

SINTEF Energy Research - experience

- SINTEF started the first studies with flowline heating in 1987
- Qualified induction heating in 1991. (JIP)
- DEH method was qualified by field testing in 1992 – 1998 (JIP)
- SINTEF has been a key player within analyses and test qualifications since 1992
- DEH is a fully qualified technology, used in the North Sea the last 15 years
- It is used for up to 42km tie-back (Tyrihans)
- It is operated for both intermittent and continuous operation

References for DEH installations

Field	1	2	3	4	5	6	7	8
Pipe dimension (inches)	10	8	10	12 1/2	18	30	12 1/2	10.5
Flowline length (km)	6-8.5 (6 flowl.)	16	6-7 (6 flowl.)	9	43	20	16	20
Water depth (m)	300	175	370	390	330	1000	350	300
U-value (W/m ² K)	5	3.5	8	4	4	-	3	5
Cable cross section (mm ²)	1000	650	1200	1200	1200	1200	1200	1200
DEH cable rating current/voltage (A/kV)	1500/12	1100/24	1500/12	1400/12	1600/52	3000/52	1300/12	1500/24
Rated power (MW)	1-1.5	2	1.5-1.6	2.3	10	8	2.4	4
Year installed	2000	2001	2004/05	2007	2007	2007 Retrofit	2009	2010

References for DEH installations

Field	9	10	11	12	13	14	15	16
Pipe dimension (inches)	12	8	14	11	12	8	14	14
Flowline length (km)	13	4 (3 flowl.)	26	43	8 (2 flowl.)	8.5	3 - 18 (12 flowl.)	26
Water depth (m)	300	30	370	1050	330	150	500	370
U-value (W/m ² K)	3	4.5	3.5	4	4	4	4	3.5
Cable cross section (mm ²)	1200	1000	1200	1400	1200	630	1000	1000
DEH cable rating current/voltage (A/kV)	1400/12	1300/12	1300/24	1350/52	1300/12	900/12	1300/24	1350/24
Rated power (MW)	2.2	0.9*3	4	9	1.2*2	1.1	0.5 – 2.5	4
Year installed	2012	2010	2015	Installation		Development ongoing		