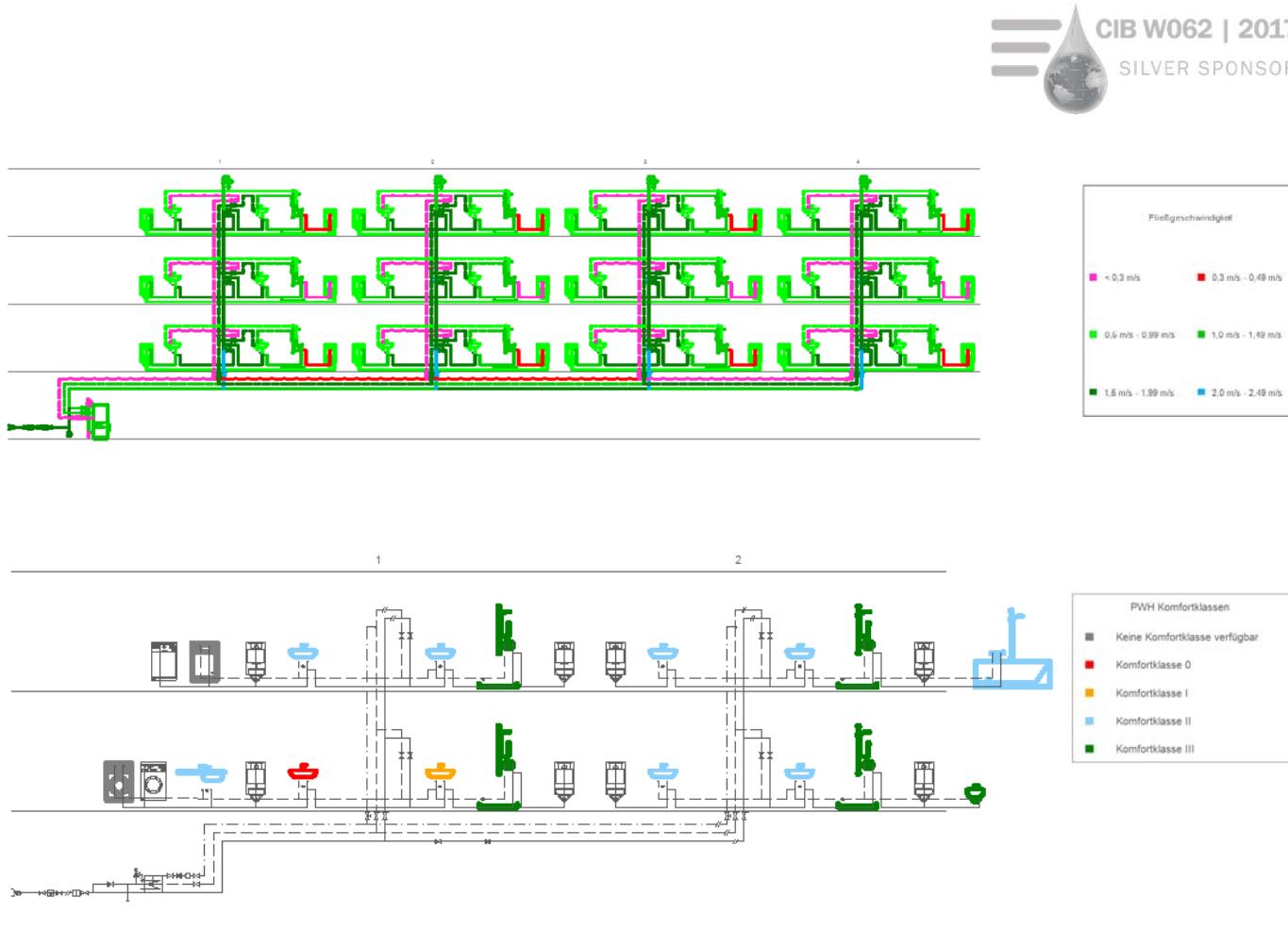
Bezeichnung	Trinkwasser					Einheit
	kalt PWC	warm PWH	Zirkulation PWH-C	Spül PWC-AB	Gesamt	
Fließwege	91	48			139	Stck
Zirkulationskreise			12		12	Stck
Teilstrecken	199	108	24		331	Stck
Leitungslänge	421,5	272,8	129,4		823,7	m
Minimale Nennweite	DN 12	DN 12	DN 12			
Maximale Nennweite	DN 32	DN 32	DN 20			
Wasserinhalt	107,7	63,6	22,5		193,9	l
Innere Oberfläche	23,2	14,1	5,9		43,2	m ²
Wasserinhalt Einzelzuleitungen	2,9	1,3			4,2	l
Nichtzirkulierendes Leitungsvolumen		1,3			1,3	l
Minimale Fließgeschwindigkeit	0,10	0,53	0,05			m/s
Maximale Fließgeschwindigkeit	2,32	2,06	0,38			m/s
Form- und Verbindungsstücke	322	167	83		560	Stck
Absperr- und Reguliventile	36	17	18		71	Stck
Minimale Dämmstärke	0	100	104			%



Analyzes

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- comfort classes
- velocity
- diameter
- temperature of circulation
- materials
- hygiene hot water
- hygiene cold water
- and many more...

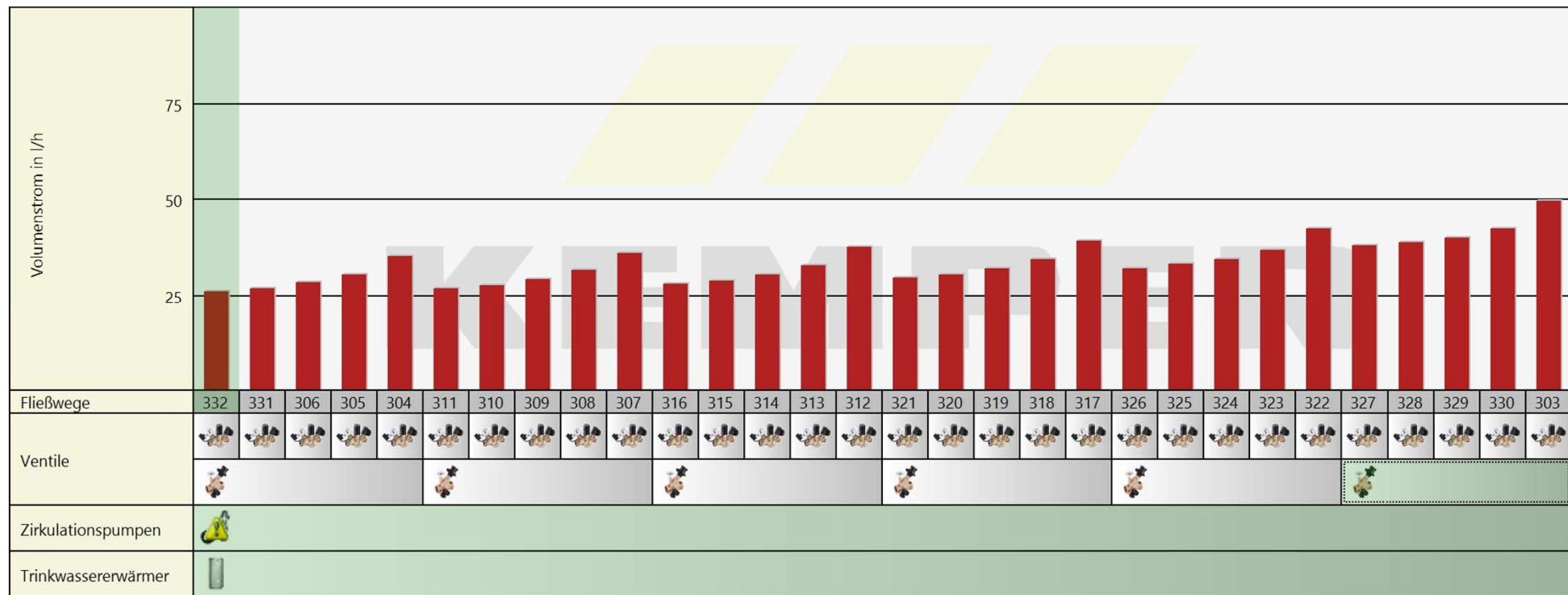


Simulation

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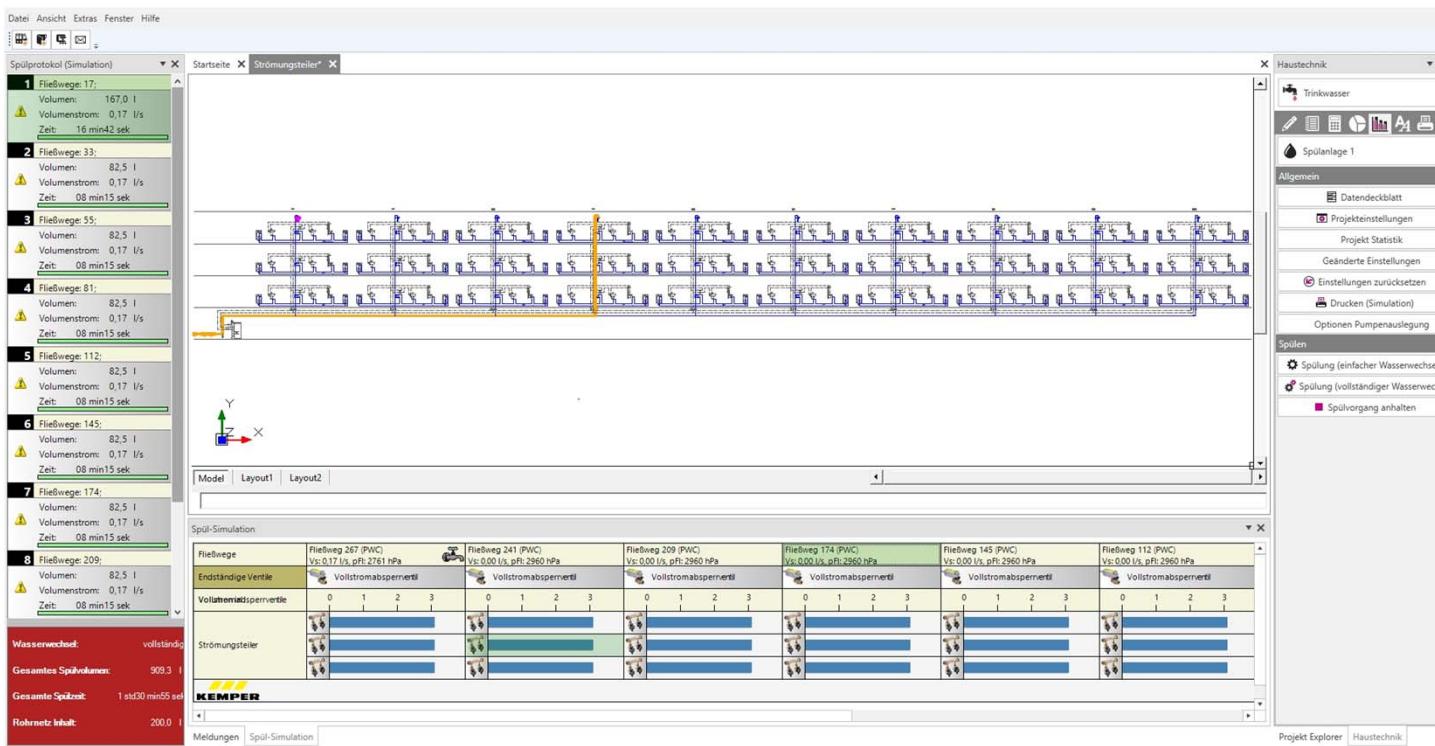
- physical simulation of circulationsystems
- real manufacturer datas of Kemper, Grundfos, Wilo and Biral



Simulation

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- cold water hygiene flushing
- simulation of flushing times and volume



Annotation

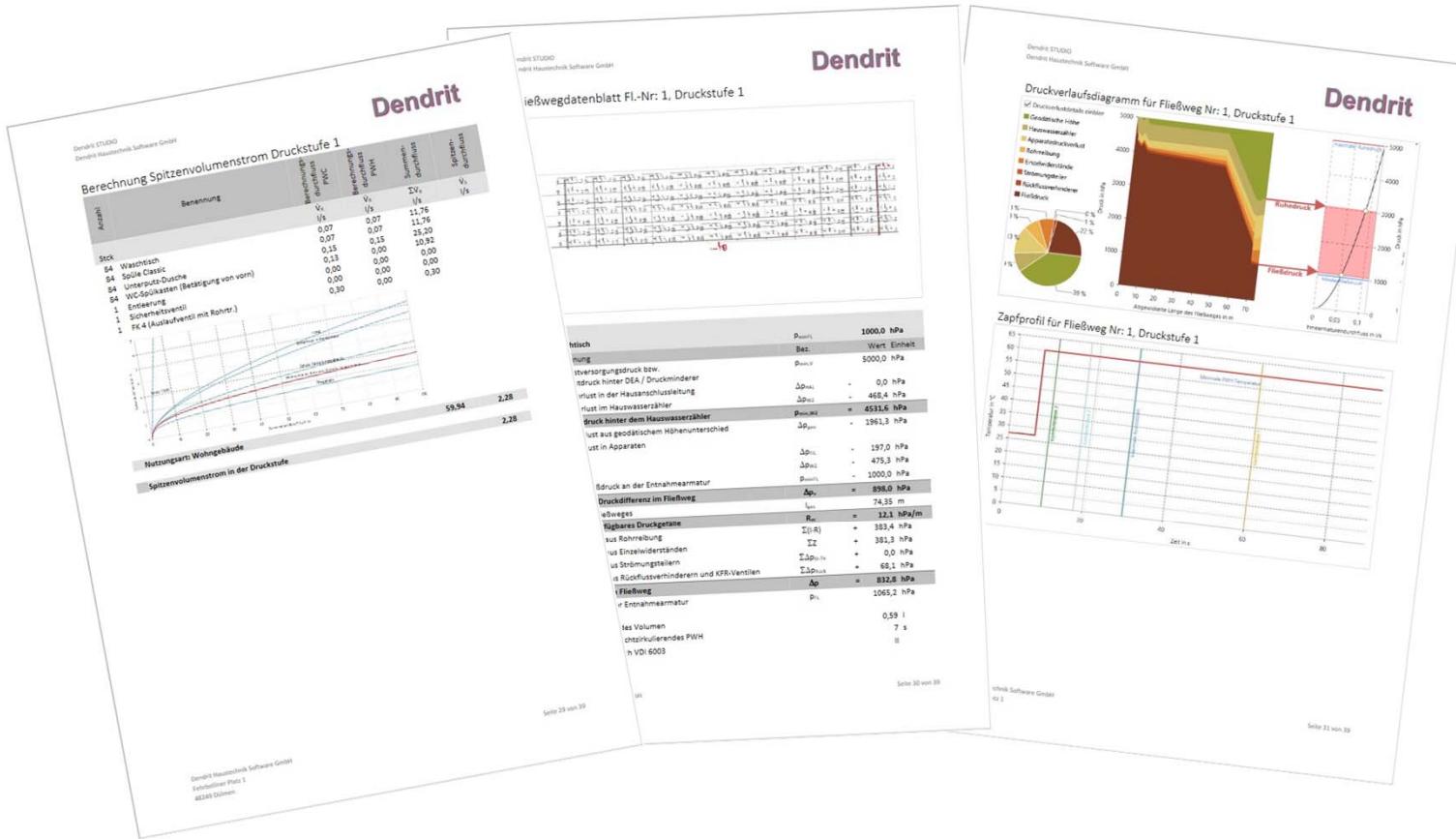
- automatic annotation of the whole drawing

DN	DN12 — — —
Da x S	15*1 — — —
EN 806	PWH 12 — — —
control of leg definition	TS:405/DN12 2,70 m/2x90° — — —



Reporting

■ example of hydraulic report



■ calculation of accessories

KEMPER WESER Freistrom-Absperrventil RG
mit Entleerstopfen G1/4 AG DN20



1x

KEMPER Dämmsschale universell Schrägsitz
inkl. Verschlussclipse, DN20



2x

KEMPER RG-Pressverschraubung MAPRESS
flachdichtend DN20/22mm



1x

KEMPER Entleerventil, RG
AG, G1/4, DN8



Bill of material

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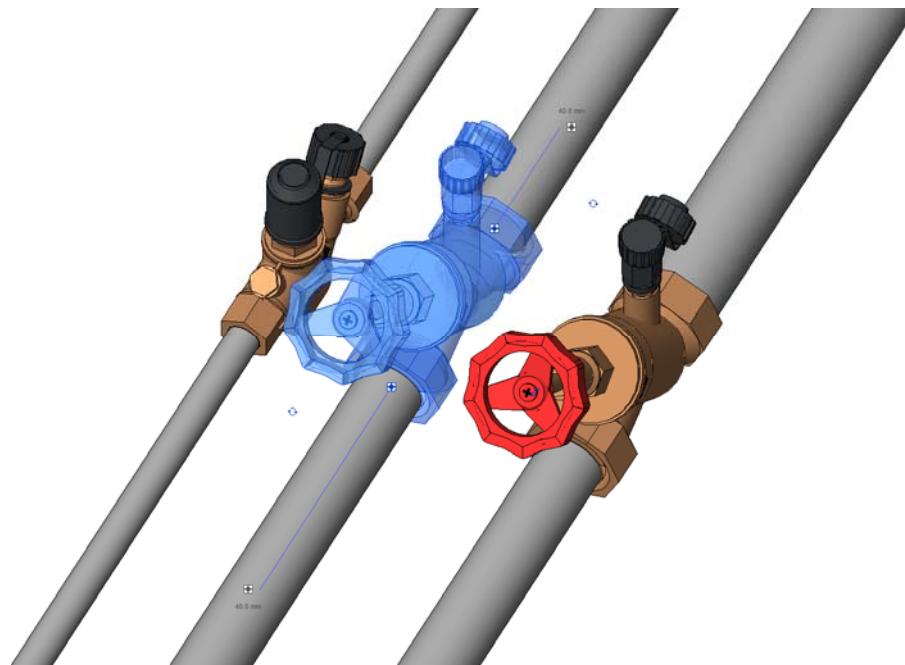
- example: bill of material



BIM ready

Dendrit

- integrated products are BIM ready with AutoDeskt Revit plug-in Dendrit *GENERATION*
- supports two level of details
- integrated product search



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Your software for drinking water calculation