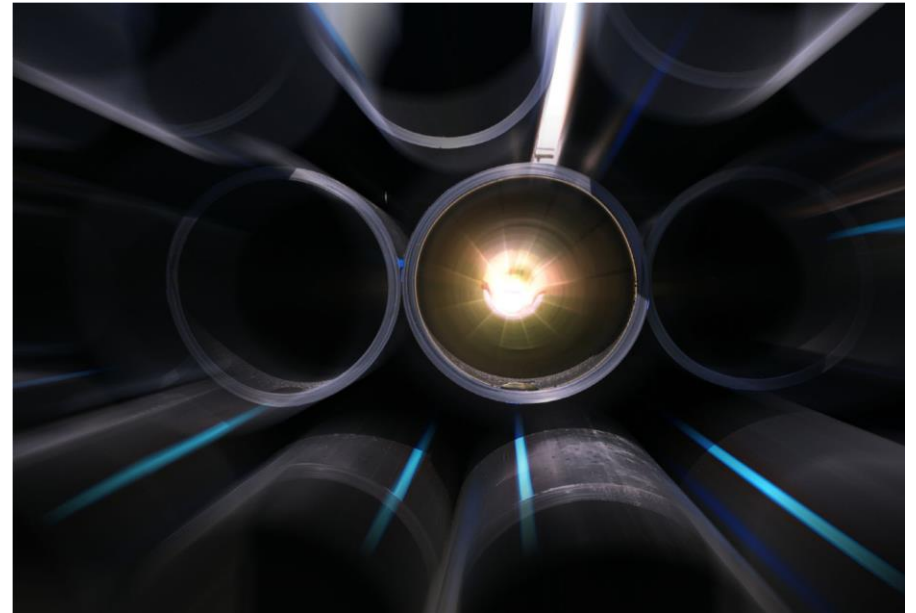




Vacuum Insulated Tubing





Vacuum Insulated Tubing (VIT)

VIT comprises of two concentric tubing strings. The thin layer of air found between the tubulars is removed; creating a vacuum layer that is difficult for heat to travel across. Therefore, VIT significantly reduces the amount of heat a well loses to its surroundings above the bitumen-bearing zone.

Vacuum Insulated tubing (VIT) reduces heat loss in steam assisted gravity drainage (SAGD) operations, reducing steam consumption; therefore making wells more energy, time and cost efficient.

In SAGD operations, steam is injected into the ground to heat the bitumen, increasing its mobility so it can be extracted through a producer well. Both wells must be heated prior to use – a process that can take up to five months. As steam travels down the well to the bitumen-bearing zone, it loses heat. Frequently additional steam is injected to make up for this heat loss, but Vacuum Insulating Tubing (VIT) significantly reduces the need for adding additional steam, in turn reducing the consumption of water and natural gas.

Benefits



By reducing heat loss, significantly less natural gas is needed to heat the water involved in SAGD operations. This reduces greenhouse gas emissions. Additionally, because less steam is needed to soften the bitumen, the quantity of water used is also reduced. Research suggests, that wells equipped with VIT may need as little as 75 days of “pre-heating,” saving time, water and fuel required for wells to begin production.

- Reduce Operational Costs
- Increase Operational Safety
- Reduce Impact to Surroundings
- Environmentally Friendly

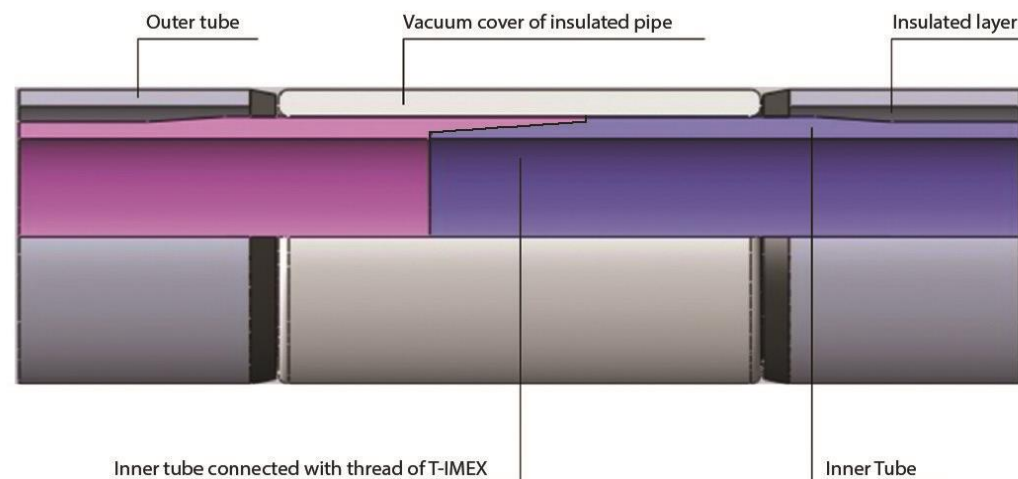
New Premium VIT

Unlike conventional VIT, Imex Canada’s new premium VIT has only 1 leak path, which further reduces heat loss. The simple running procedure and

durability will save you time and money. With premium VIT, the connection is made on the inside tube with our semi premium T – Imex connection. Our proprietary stainless steel exterior cover provides you with a flush OD and a reduction in heat loss.

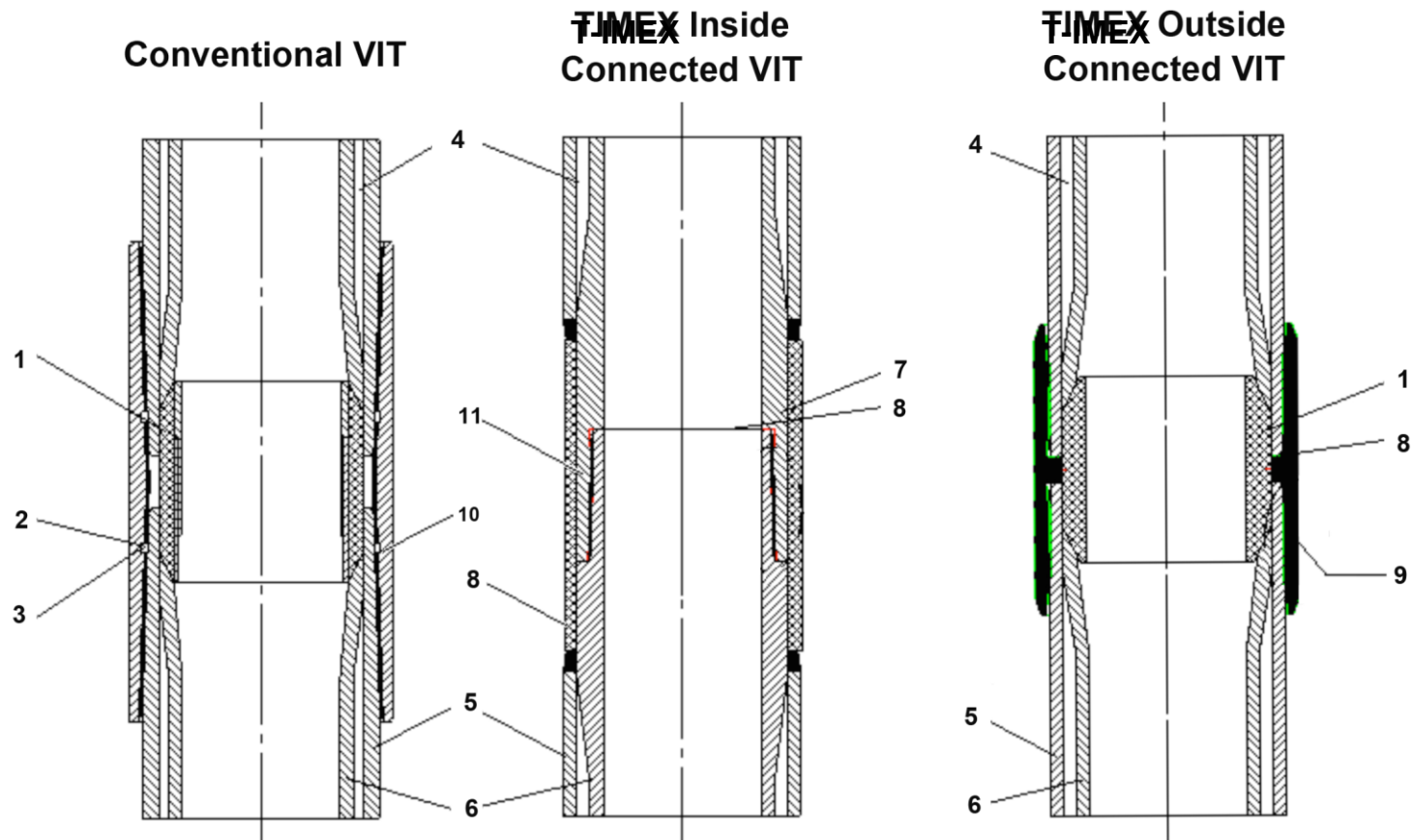
- Flush OD/ID
- Outside cover up to 1000 degreesC
- Insulation material: Aluminum (GB 3198-1996) and glass wool (GB8624-2006).
- Running Depth to 3500m
- K Factor: E Grade $0.006 > \lambda \geq 0.002$

T-IMEX



Comparison/Benefit Diagrams

1. Inside insulation Sleeve
2. Seal ring
3. Seal groove
4. Vacuum Insulated Annulus
5. Outer tube
6. Inner tube
7. Vacuum Sleeve Connection Insulation
8. Shoulder
9. **TIMEX** Coupling
10. Conventional Coupling
11. Upset **TIMEX** Integral Connection



	Conventional VIT	TIMEX Inside Conneced VIT	TIMEX Outside Conneced VIT
Heat Insulation	Low	High	Moderate
Installation of VIT in Well	Slow	Fast	Fast
Torque Resistance	Low	High	High
Leak Paths	2	1	2
Connection Heat Insulation	Poor	Excellent	Average
Torque Shoulder	No	2	1
Running Procedure	Tedious	Simple	Average
Durability	Poor	Excellent	Good
Running Speed	Slow	Fast	Average
Total Installed Cost	High	Low	Average
Risks	High	Low	Average
Overall Comparison	Worst Conventional	Best	Good

IMEX CANADA INC. VIT

Parameter	Model						
	178 x 124	139 x 101	139 x 88	114 x 76	114 x 62	88 x 50	73 x 40
Grade of Insulating	D E	D E		D E		D E	
Length (m)	9.0 - 10.0						
Weight (Kg)	64.24	42.04	40.7	32	28	21	15
Connecting Thread	7” API/Premium	5 1/2’ API/Premium	5 1/2” API/Premium	4 1/2” API/Premium		3 1/2” API/Premium	2 7/8” API/Premium
Outer Tube OD (mm)	177.8	139.7	139.7	114.3		88.9	73
Inner Tube ID (mm)	124.26	101.6	88	76	62	50.6	40.9
Coupling OD (mm)	152	154	154	132		108	88.9
Running Depth (m)		3600					

Insulating grade	B	C	D	E
Apparent k-factor (λ)(W/m.°C)	$0.06 > \lambda \geq 0.04$	$0.04 > \lambda \geq 0.02$	$0.02 > \lambda \geq 0.006$	$0.006 > \lambda \geq 0.002$

Insulating Grade of VIT

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