TECHNOLOGY CHALLENGE 17:

TECHNOLOGY SOLUTION FOR SPECIATION OF CHLORIDE ALONG THE LIQUID HYDROCARBON VALUE CHAIN

No	Parameters	Value / Remarks
1	Type of sample	Crude oil and liquid hydrocarbon (light distillates to heavy distillates)
2	Type of chloride speciation (target and untargeted)	i. Inorganic chloride (Ca, Mg, Na) ii. Organic chloride (subject to hydrocarbon number)
3	Range of chloride speciation	(see table below)
4	Detection limit (minimum and maximum)	0.2 (min) to 100 (max)
5	Measurement error (%RSD)	(see table below)
6	% recovery	(see table below)
7	Calibration (internal or external)	i. R-square (regression coefficient) of 99.99% ii. Minimum 5 points of calibration
8	Carbon distribution	(C1 – C150)
9	Sample location	From offshore to refinery (downstream)
10	Injection method	direct injection or required sample pretreatment
11	Site references	Proven deployment
12	Optional	Predictive and prescriptive online monitoring

Range of chloride speciation (Parameter 3):

	Total Chloride (mg/L)	Organic (mg/L)	% Inorganic (by mass)
Neat Dulang	25.79		
Naphtha			
LGO	0.44	0.34	23
LVGO	0.74	0.67	9
Combined VGO	0.94	0.39	59
LSWR	82.03	2.71	97

Measurement error (%RSD) (Parameter 5):

Sample	T Chloride (ppm)	% RSD
LGO	0.4	3.7
LSWR	83	1.3
Miri	1.43	2.7
Tapis	55	1.3

% recovery (Parameter 6):

Sample	T Chloride (ppm)	% Recovery
LGO	0.4	95 - 105
LSWR	83	98 - 102
Miri	1.43	97 - 103
Tapis	55	98 - 102