

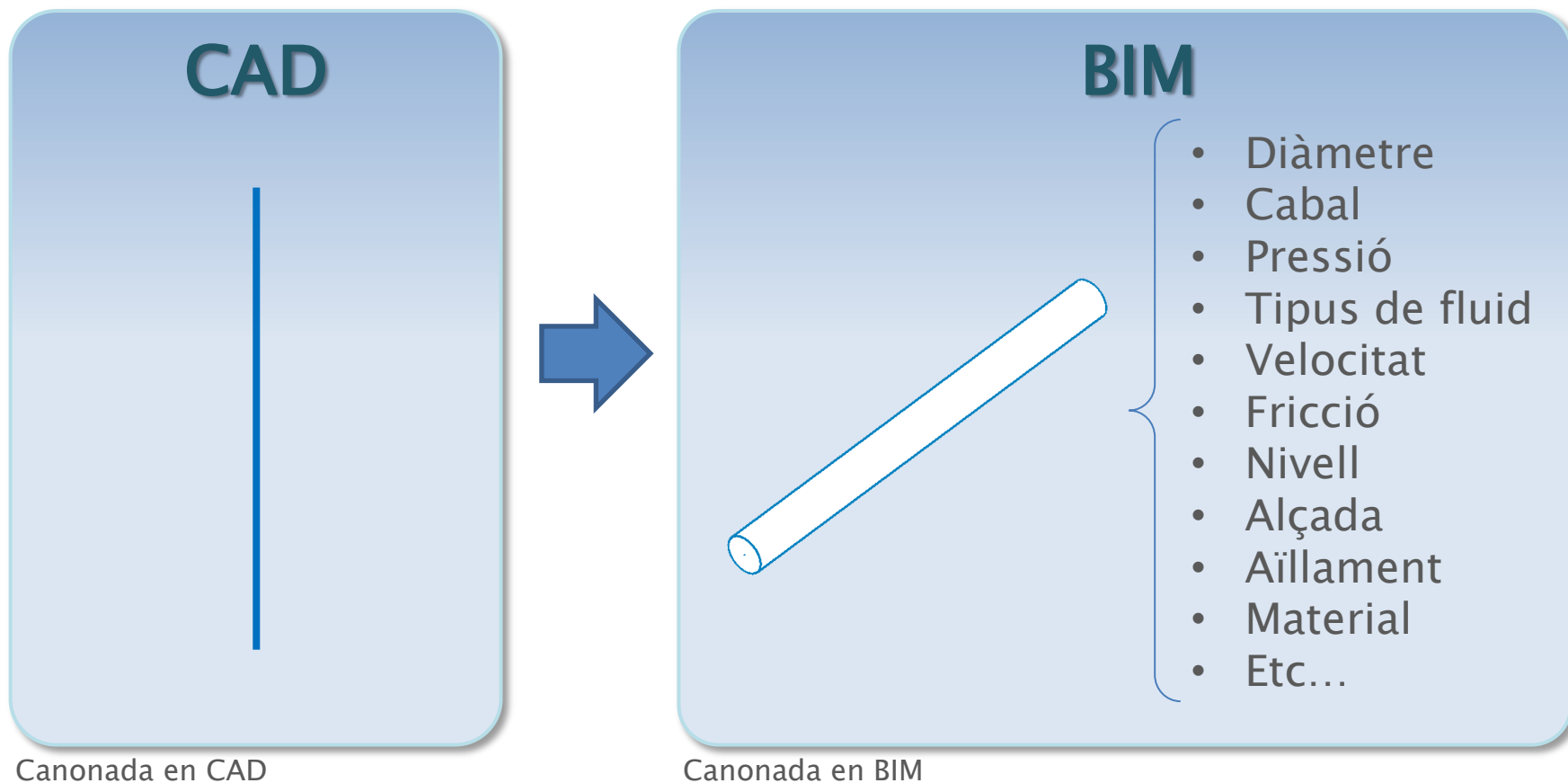
IMPACTE DEL BIM ALS PROJECTES D'INSTAL·LACIONS

Jordi Cucurull – Enginyer Industrial

EL CONCEPTE DEL BIM

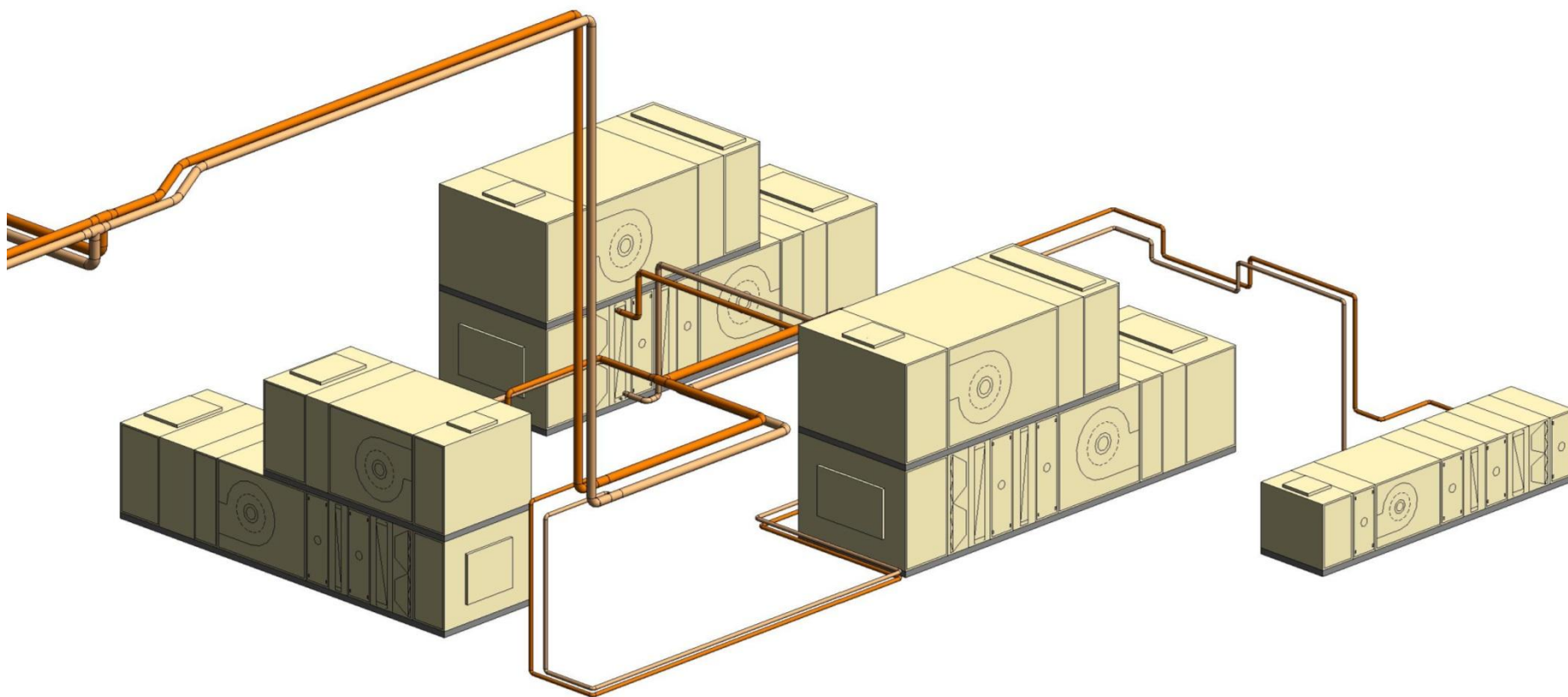
BIM és el conjunt de processos per **crear**, **estandarditzar** i **gestionar** tota la informació d'un projecte continguda en un model.

Exemple d'una canonada en BIM vs CAD:



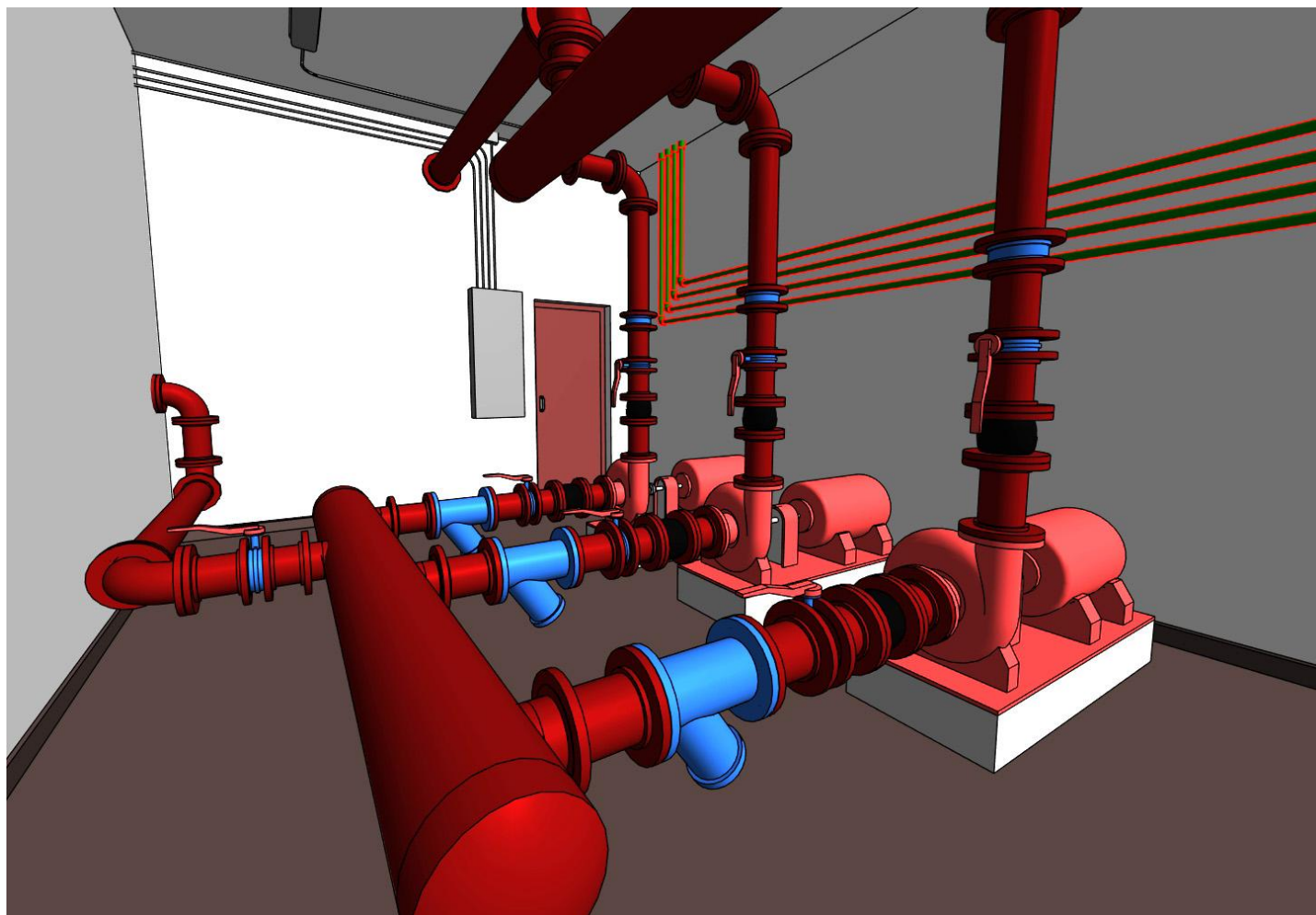
AVANTATGES DEL BIM A LES INSTAL·LACIONS

- Modelat tridimensional, control geomètric dels elements



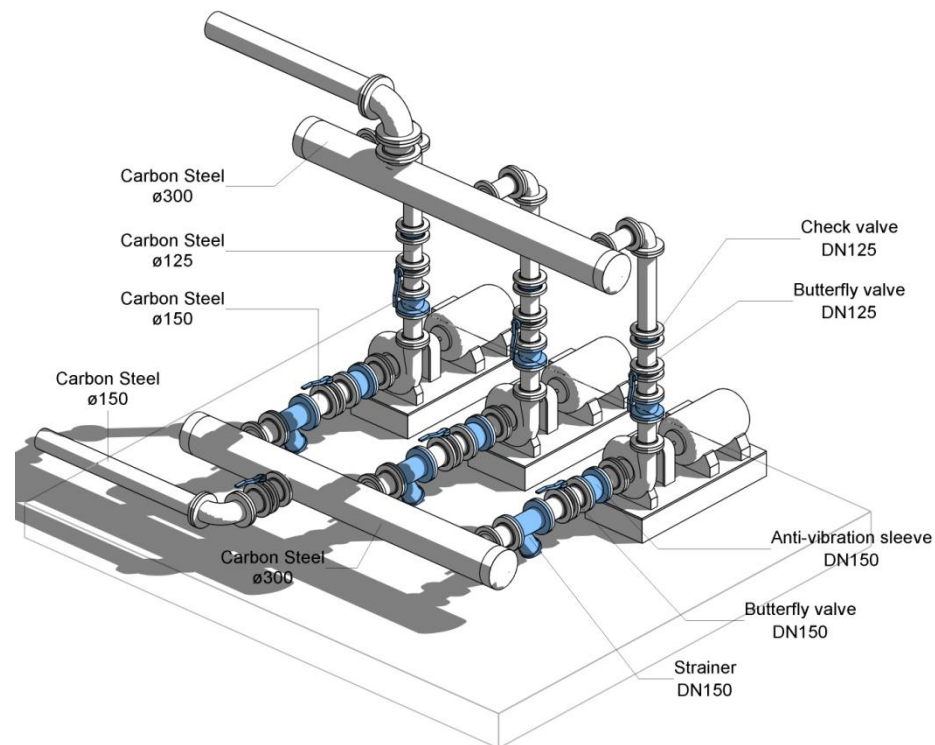
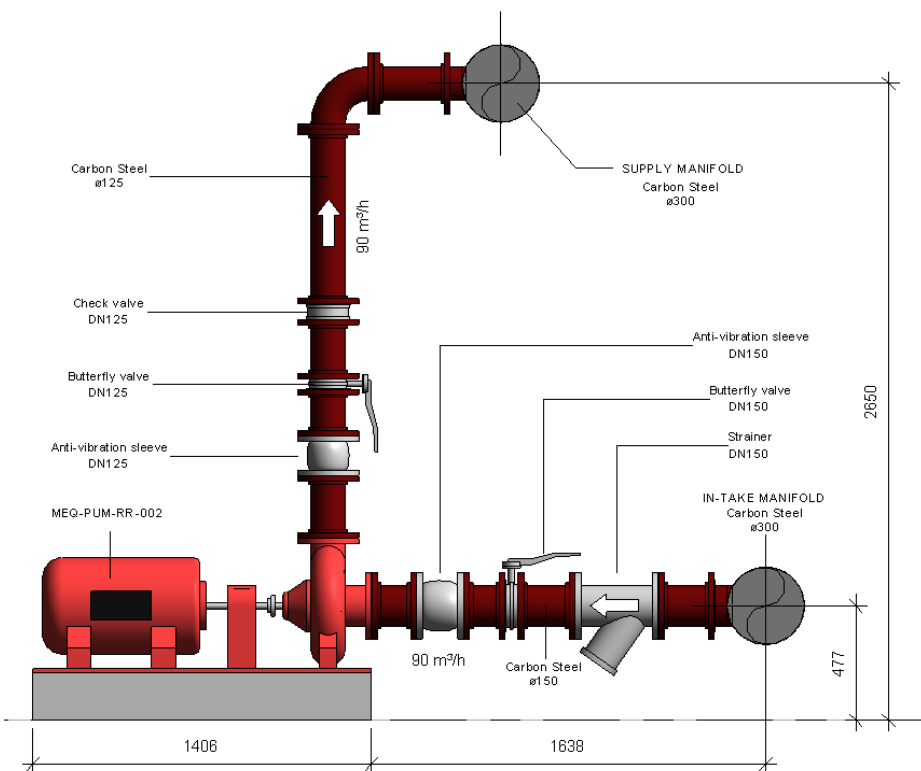
AVANTATGES DEL BIM A LES INSTAL·LACIONS

- Modelat tridimensional, control geomètric dels elements



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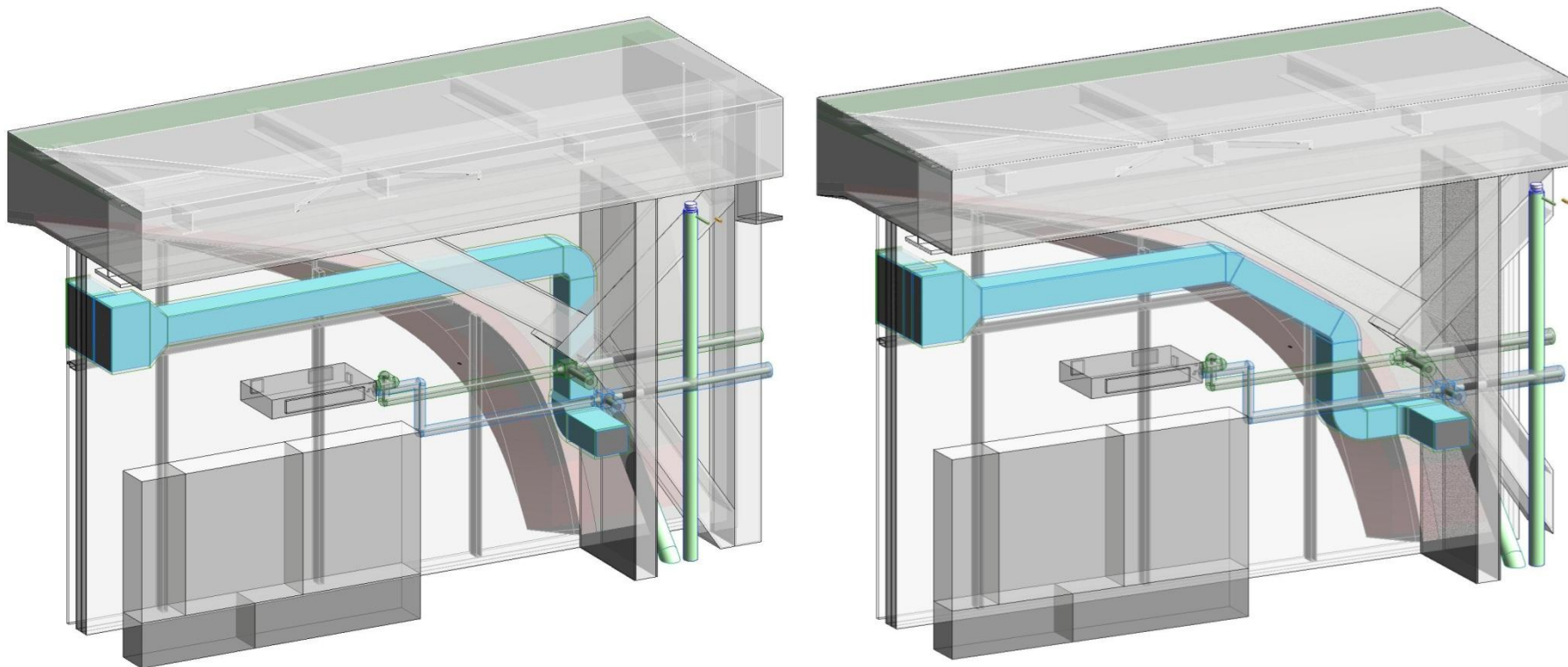
- Optimització dels amidaments i del pressupost

PIPE ELBOWS				
Junction	Material	Angle	Size	Count
Flanged	CST	90.00°	ø100-ø100	1
Flanged	CST	90.00°	ø150-ø150	1
Flanged	GST	90.00°	ø100-ø100	1
Flanged	GST	90.00°	ø150-ø150	1
Flanged	SST	90.00°	ø100-ø100	1
Flanged	SST	90.00°	ø150-ø150	1
Fusion	CPVC	90.00°	ø90-ø90	1
Fusion	CPVC	90.00°	ø125-ø125	1
Fusion	PE	90.00°	ø90-ø90	1
Fusion	PE	90.00°	ø125-ø125	1
Fusion	PPR	90.00°	ø110-ø110	2
Fusion	PPR	90.00°	ø125-ø125	2
Gluing	PVC	45.00°	ø75-ø75	1
Gluing	PVC	45.00°	ø125-ø125	1
Grooved	CST	45.00°	ø150-ø150	1
Grooved	CST	90.00°	ø100-ø100	1
Grooved	CST	90.00°	ø150-ø150	1
Push fit	BRASS	90.00°	ø50-ø50	2
Soldered	CU	90.00°	ø28-ø28	1
Soldered	CU	90.00°	ø42-ø42	1
Welded	CST	90.00°	ø50-ø50	1
Welded	CST	90.00°	ø60-ø60	4
Welded	CST	90.00°	ø90-ø90	1
Welded	GST	90.00°	ø50-ø50	1
Welded	GST	90.00°	ø80-ø80	4
Welded	GST	90.00°	ø90-ø90	1
Welded	SST	90.00°	ø50-ø50	1
Welded	SST	90.00°	ø80-ø80	4
Welded	SST	90.00°	ø90-ø90	1

Pipe Accessory Schedule						
Valve type	Valve material	Junction	Action	Nominal diameter	Count	OmniClass Title
Anti-vibration sleeve	Rubber	Flanged	-	65	1	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	80	1	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	90	1	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	100	1	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	125	4	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	150	4	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	200	1	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	250	1	Valves for Liquid Services
Anti-vibration sleeve	Rubber	Flanged	-	300	1	Valves for Liquid Services
Ball valve	Brass	Threaded	Handle	15	1	Valves for Liquid Services
Ball valve	Brass	Threaded	Handle	20	1	Valves for Liquid Services
Ball valve	Brass	Threaded	Handle	25	1	Valves for Liquid Services
Ball valve	Brass	Threaded	Handle	32	1	Valves for Liquid Services
Ball valve	Brass	Threaded	Handle	40	1	Valves for Liquid Services
Ball valve	Brass	Threaded	Handle	50	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	65	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	80	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	90	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	100	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	125	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	150	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	200	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	250	1	Valves for Liquid Services
Butterfly valve	Steel	Flanged	Handle	300	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	65	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	80	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	90	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	100	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	125	4	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	150	5	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	200	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	250	1	Valves for Liquid Services
Butterfly valve	Steel	Free	Handle	300	2	Valves for Liquid Services
Check valve	Brass	Threaded	-	15	1	Valves for Liquid Services
Check valve	Brass	Threaded	-	20	1	Valves for Liquid Services
Check valve	Brass	Threaded	-	25	1	Valves for Liquid Services
Check valve	Brass	Threaded	-	32	1	Valves for Liquid Services
Check valve	Brass	Threaded	-	40	1	Valves for Liquid Services
Check valve	Brass	Threaded	-	50	1	Valves for Liquid Services
Check valve	Steel	Flanged	-	65	1	Non-Return Valves for Liquid Services
Check valve	Steel	Flanged	-	80	1	Non-Return Valves for Liquid Services

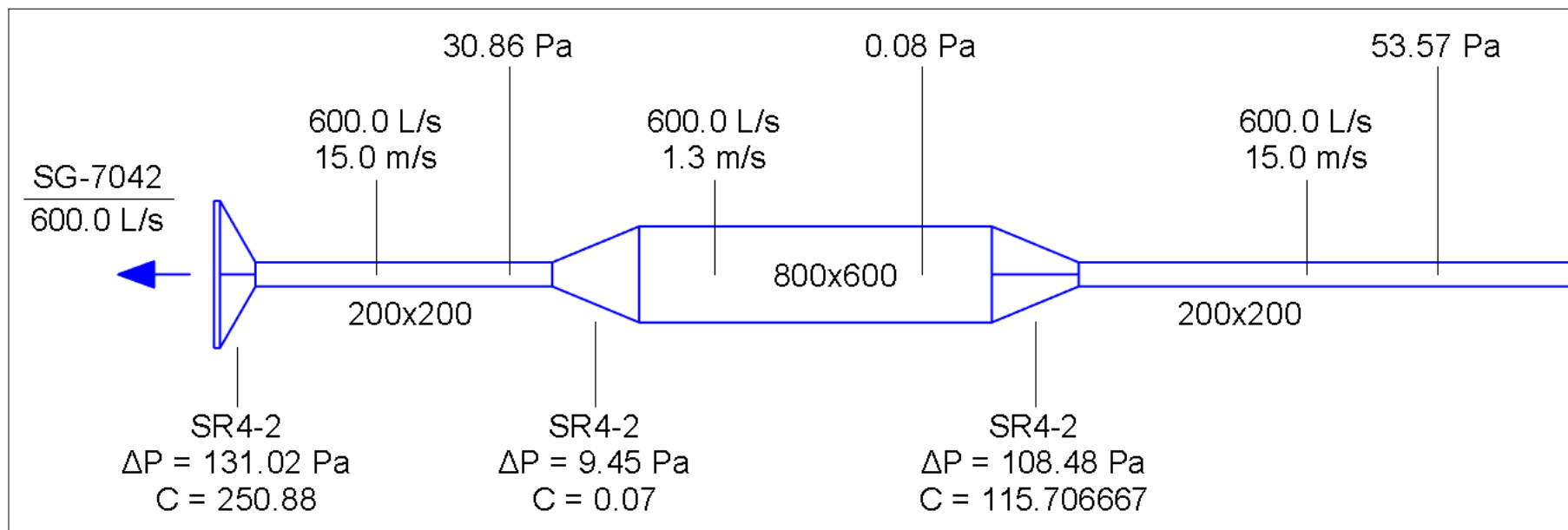
AVANTATGES DEL BIM A LES INSTAL·LACIONS

- Coordinació entre disciplines ARC, STR i MEP



AVANTATGES DEL BIM A LES INSTAL·LACIONS

- Càlculs



Càlcul de conductes segons ASHRAE

ASPECTES A TENIR EN COMPTE

- Criteris d'estandardització
- Criteris del modelatge
- Criteris de representació gràfica (colors, línies, textos, etc...)
- Criteris d'etiquetatge
- Definició de sistemes
- Definició de fluids
- Configuració de canonades, conductes, safates i tubs
- Materials
- Adequació de la feina en els documents d'entrega

ASPECTES A TENIR EN COMPTE

Exemple de plantilla de treball MEP

Properties

Pipe Types
PEX - SDR 9 (Push fit)

- CST - SCH 40 (Flanged)
- CST - SCH 40 (Grooved)
- CST - SCH 40 (Welded)
- CU - EN 1057 - R250 (Soldered)
- GST - SCH 40 (Flanged)
- GST - SCH 40 (Welded)
- PE - SDR 7.4 (Fusion)
- PEX - SDR 9 (Push fit)
- PPR - SDR 7.4 (Fusion)
- PVC - B (Gluing)

Most Recently Used Types

Pipe Types : CU - EN 1057 - R250 (Soldered)

Pipe Types : PPR - SDR 7.4 (Fusion)

Pipe Types : PE - SDR 7.4 (Fusion)

Pipe Types : PEX - SDR 9 (Push fit)

Pipe Types : CST - SCH 40 (Flanged)

Pipe Types : CST - SCH 40 (Welded)

Pipe Types : CST - SCH 40 (Grooved)

Length : 1586.9

Identity Data

Diagram Labels:

- CST - SCH 40 (Welded)
- GST - SCH 40 (Welded)
- SST - 5S (Welded)
- PVC - B (Gluing)
- CST - SCH 40 (Flanged)
- GST - SCH 40 (Flanged)
- SST - 5S (Flanged)
- CU - EN 1057 - R250 (Soldered)
- PPR - SDR 7.4 (Fusion)
- PE - SDR 7.4 (Fusion)
- CPVC - SCH 40 (Fusion)
- CST - SCH 40 (Grooved)

Legend:

- FW
- HW
- HW_R
- DW
- GW
- RW
- SW
- HWS
- HWR
- CWS
- CWR
- VRF_GAS
- VRF_LIQ
- FP_WET
- FP_DRY
- FP_PRE
- FP_OTHER

CONCLUSIÓ

- El procés de modelatge és més complex que la delineació
- Es requereix una major qualificació dels operadors
- El disseny i el modelatge han de transcórrer en paral·lel
- És essencial establir un pla d'execució BIM prèviament
- Implica més coordinació entre disciplines
- Gran control dels elements modelats
- Aplicació en fase de projecte, construcció i operació/manteniment
- Projectes més definits i de qualitat superior respecte al CAD

Moltes gràcies per la vostra atenció!