Contents

1 Global Definitions

GLOBAL SETTINGS

Name	Untitled 1.mph
Path	C:\Users\haghi\Desktop\Untitled_1.mph
Version	COMSOL Multiphysics 6.1 (Build: 282)
Unit system	SI

USED PRODUCTS

COMSOL Multiphysics
Corrosion Module

COMPUTER INFORMATION

CPU	AMD64 Family 25 Model 80 Stepping 0, 6 cores, 15.31 GB RAM
Operating system	Windows 10

1.1 PARAMETERS

CONSTANTS

Name	Expression	Value	Description
R_z	8.314[J/(mol*K)]	8.314 J/(mol·K)	
T	298[K]	298 K	Temperature
F	96485[C/mol]	96485 C/mol	Faraday constant
c_bulk	1[mM]	1 mol/m³	Bulk concentration
D_ox	1e-9[m^2/s]	1E−9 m²/s	Diffusion coeff (oxidised)
D_red	1e-9[m^2/s]	1E−9 m²/s	Diffusion coeff (reduced)
k0	1e-4[m/s]	1E−4 m/s	Standard rate constant
E0	0[V]	0 V	Standard potential vs ref
alpha	0.5	0.5	Transfer coefficient
scan_rate	0.1[V/s]	0.1 V/s	Scan rate
E_start	-0.4[V]	−0.4 V	Starting potential
E_vertex	0.4[V]	0.4 V	Vertex potential
n	1	1	electrons (MB ~1)
sigma_elec	1.5[S/m]	1.5 S/m	S/m, PBS ~150 mM (adjustable)
rElec	1e-3[m]	0.001 m	m (1 mm radius)
rDom	5e-3[m]	0.005 m	m (5 mm domain radius)
Cdl	2e-2[F/m^2]	0.02 F/m²	F/m² (20 µF/cm² typical Au in PBS)
alpha_a	0.5	0.5	anodic transfer coef

Name	Expression	Value	Description
alpha_c	0.5	0.5	cathodic transfer coef
Eapp	-0.23[V]	−0.23 V	V applied bias for BV linearisation (≈E0)
Gamma_MB	1e-11*1e4[mol/m^2]	1E−7 mol/m²	mol/m² (1×10⁻¹¹ mol/cm² → m²)
k_on	10[m^3/(mol*s)]	10 m³/(s·mol)	1/(M·s)
k_off	0.02[1/s]	0.02 1/s	1/s
beta	1.1e10[1/m]	1.1E10 1/m	1/m (1.1 Å⁻¹)
d0	3.2e-9[m]	3.2E−9 m	m (reference distance ~closed)
d_open	6.5e-9[m]	6.5E−9 m	m
d_closed	3.2e-9[m]	3.2E−9 m	m
k0et	500[1/s]	500 1/s	1/s (nominal pre-exponential)
f	50[1/s]	50 1/s	Hz
Ctarget	0.1[mol/m^3]	0.1 mol/m³	note 10 µM = 10e-6 M

1.2 VARIABLES

1.2.1 Aptamer_vars

SELECTION

Geometric entity level	Entire model

Name	Expression	Unit	Description
theta_open_ss	(k_off)/(k_off + k_on*Ctarget)		Steady-state open fraction
theta_closed_ss	1 - theta_open_ss		Bound (closed) fraction
ket_open	k0et*exp(-beta*(d_open - d0))	1/s	ET rate in open conformation
ket_closed	k0et*exp(-beta*(d_closed - d0))	1/s	ET rate in closed conformation
ket	theta_open_ss*ket_open + theta_closed_ss*ket_closed	1/s	Weighted average ET rate
omega	2*pi*f	1/s	Angular frequency
ket_eff	(ket*omega)/(omega + ket)	1/s	Frequency-dependent effective ET
i0_raw	n*F*Gamma_MB*ket_eff	A/m²	Unattenuated exchange current density (A/m²)
Rct	(R_z*T)/(n*F*i0_raw)	Ω·m²	Area-specific charge-transfer resistance (BV linearisation) (Ω·m²)
atten	1/sqrt(1 + (omega*Rct*Cdl)^2)		Double-layer RC attenuation
i0	i0_raw*atten	A/m²	Final effective exchange current density (A/m²)

1.3 SHARED PROPERTIES

1.3.1 Default Model Inputs

Tag	cminpt

2 Component 1

SETTINGS

Description	Value
Unit system	SI (global system)
Geometry shape function	Automatic

SPATIAL FRAME COORDINATES

First	Second	Third
r	phi	z

MATERIAL FRAME COORDINATES

First	Second	Third
R	PHI	Z

GEOMETRY FRAME COORDINATES

First	Second	Third
Rg	PHIg	Zg

MESH FRAME COORDINATES

First	Second	Third
Rm	PHIm	Zm

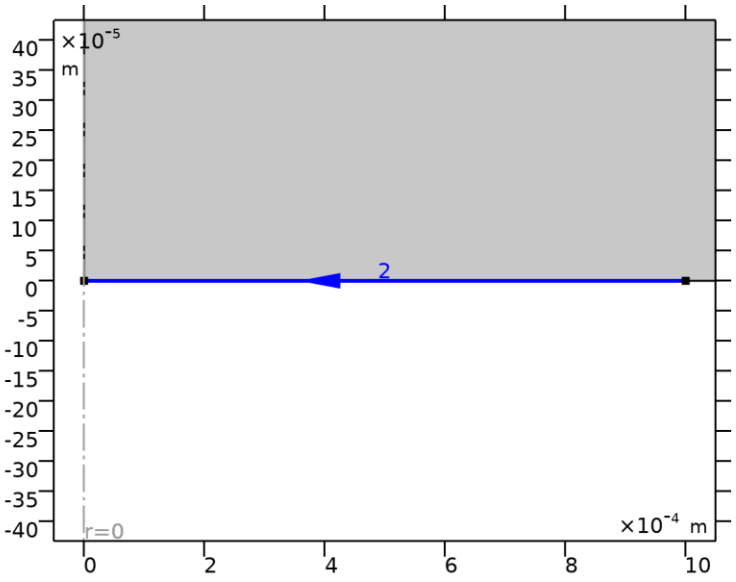
2.1 DEFINITIONS

2.1.1 Selections

Electrode Boundary

Selection type
Explicit

Selection
Boundary 2

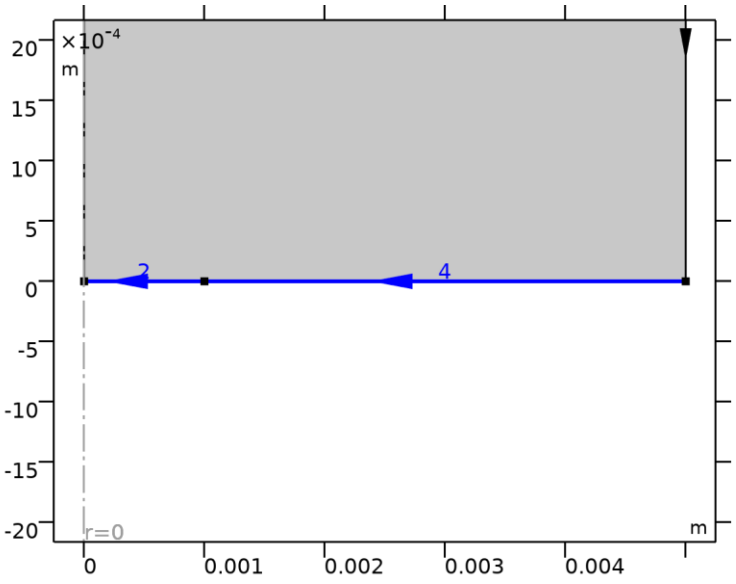


Electrode Boundary

Insulation Boundary

Selection type
Explicit

Selection
Boundaries 2, 4



Insulation Boundary

2.1.2 Coordinate Systems

Boundary System 1

Coordinate system type	Boundary system
Tag	sys1

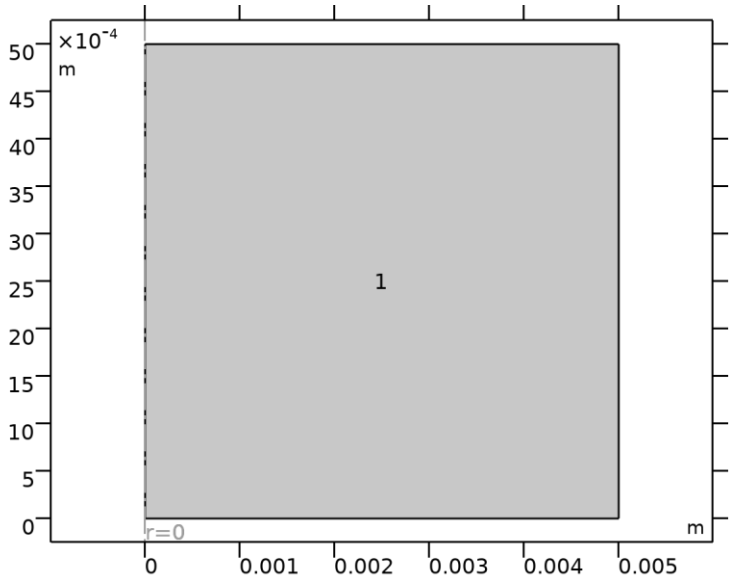
COORDINATE NAMES

First	Second	Third
t1	to	n

SETTINGS

Description	Value
Axis	phi

2.2 GEOMETRY 1



Geometry 1

UNITS

Length unit	m
Angular unit	deg

GEOMETRY STATISTICS

Description	Value
Space dimension	2
Number of domains	1
Number of boundaries	5

Description	Value
Number of vertices	5

2.2.1 Rectangle 1 (r1)

POSITION

Description	Value
Position	{0, 0}

SIZE

Description	Value
Width	rDom
Height	rDom

2.2.2 Partition Edges 1 (pare1)

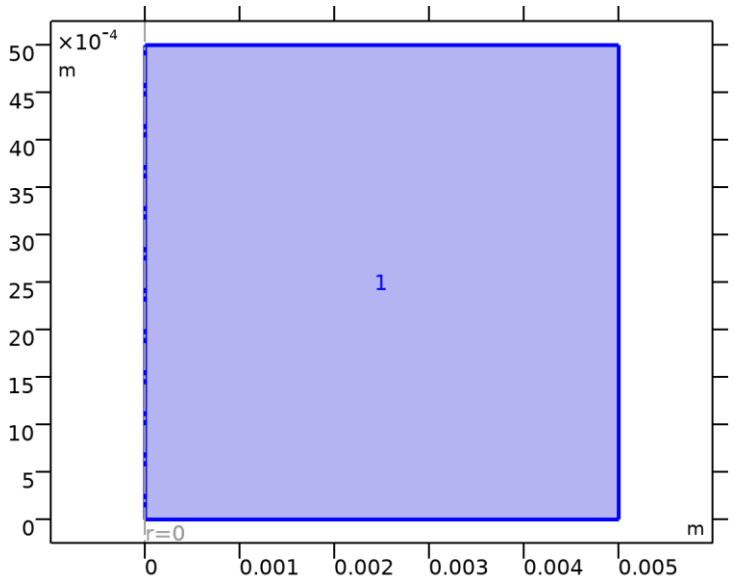
SETTINGS

Relative arc length parameters
0.8

2.3 SECONDARY CURRENT DISTRIBUTION

USED PRODUCTS

COMSOL Multiphysics
Corrosion Module



Secondary Current Distribution

SELECTION

Geometric entity level	Domain
Selection	Geometry geom1: Dimension 2: All domains

EQUATIONS

$$\nabla \cdot \mathbf{i}_l = Q_l, \quad \mathbf{i}_l = -\sigma_l \nabla \phi_l$$
$$\nabla \cdot \mathbf{i}_s = Q_s, \quad \mathbf{i}_s = -\sigma_s \nabla \phi_s$$
$$\phi_l = \text{phil}, \quad \phi_s = \text{phis}$$

2.3.1 Interface Settings

Discretization

SETTINGS

Description	Value
Electrolyte potential	Linear
Compute boundary fluxes	On
Apply smoothing to boundary fluxes	On
Electric potential	Linear
Compute boundary fluxes	On
Apply smoothing to boundary fluxes	On

SETTINGS

Description	Value
Equation form	Study controlled

SETTINGS

Description	Value
Current distribution type	Secondary

Cathodic Protection

SETTINGS

Description	Value
Enable cathodic protection features	Off

Physics vs. Materials Reference Electrode Potential

SETTINGS

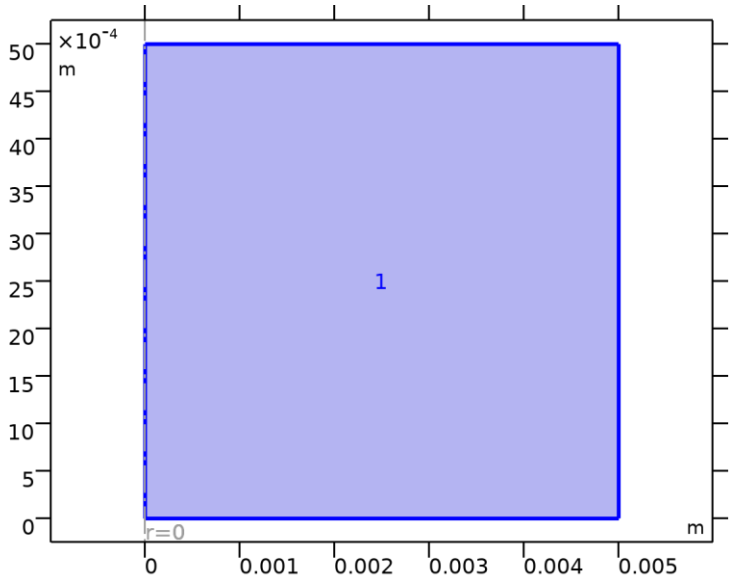
Description	Value
Physics vs. materials reference electrode potential	0 V

2.3.2 Variables

Name	Expression	Unit	Description	Selection	Details
domflux.philr	2*cd.Ilr*pi*r*cd.d	A/m	Domain flux, r-component	Domain 1	
domflux.philz	2*cd.Ilz*pi*r*cd.d	A/m	Domain flux, z-component	Domain 1	
domflux.phisr	2*cd.Isr*pi*r*cd.d	A/m	Domain flux, r-component	Domain 1	
domflux.phisz	2*cd.Isz*pi*r*cd.d	A/m	Domain flux, z-component	Domain 1	
cd.d	1	1	Out-of-plane geometry extension	Global	
cd.bndflux_phil	if(r>0.001/sqrt(sqrt(mean(emetric2))),-0.5*dflux_spatial(phil)/(pi*r),NaN)	A/m²	Boundary flux	Boundaries 1–5	
cd.nIl	cd.bndflux_phil/cd.d	A/m²	Normal electrolyte current density	Boundaries 2–5	
cd.nR	dnR	1	Normal vector, R-component	Boundaries 1–5	
cd.nPHI	0	1	Normal vector, PHI-component	Boundaries 1–5	
cd.nZ	dnZ	1	Normal vector, Z-component	Boundaries 1–5	
cd.nil	0	A/m²	Inward electrolyte current density	Domain 1	+ operation
cd.nis	0	A/m²	Inward electrode current density	Domain 1	+ operation
cd.Qsi	0	A/m³	Current source	Domain 1	+ operation
cd.mulstopcond	1	1	Multiplicative stop condition	Global	* operation
cd.stopcond	cd.mulstopcond	1	Solver stop condition	Global	
cd.Ect	NaN	V	Electrode potential	Domain 1	
cd.nr	nr		Normal vector, r-component	Boundaries 1–5	Meta
cd.nphi	root.nphi		Normal vector, phi-component	Boundaries 1–5	Meta
cd.nz	nz		Normal vector, z-	Boundaries 1–	Meta

Name	Expression	Unit	Description	Selection	Details
			component	5	
cd.nrmesh	nrmesh		Normal vector (mesh), r-component	Boundaries 1–5	Meta
cd.nphimesh	root.nphimesh		Normal vector (mesh), phi-component	Boundaries 1–5	Meta
cd.nzmesh	nzmesh		Normal vector (mesh), z-component	Boundaries 1–5	Meta

2.3.3 Electrolyte (PBS)



Electrolyte (PBS)

SELECTION

Geometric entity level	Domain
Selection	Geometry geom1: Dimension 2: All domains

EQUATIONS

$$\nabla \cdot \mathbf{i}_l = Q_l, \quad \mathbf{i}_l = -\sigma_l \nabla \phi_l$$

Electrolyte

SETTINGS

Description	Value	Unit
Electrolyte conductivity	User defined	
Electrolyte conductivity	sigma_elec	S/m

Coordinate System Selection

SETTINGS

Description	Value
Coordinate system	Global coordinate system

Variables

Name	Expression	Unit	Description	Selection	Details
cd.sigmalrr	sigma_elec	S/m	Electrolyte conductivity, rr-component	Domain 1	
cd.sigmalphir	0	S/m	Electrolyte conductivity, phir-component	Domain 1	
cd.sigmalzr	0	S/m	Electrolyte conductivity, zr-component	Domain 1	
cd.sigmalrphi	0	S/m	Electrolyte conductivity, rphi-component	Domain 1	
cd.sigmalphiphi	sigma_elec	S/m	Electrolyte conductivity, phiphi-component	Domain 1	
cd.sigmalzphi	0	S/m	Electrolyte conductivity, zphi-component	Domain 1	
cd.sigmalrz	0	S/m	Electrolyte conductivity, rz-component	Domain 1	
cd.sigmalphiz	0	S/m	Electrolyte conductivity, phiz-component	Domain 1	
cd.sigmalzz	sigma_elec	S/m	Electrolyte conductivity, zz-component	Domain 1	
cd.Qh	-cd.Ilr*philr-cd.Ilz*philz	W/m^3	Total power dissipation density	Domain 1	+ operation
cd.IlMag	sqrt(realdot(cd.Ilr,cd.Ilr)+realdot(cd.Ilphi,cd.Ilphi)+realdot(cd.Ilz,cd.Ilz))	A/m^2	Electrolyte current density magnitude	Domain 1	
cd.Qli	0	A/m^3	Current source	Domain 1	+ operation

Name	Expression	Unit	Description	Selection	Details
cd.tEr	-philTr	V/m	Tangential electric field, r-component	Boundaries 1–5	
cd.tEphi	0	V/m	Tangential electric field, phi-component	Boundaries 1–5	
cd.tEz	-philTz	V/m	Tangential electric field, z-component	Boundaries 1–5	
cd.Er	-philr	V/m	Electric field, r-component	Domain 1	
cd.Ephi	0	V/m	Electric field, phi-component	Domain 1	
cd.Ez	-philz	V/m	Electric field, z-component	Domain 1	
cd.ilr	-cd.sigmalrr*philr-cd.sigmalrz*philz	A/m^2	Electrolyte current density, r-component	Domain 1	+ operation
cd.ilphi	-cd.sigmalphir*philr-cd.sigmalphiz*philz	A/m^2	Electrolyte current density, phi-component	Domain 1	+ operation
cd.ilz	-cd.sigmalzr*philr-cd.sigmalzz*philz	A/m^2	Electrolyte current density, z-component	Domain 1	+ operation
cd.Ilr	cd.ilr	A/m^2	Electrolyte current density vector, r-component	Domain 1	
cd.Ilphi	cd.ilphi	A/m^2	Electrolyte current density vector, phi-component	Domain 1	
cd.Ilz	cd.ilz	A/m^2	Electrolyte current density vector, z-component	Domain 1	
cd.phil	phil	V	Electrolyte potential	Domain 1	
cd.sigmaleffrr	cd.sigmalrr	S/m	Electrolyte conductivity, rr-component	Domain 1	

Name	Expression	Unit	Description	Selection	Details
cd.sigmaleffphir	cd.sigmalphir	S/m	Electrolyte conductivity, phir-component	Domain 1	
cd.sigmaleffzr	cd.sigmalzr	S/m	Electrolyte conductivity, zr-component	Domain 1	
cd.sigmaleffrphi	cd.sigmalrphi	S/m	Electrolyte conductivity, rphi-component	Domain 1	
cd.sigmaleffphiphi	cd.sigmalphiphi	S/m	Electrolyte conductivity, phiphi-component	Domain 1	
cd.sigmaleffzphi	cd.sigmalzphi	S/m	Electrolyte conductivity, zphi-component	Domain 1	
cd.sigmaleffrz	cd.sigmalrz	S/m	Electrolyte conductivity, rz-component	Domain 1	
cd.sigmaleffphiz	cd.sigmalphiz	S/m	Electrolyte conductivity, phiz-component	Domain 1	
cd.sigmaleffzz	cd.sigmalzz	S/m	Electrolyte conductivity, zz-component	Domain 1	

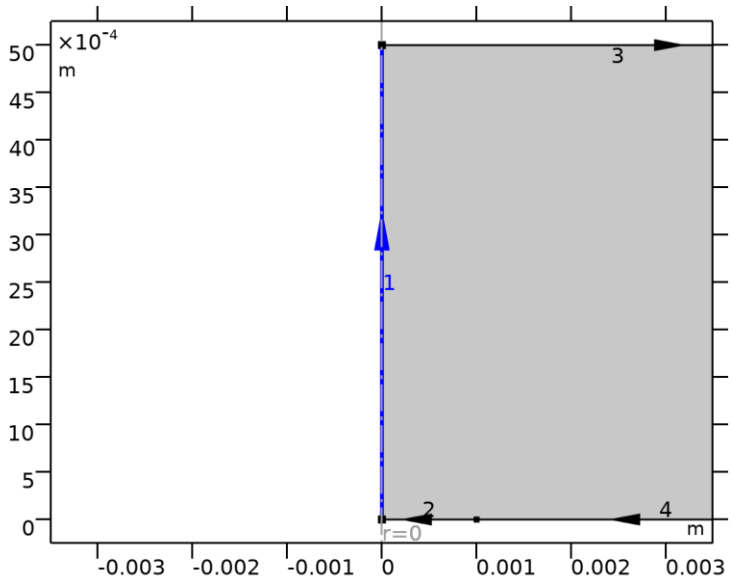
Shape functions

Name	Shape function	Unit	Description	Shape frame	Selection
phil	Lagrange (Linear)	V	Electrolyte potential	Spatial	Domain 1

Weak Expressions

Weak expression	Integration order	Integration frame	Selection
2*(cd.Ilr*test(philr)+cd.Ilz*test(philz)+cd.Qli*test(phil))*cd.d*pi*r	2	Spatial	Domain 1

2.3.4 Axial Symmetry 1

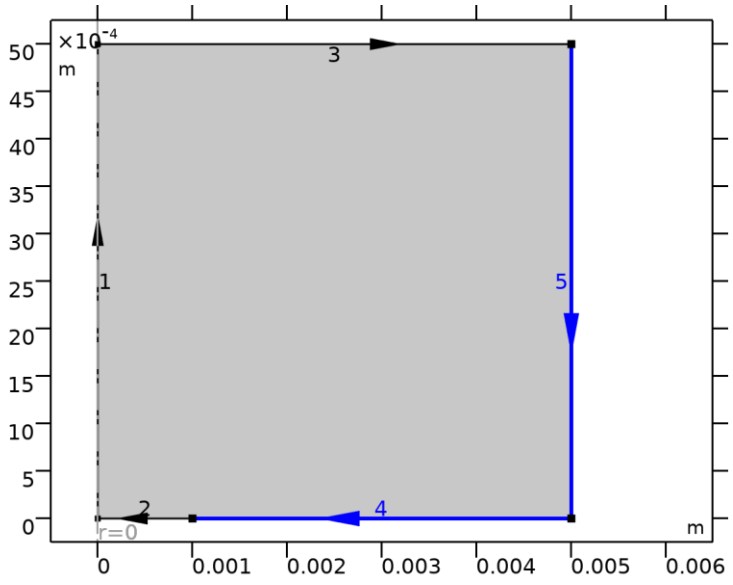


Axial Symmetry 1

SELECTION

Geometric entity level	Boundary
Selection	Geometry geom1: Dimension 1: All boundaries

2.3.5 Insulation 1



Insulation 1

SELECTION

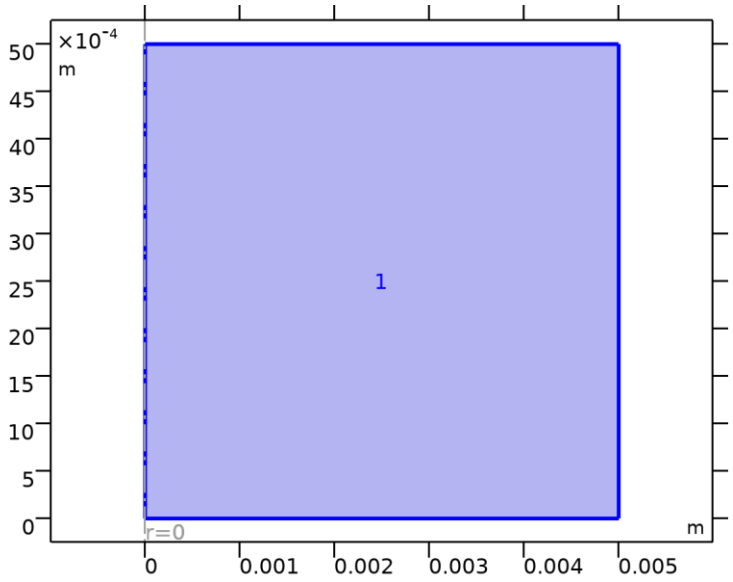
Geometric entity level	Boundary

Selection	Geometry geom1: Dimension 1: All boundaries

EQUATIONS

$$-\mathbf{n}\cdot\mathbf{i}_l = 0, \quad -\mathbf{n}\cdot\mathbf{i}_s = 0$$

2.3.6 Initial Values 1



Initial Values 1

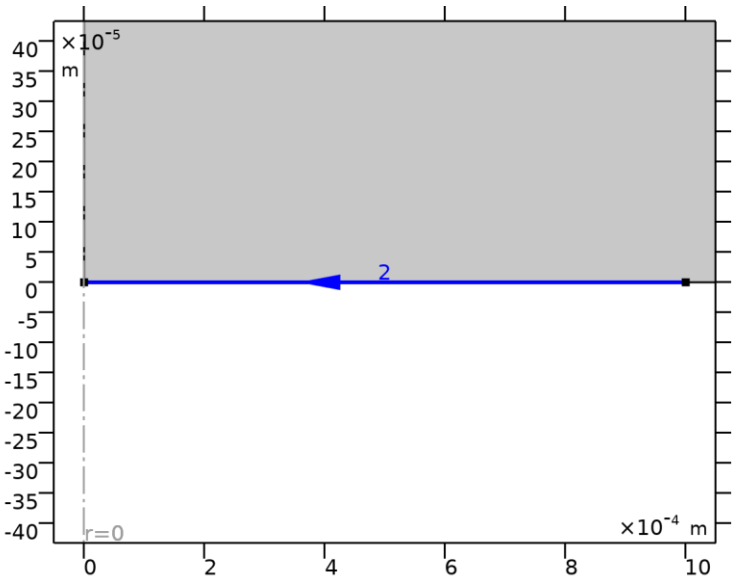
SELECTION

Geometric entity level	Domain
Selection	Geometry geom1: Dimension 2: All domains

SETTINGS

Description	Value	Unit
Electric potential	0	V
Electrolyte potential	0	V

2.3.7 Electrode Surface 1



Electrode Surface 1

SELECTION

Geometric entity level	Boundary
Selection	Geometry geom1: Dimension 1: Boundary 2

EQUATIONS

$$\mathbf{n} \cdot \mathbf{i}_l = i_{\text{total}}$$
$$i_{\text{total}} = \sum_m i_{\text{loc},m}$$

Dissolving-Depositing Species

SETTINGS

Description	Value
Species	
Solve for surface concentration variables	On

Adsorbing-Desorbing Species

SETTINGS

Description	Value	Unit
Density of sites	1E-5	mol/m²
Adsorbing-desorbing species		

Species	Site occupancy number
1	

Film Resistance

SETTINGS

Description	Value
Film resistance	No film resistance

Equilibrium Potential Handling (Primary Condition)

SETTINGS

Description	Value
Equilibrium potential based on	Average of all reactions

Harmonic Perturbation

SETTINGS

Description	Value	Unit
Perturbation amplitude	0	V

Electrode Phase Potential Condition

SETTINGS

Description	Value	Unit
Electrode phase potential condition	Electrode potential	
Electrode potential vs. reference	Eapp	V
Electric reference potential	User defined	
Electric reference potential	0	V

Constraint Settings

SETTINGS

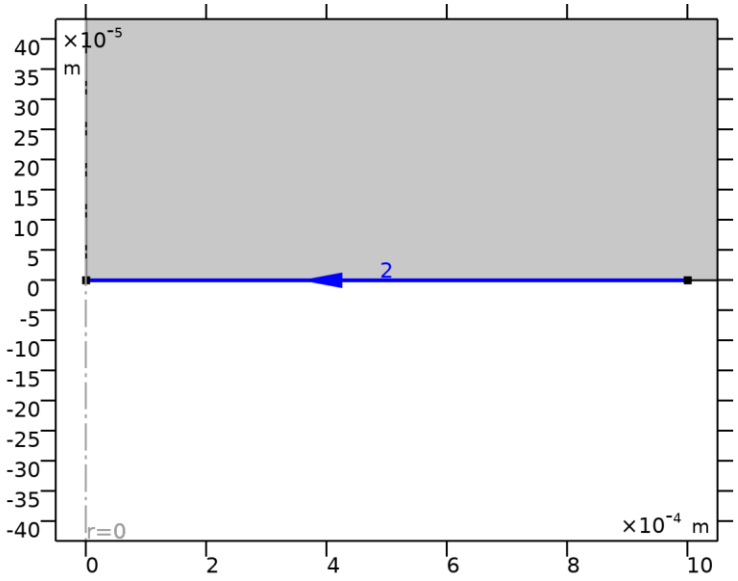
Description	Value
Constraint method	Elemental

Variables

Name	Expression	Unit	Description	Selection	Details
cd.nil	cd.itot	A/m^2	Inward electrolyte current density	Boundary 2	+ operation
cd.Ect	cd.phisext-phil	V	Electrode potential	Boundary 2	
cd.Gamma_es1	1.0E-5[mol/m^2]	mol/m^2	Density of sites	Boundary 2	
cd.Evsref0	Eapp	V	Electrode potential vs. reference	Boundary 2	

Name	Expression	Unit	Description	Selection	Details
cd.phisext	0[V]+cd.Evsref0	V	External electric potential	Boundary 2	
cd.phis_es1	cd.es1.int(cd.phisext*cd.dvolfactor*cd.d)/cd.Area_es1	V	Electric potential	Global	
cd.dvolfactor	2*pi*r	m	Differential volume factor	Boundary 2	Meta
cd.Area_es1	cd.es1.int(cd.dvolfactor*cd.d)	m^2	Area	Global	
cd.itotavg_es1	cd.es1.int(cd.itot*cd.dvolfactor*cd.d)/cd.Area_es1	A/m^2	Average total interface current density	Global	
cd.Temp	cd.es1.minput_temperature	K	Temperature	Boundary 2	
cd.Evsref	cd.phisext-phil	V	Electrode potential vs. adjacent reference	Boundary 2	
cd.Ectmat	cd.Ect	V	Electrode potential	Boundary 2	
cd.Itot_es1	cd.es1.int(cd.itot*cd.dvolfactor*cd.d)	A	Total current	Global	
cd.itot	0	A/m^2	Total interface current density	Boundary 2	+ operation
cd.rhos	8960	kg/m^3	Density	Boundary 2	
cd.Ms	0.06355	kg/mol	Molar mass	Boundary 2	
cd.Sigma	1	1	Site occupancy number	Boundary 2	

Electrode Reaction 1



Electrode Reaction 1

SELECTION

Geometric entity level	Boundary
Name	Electrode Boundary
Selection	Named sel1: Geometry geom1: Dimension 1: Boundary 2

EQUATIONS

$$\eta = E_{ct} - E_{eq}, \quad E_{ct} = \phi_{s,ext} - \phi_l$$

Equilibrium Potential

SETTINGS

Description	Value	Unit
Equilibrium potential	User defined	
Equilibrium potential	E0	V

Electrode Kinetics

SETTINGS

Description	Value	Unit
Local current density expression	From kinetics expression	
Kinetics expression type	Butler - Volmer	
Exchange current density	i0	A/m²
Anodic transfer coefficient	alpha_a	1
Cathodic transfer coefficient	alpha_c	1

Description	Value	Unit
Limiting current density	Off	

Heat of Reaction

SETTINGS

Description	Value	Unit
Specify	Temperature derivative	
Temperature derivative of equilibrium potential	User defined	
Temperature derivative of equilibrium potential	0	V/K

Model Input

SETTINGS

Description	Value	Unit
Temperature	User defined	
Temperature	T	K

Variables

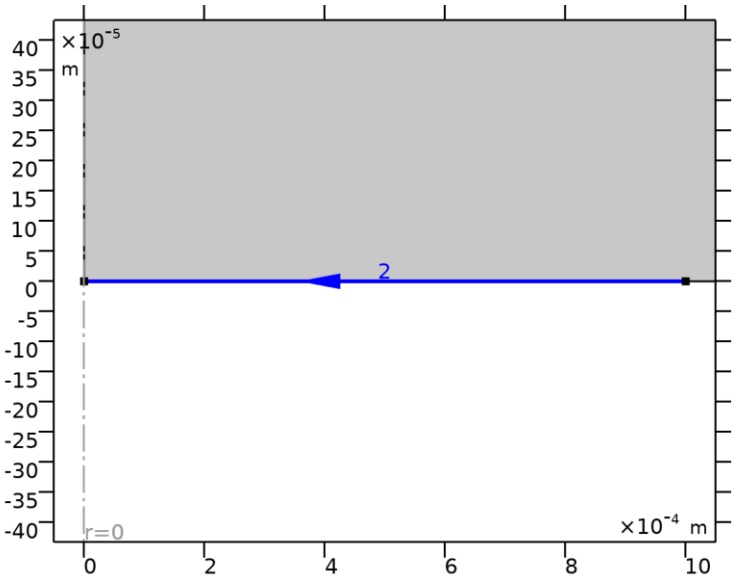
Name	Expression	Unit	Description	Selection	Details
cd.itot	cd.iloc_er1	A/m^2	Total interface current density	Boundary 2	+ operation
cd.Eeq_er1	E0	V	Equilibrium potential, Electrode Reaction 1	Boundary 2	
cd.i0_er1	i0	A/m^2	Exchange current density	Boundary 2	
cd.alphaa_er1	alpha_a	1	Anodic transfer coefficient	Boundary 2	
cd.alphac_er1	alpha_c	1	Cathodic transfer coefficient	Boundary 2	
cd.iloc_er1	cd.i0_er1*(exp(cd.alphaa_er1*F_const*cd.eta_er1/(R_const*cd.es1.er1.minput_temperature))-exp(-cd.alphac_er1*F_const*cd.eta_er1/(R_const*cd.es1.er1.minput_temperature)))	A/m^2	Local current density	Boundary 2	
cd.es1.er1.iloc	cd.iloc_er1	A/m^2	Local current density, Electrode Reaction 1	Boundary 2	

Name	Expression	Unit	Description	Selection	Details
cd.Qirrev_er1	cd.iloc_er1*cd.eta_er1	W/m²	Irreversible heat flux	Boundary 2	
cd.Qrev_er1	cd.iloc_er1*cd.es1.er1.minput_temperature*cd.dEeqdT_er1	W/m²	Reversible heat flux	Boundary 2	
cd.es1.er1.Qb	cd.Qrev_er1+cd.Qirrev_er1	W/m²	Electrochemical reaction boundary heat source	Boundary 2	
cd.Qbtot	cd.es1.er1.Qb	W/m²	Electrochemical reaction boundary heat source	Boundary 2	+ operation
cd.eta_er1	cd.Ect-cd.Eeq_er1	V	Overpotential	Boundary 2	
cd.dEeqdT_er1	0	V/K	Temperature derivative of equilibrium potential	Boundary 2	

Weak Expressions

Weak expression	Integration order	Integration frame	Selection
2*cd.iloc_er1*cd.d*test(phil)*pi*R	2	Material	Boundary 2

Double Layer Capacitance 1



Double Layer Capacitance 1

SELECTION

Geometric entity level	Boundary

Selection	Geometry geom1: Dimension 1: All boundaries

EQUATIONS

$$i_{dl} = 0$$

Double Layer Capacitance

SETTINGS

Description	Value	Unit
Electrical double layer capacitance	Cdl	F/m²

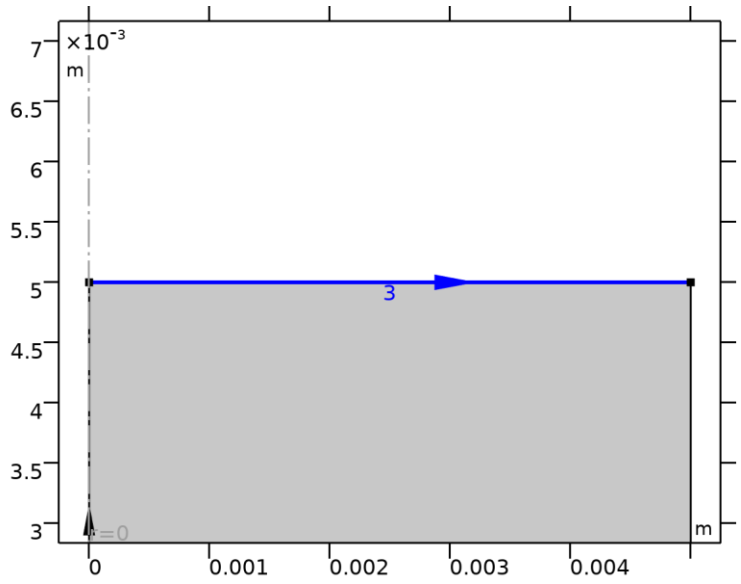
Variables

Name	Expression	Unit	Description	Selection	Details
cd.itot	cd.idl	A/m²	Total interface current density	Boundary 2	+ operation
cd.Cdl	Cdl	F/m²	Electrical double layer capacitance	Boundary 2	
cd.idl	0	A/m²	Double layer current density	Boundary 2	

Weak Expressions

Weak expression	Integration order	Integration frame	Selection
2*cd.idl*cd.d*test(phil)*pi*R	2	Material	Boundary 2

2.3.8 Electrolyte Potential 1



Electrolyte Potential 1

SELECTION

Geometric entity level	Boundary
Selection	Geometry geom1: Dimension 1: Boundary 3

EQUATIONS

$$\phi_l = \phi_{l,bnd}$$

Electrolyte Potential

SETTINGS

Description	Value	Unit
Boundary electrolyte potential	0	V

Constraint Settings

SETTINGS

Description	Value
Apply reaction terms on	All physics (symmetric)
Use weak constraints	Off
Constraint method	Elemental

Variables

Name	Expression	Unit	Description	Selection
cd.philbnd	0[V]	V	Boundary electrolyte potential	Boundary 3

Constraints

Constraint	Constraint force	Shape function	Selection	Details
cd.philbnd-phil	test(cd.philbnd-phil)	Lagrange (Linear)	Boundary 3	Elemental

2.4 GLOBAL ODES AND DAES

USED PRODUCTS

COMSOL Multiphysics

SELECTION

Geometric entity level	Entire model

2.4.1 Interface Settings

SETTINGS

Description	Value
Equation form	Study controlled

2.4.2 Variables

Name	Expression	Unit	Description	Selection
ge.omega	2*pi*ge.freq	rad/s	Angular frequency	Global
ge.freq	freq	Hz	Frequency	Global
ge.iomega	ge.omega*i	rad/s	Complex angular frequency	Global

2.4.3 Global Equations 1

SELECTION

Geometric entity level	Entire model

Global Equations

Name	f(u,ut,utt,t)	Initial value (u_0)	Initial value (u_t0)	Description
theta_open	d(theta_open,t) - (k_off*(1 - theta_open) - k_on*Ctarget*theta_open)	1	1	

Discretization

SETTINGS

Description	Value
Value type when using splitting of complex variables	Complex

Units

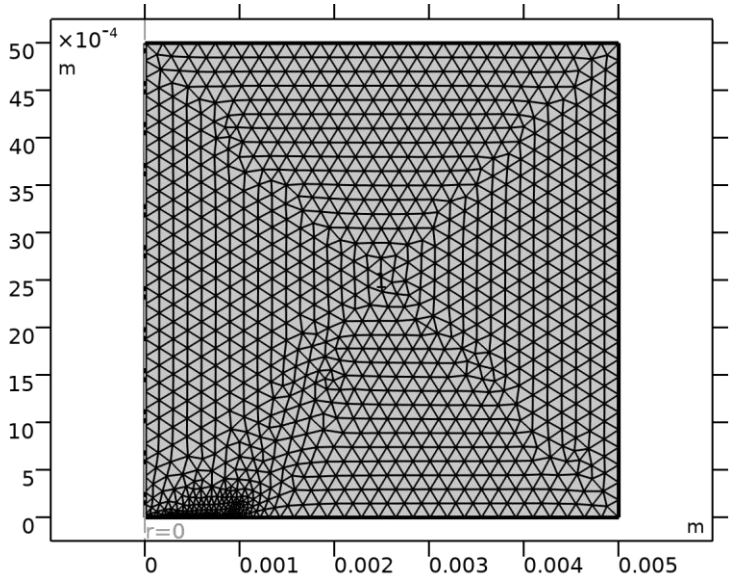
Dependent variable quantity	Unit
none	

Source term quantity	Unit
dimensionless	

Shape functions

Name	Shape function	Unit	Description	Shape frame	Selection
theta_open	ODE	1	State variable theta_open		Global

2.5 MESH 1



Mesh 1

MESH STATISTICS

Description	Value
Status	Complete mesh
Mesh vertices	1348
Triangles	2266
Quads	141
Number of elements	2407
Minimum element quality	1.551E-5
Average element quality	0.8845
Element area ratio	5.4296E-7
Mesh area	2.5E-5 m^2

2.5.1 Size (Baseline) (size)

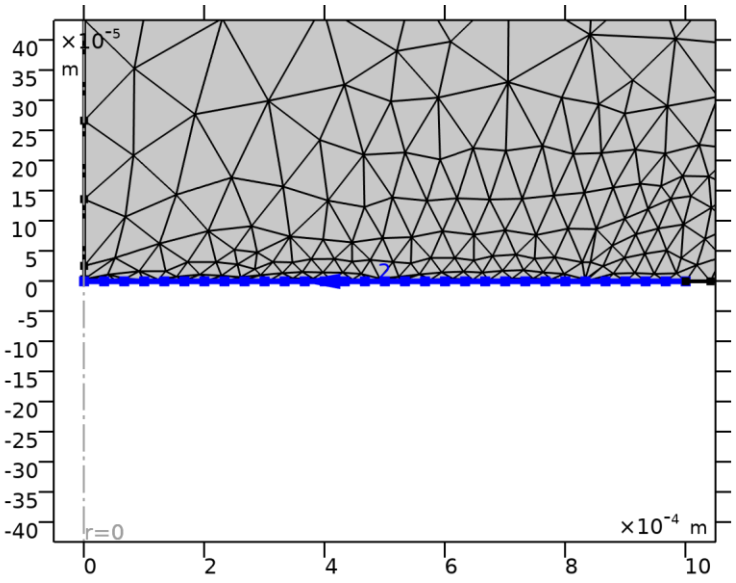
SETTINGS

Description	Value
Maximum element size	1.85E-4
Minimum element size	6.25E-7
Curvature factor	0.25
Maximum element growth rate	1.25
Predefined size	Finer

2.5.2 Size 1 (size1)

SELECTION

Geometric entity level	Boundary
Selection	Geometry geom1: Dimension 1: Boundary 2



Size 1

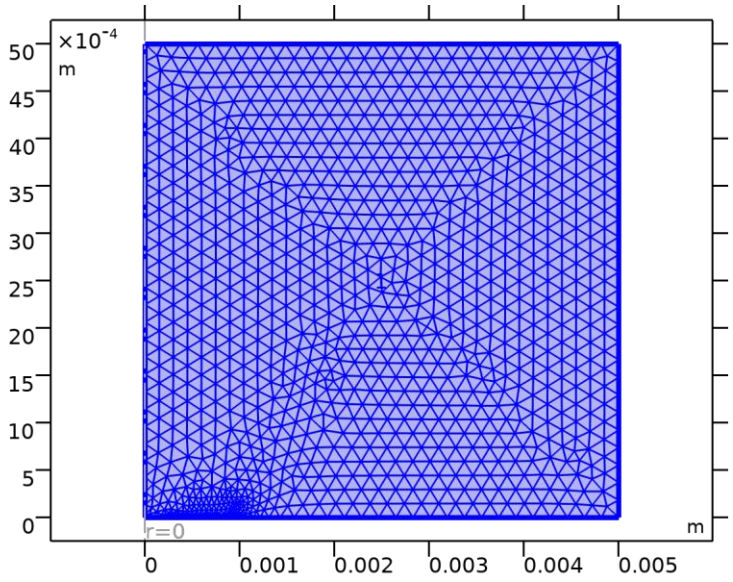
SETTINGS

Description	Value
Maximum element size	3.35E-5
Minimum element size	1.5E-6
Curvature factor	0.3
Maximum element growth rate	1.3
Custom element size	Custom

2.5.3 Free Triangular 1 (ftri1)

SELECTION

Geometric entity level	Domain
Selection	Remaining



Free Triangular 1

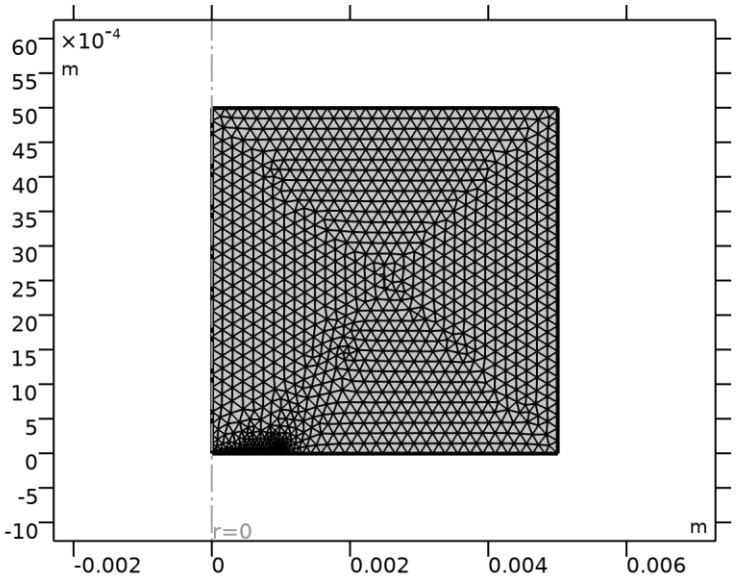
SETTINGS

Description	Value
Number of iterations	4
Maximum element depth to process	4
Last build time	0
Built with	COMSOL 6.1.0.282 (win64)|2025 - 10 - 09T17:02:12.673352400

2.5.4 Boundary Layers 1 (bl1)

SELECTION

Geometric entity level	Domain
Selection	Geometry geom1



Boundary Layers 1

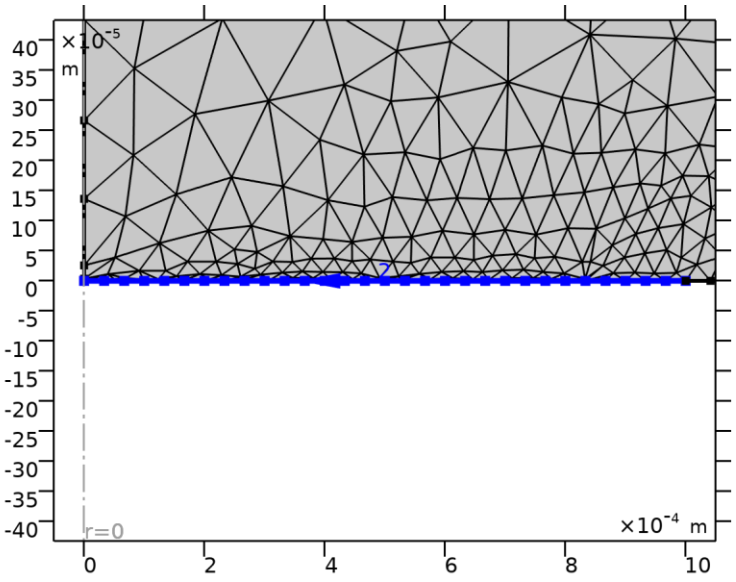
SETTINGS

Description	Value
Number of iterations	4
Maximum element depth to process	6
Last build time	0
Built with	COMSOL 6.1.0.282 (win64)|2025 - 10 - 09T17:02:12.710520500

Boundary Layer Properties (blp)

SELECTION

Geometric entity level	Boundary
Selection	Geometry geom1: Dimension 1: Boundary 2



Boundary Layer Properties

SETTINGS

Description	Value
Number of layers	5
Thickness specification	All layers
Total thickness	2.345E-9

3 Study 1

COMPUTATION INFORMATION

Computation time	6 s

3.1 PARAMETRIC SWEEP

Parameter name	Parameter value list	Parameter unit
f	10^(range(1, (3-1)/24, 3))*1[Hz]	1/s
Ctarget	10^(range(-7, (-4 - (-7))/14, -4))*1[mol/m^3]	mol/m^3

STUDY SETTINGS

Description	Value
Sweep type	All combinations
Parameter name	{f, Ctarget}
Unit	{1/s, mol/m^3}

PARAMETERS

Parameter name	Parameter value list	Parameter unit
f (Hz)	10^(range(1, (3-1)/24, 3))*1[Hz]	1/s
Ctarget (note 10 µM = 10e-6 M)	10^(range(-7, (-4 - (-7))/14, -4))*1[mol/m^3]	mol/m^3

3.2 STATIONARY

STUDY SETTINGS

Description	Value
Include geometric nonlinearity	Off

PHYSICS AND VARIABLES SELECTION

Physics interface	Solve for	Equation form
Secondary Current Distribution (cd)	On	Automatic (Stationary)
Global ODEs and DAEs (ge)	On	Automatic (Stationary)

MESH SELECTION

Component	Mesh
Component 1	Mesh 1

3.3 SOLVER CONFIGURATIONS

3.3.1 Solution 1

Compile Equations: Stationary (st1)

STUDY AND STEP

Description	Value
Use study	Study 1
Use study step	Stationary

Dependent Variables 1 (v1)

GENERAL

Description	Value
Defined by study step	Stationary

INITIAL VALUE CALCULATION CONSTANTS

Constant name	Initial value source
f	10^(range(1, (3-1)/24, 3))*1[Hz]
Ctarget	10^(range(-7, (-4 - (-7))/14, -4))*1[mol/m^3]

Electrolyte potential (comp1.phil) (comp1_phil)

GENERAL

Description	Value
Field components	comp1.phil
Internal variables	{comp1.uflux.phil, comp1.dflux.phil}

SCALING

Description	Value
Method	Manual
Scale	1

State variable theta_open (comp1.ODE1) (comp1_ODE1)

GENERAL

Description	Value
State components	comp1.theta_open

Stationary Solver 1 (s1)

GENERAL

Description	Value

Description	Value
Defined by study step	Stationary
Relative tolerance	1E-4

RESULTS WHILE SOLVING

Description	Value
Probes	None

LOG

```
   1     1.9e-11     3.5e-06   1.0000000       0.003  766  266  532  2.1e-10  5.7e-
11

Parameter f = 215.443.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.5e-10     3.8e-06   1.0000000      0.0049  769  267  534  1.7e-10  6.2e-
11

Parameter f = 215.443.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.5e-09       3e-06   1.0000000      0.0081  772  268  536  1.2e-10  6.6e-
11

Parameter f = 215.443.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-07     4.2e-05   1.0000000       0.013  775  269  538  2.2e-10  5.9e-
11

Parameter f = 215.443.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.8e-06      0.0017   1.0000000       0.022  778  270  540  3.4e-10    6e-
11

Parameter f = 215.443.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.4e-05          14   1.0000000       0.037  780  271  542  2.7e-10  5.7e-
11
   2     9.4e-11     3.8e-06   1.0000000     2.5e-05  782  272  544    3e-10  6.8e-
11

Parameter f = 261.016.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     3.7e-06   1.0000000     3.5e-05  785  273  546  4.1e-10  5.5e-
15

Parameter f = 261.016.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     9.5e-18     4.1e-06   1.0000000     5.8e-05  788  274  548  4.2e-10  4.8e-
14

Parameter f = 261.016.
Parameter Ctarget = 2.6827e-07.
```

```
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     4.1e-17     2.5e-06   1.0000000     9.5e-05  791  275  550  2.5e-10  3.6e-
14

Parameter f = 261.016.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1      3e-17     3.7e-06   1.0000000     0.00016  794  276  552  3.8e-10  3.6e-
14

Parameter f = 261.016.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1      2e-16       3e-06   1.0000000     0.00025  797  277  554  5.7e-11  8.7e-
13

Parameter f = 261.016.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.4e-16     3.5e-06   1.0000000     0.00042  800  278  556  4.6e-10  3.4e-
13

Parameter f = 261.016.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.1e-15     3.4e-06   1.0000000     0.00068  803  279  558  3.4e-10  2.4e-
12

Parameter f = 261.016.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.2e-14     2.9e-06   1.0000000      0.0011  806  280  560  1.6e-10  3.7e-
11

Parameter f = 261.016.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     5.6e-13     3.3e-06   1.0000000      0.0018  809  281  562  1.9e-10  5.9e-
11

Parameter f = 261.016.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-11     3.2e-06   1.0000000       0.003  812  282  564  9.1e-11  6.1e-
11

Parameter f = 261.016.
Parameter Ctarget = 1.3895e-05.
```

```
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       2e-10     3.6e-06   1.0000000      0.0049  815  283  566  1.9e-10  6.1e-
11

Parameter f = 261.016.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.7e-09     3.3e-06   1.0000000      0.0081  818  284  568  8.1e-11  5.9e-
11

Parameter f = 261.016.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.6e-08       2e-05   1.0000000       0.013  821  285  570  6.1e-11  6.3e-
11

Parameter f = 261.016.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-06     0.00083   1.0000000       0.022  824  286  572  7.8e-11  5.8e-
11

Parameter f = 261.016.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.5e-05          10   1.0000000       0.037  826  287  574  1.4e-10  6.1e-
11
   2     3.1e-11     3.2e-06   1.0000000     1.5e-05  828  288  576    4e-10  7.1e-
11

Parameter f = 316.228.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     2.5e-06   1.0000000     3.5e-05  831  289  578  5.8e-10  1.2e-
15

Parameter f = 316.228.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.5e-18     4.4e-06   1.0000000     5.8e-05  834  290  580  5.3e-10  2.3e-
14

Parameter f = 316.228.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.9e-17     3.3e-06   1.0000000     9.5e-05  837  291  582  3.9e-10  3.2e-
14
```

```
Parameter f = 316.228.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.1e-17     3.5e-06   1.0000000     0.00016  840  292  584  5.7e-10  1.5e-
14

Parameter f = 316.228.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.8e-17     3.3e-06   1.0000000     0.00025  843  293  586  3.8e-10  8.6e-
14

Parameter f = 316.228.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.6e-16     3.4e-06   1.0000000     0.00042  846  294  588  3.1e-10  2.6e-
13

Parameter f = 316.228.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.9e-16     3.2e-06   1.0000000     0.00068  849  295  590    8e-11  3.7e-
13

Parameter f = 316.228.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.6e-14       3e-06   1.0000000      0.0011  852  296  592  9.8e-11  1.8e-
11

Parameter f = 316.228.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.2e-13     2.7e-06   1.0000000      0.0018  855  297  594  7.7e-11  5.7e-
11

Parameter f = 316.228.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       6e-12     3.7e-06   1.0000000       0.003  858  298  596  1.3e-10  5.9e-
11

Parameter f = 316.228.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-10     3.1e-06   1.0000000      0.0049  861  299  598  1.1e-10  6.3e-
11
```

```
Parameter f = 316.228.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.1e-09     3.5e-06   1.0000000      0.0081  864  300  600  3.9e-10  6.3e-
11

Parameter f = 316.228.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.8e-08     9.4e-06   1.0000000       0.013  867  301  602    2e-10  5.8e-
11

Parameter f = 316.228.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.3e-07     0.00041   1.0000000       0.022  870  302  604  6.1e-11  5.8e-
11

Parameter f = 316.228.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     9.2e-06         7.2   1.0000000       0.036  872  303  606  1.4e-10  5.5e-
11
   2     9.6e-12     3.6e-06   1.0000000     9.2e-06  874  304  608  1.8e-10  6.9e-
11

Parameter f = 383.119.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     3.1e-06   1.0000000     3.5e-05  877  305  610  2.9e-10  1.8e-
15

Parameter f = 383.119.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.7e-18     3.4e-06   1.0000000     5.8e-05  880  306  612  2.6e-10  2.7e-
14

Parameter f = 383.119.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.1e-17     3.2e-06   1.0000000     9.5e-05  883  307  614  1.1e-10  1.1e-
14

Parameter f = 383.119.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
```

```
   1     3.1e-17     2.8e-06   1.0000000     0.00016  886  308  616  5.7e-11  4.7e-
14

Parameter f = 383.119.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.7e-17     2.9e-06   1.0000000     0.00025  889  309  618  3.2e-10  2.2e-
13

Parameter f = 383.119.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1      5e-16     3.5e-06   1.0000000     0.00042  892  310  620  4.8e-10  1.2e-
12

Parameter f = 383.119.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.4e-16      3e-06   1.0000000     0.00068  895  311  622  2.4e-10  6.2e-
13

Parameter f = 383.119.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     9.8e-15     4.5e-06   1.0000000      0.0011  898  312  624  1.2e-10  1.2e-
11

Parameter f = 383.119.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.8e-13     3.1e-06   1.0000000      0.0018  901  313  626  2.5e-10  6.2e-
11

Parameter f = 383.119.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.4e-12      4e-06   1.0000000       0.003  904  314  628  9.7e-11    6e-
11

Parameter f = 383.119.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.4e-11     2.8e-06   1.0000000      0.0049  907  315  630  3.8e-10  5.9e-
11

Parameter f = 383.119.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
```

```
   1     1.2e-09     4.1e-06   1.0000000      0.0081  910  316  632  6.1e-11  6.2e-
11

Parameter f = 383.119.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.1e-08     5.2e-06   1.0000000       0.013  913  317  634  8.6e-11  6.3e-
11

Parameter f = 383.119.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.6e-07      0.0002   1.0000000       0.022  916  318  636  4.2e-11    6e-
11

Parameter f = 383.119.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     5.5e-06         5.1   1.0000000       0.036  918  319  638  7.4e-11  5.5e-
11
   2     2.9e-12     3.7e-06   1.0000000     5.5e-06  920  320  640  8.7e-11  6.8e-
11

Parameter f = 464.159.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     3.5e-06   1.0000000     3.5e-05  923  321  642  3.1e-10  3.7e-
15

Parameter f = 464.159.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.4e-18     3.2e-06   1.0000000     5.8e-05  926  322  644  1.9e-10    2e-
14

Parameter f = 464.159.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.1e-17     3.8e-06   1.0000000     9.5e-05  929  323  646  1.6e-10    1e-
14

Parameter f = 464.159.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1      4e-17     3.3e-06   1.0000000     0.00016  932  324  648  3.4e-10  7.6e-
14

Parameter f = 464.159.
Parameter Ctarget = 7.19686e-07.
```

```
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     5.4e-17     3.1e-06   1.0000000     0.00025  935  325  650  6.1e-10  2.1e-
13

Parameter f = 464.159.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     9.4e-17     3.2e-06   1.0000000     0.00042  938  326  652  4.9e-10    2e-
13

Parameter f = 464.159.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     8.8e-16     3.1e-06   1.0000000     0.00068  941  327  654  4.6e-10  8.7e-
13

Parameter f = 464.159.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     7.7e-15     4.3e-06   1.0000000      0.0011  944  328  656  3.5e-10  9.8e-
12

Parameter f = 464.159.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       1e-13     2.7e-06   1.0000000      0.0018  947  329  658  2.7e-10  6.3e-
11

Parameter f = 464.159.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-12       3e-06   1.0000000       0.003  950  330  660  2.1e-10  5.9e-
11

Parameter f = 464.159.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.6e-11     3.3e-06   1.0000000      0.0049  953  331  662  2.9e-10  6.2e-
11

Parameter f = 464.159.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.7e-10     2.3e-06   1.0000000      0.0081  956  332  664  2.5e-10  5.4e-
11

Parameter f = 464.159.
Parameter Ctarget = 3.72759e-05.
```

```
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.2e-08     4.5e-06   1.0000000       0.013  959  333  666    4e-10  6.1e-
11

Parameter f = 464.159.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.1e-07     9.3e-05   1.0000000       0.022  962  334  668    4e-10  6.6e-
11

Parameter f = 464.159.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.2e-06         3.6   1.0000000       0.036  964  335  670  1.3e-10  6.1e-
11
   2     8.5e-13       3e-06   1.0000000     3.2e-06  966  336  672  1.5e-10  6.9e-
11

Parameter f = 562.341.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     2.8e-06   1.0000000     3.5e-05  969  337  674  4.5e-10  2.4e-
15

Parameter f = 562.341.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     5.9e-18       4e-06   1.0000000     5.8e-05  972  338  676  4.5e-10  8.8e-
15

Parameter f = 562.341.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.1e-17     3.6e-06   1.0000000     9.5e-05  975  339  678  2.3e-10  5.9e-
15

Parameter f = 562.341.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.3e-17     3.3e-06   1.0000000     0.00016  978  340  680    5e-11  1.8e-
14

Parameter f = 562.341.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.7e-17     3.1e-06   1.0000000     0.00025  981  341  682    5e-10    6e-
14
```

```
Parameter f = 562.341.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.6e-16     3.4e-06   1.0000000     0.00042  984  342  684  1.8e-10  3.7e-
13

Parameter f = 562.341.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.9e-17     3.7e-06   1.0000000     0.00068  987  343  686  4.3e-10  7.2e-
14

Parameter f = 562.341.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.4e-15     3.7e-06   1.0000000      0.0011  990  344  688  9.7e-11  4.1e-
12

Parameter f = 562.341.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     5.7e-14     3.3e-06   1.0000000      0.0018  993  345  690  6.1e-11  6.5e-
11

Parameter f = 562.341.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-12     2.9e-06   1.0000000       0.003  996  346  692  1.7e-10  7.2e-
11

Parameter f = 562.341.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1      2e-11     3.2e-06   1.0000000      0.0049  999  347  694  1.7e-10  6.2e-
11

Parameter f = 562.341.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.8e-10     3.6e-06   1.0000000      0.0081 1002  348  696    9e-11  6.4e-
11

Parameter f = 562.341.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.9e-09     3.1e-06   1.0000000       0.013 1005  349  698  1.1e-10    6e-
11
```

```
Parameter f = 562.341.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.2e-07     4.5e-05   1.0000000       0.022 1008  350  700  7.2e-11  5.8e-
11

Parameter f = 562.341.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-06         2.5   1.0000000       0.036 1010  351  702  2.2e-10  6.3e-
11
   2     2.4e-13     2.7e-06   1.0000000     1.9e-06 1012  352  704    1e-10  6.4e-
11

Parameter f = 681.292.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17       3e-06   1.0000000     3.5e-05 1015  353  706  1.7e-10  1.1e-
15

Parameter f = 681.292.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     7.1e-18     4.2e-06   1.0000000     5.8e-05 1018  354  708  2.5e-10  2.8e-
14

Parameter f = 681.292.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.1e-17     3.7e-06   1.0000000     9.5e-05 1021  355  710  3.7e-10  2.9e-
15

Parameter f = 681.292.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.3e-17     3.1e-06   1.0000000     0.00016 1024  356  712  4.6e-10  2.3e-
14

Parameter f = 681.292.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     4.2e-17     3.7e-06   1.0000000     0.00025 1027  357  714  3.7e-10  1.2e-
13

Parameter f = 681.292.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
```

```
   1     7.9e-17     3.3e-06   1.0000000     0.00042 1030  358  716  5.6e-10  1.6e-
13

Parameter f = 681.292.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.3e-16       4e-06   1.0000000     0.00068 1033  359  718  2.4e-10  1.6e-
13

Parameter f = 681.292.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.7e-15     2.9e-06   1.0000000      0.0011 1036  360  720  4.1e-10  5.2e-
12

Parameter f = 681.292.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.2e-14     2.9e-06   1.0000000      0.0018 1039  361  722  9.9e-11  5.8e-
11

Parameter f = 681.292.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       6e-13     3.7e-06   1.0000000       0.003 1042  362  724    2e-10  6.1e-
11

Parameter f = 681.292.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-11     3.1e-06   1.0000000      0.0049 1045  363  726  6.3e-11  6.1e-
11

Parameter f = 681.292.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.1e-10     4.2e-06   1.0000000      0.0081 1048  364  728    1e-10    6e-
11

Parameter f = 681.292.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.9e-09     3.6e-06   1.0000000       0.013 1051  365  730  9.6e-11  5.7e-
11

Parameter f = 681.292.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
```

```
   1     6.8e-08     2.2e-05   1.0000000       0.022 1054  366  732  9.3e-11  6.3e-
11

Parameter f = 681.292.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-06         1.7   1.0000000       0.036 1056  367  734  4.3e-10  5.7e-
11
   2     6.8e-14     3.6e-06   1.0000000     1.1e-06 1058  368  736  1.8e-10  2.5e-
11

Parameter f = 825.404.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     3.8e-06   1.0000000     3.5e-05 1061  369  738  4.7e-10  2.3e-
15

Parameter f = 825.404.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       7e-18     2.6e-06   1.0000000     5.8e-05 1064  370  740  4.5e-10  2.8e-
14

Parameter f = 825.404.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.1e-17     3.4e-06   1.0000000     9.5e-05 1067  371  742    2e-10  3.5e-
15

Parameter f = 825.404.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       2e-17     2.8e-06   1.0000000     0.00016 1070  372  744  3.9e-10  9.8e-
15

Parameter f = 825.404.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.6e-17     3.9e-06   1.0000000     0.00025 1073  373  746  2.8e-10  7.4e-
14

Parameter f = 825.404.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       1e-16     3.8e-06   1.0000000     0.00042 1076  374  748  2.3e-10  2.1e-
13

Parameter f = 825.404.
Parameter Ctarget = 1.9307e-06.
```

```
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-16     3.2e-06   1.0000000     0.00068 1079  375  750  2.9e-10  1.8e-
13

Parameter f = 825.404.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.7e-15     3.4e-06   1.0000000      0.0011 1082  376  752  2.1e-10    2e-
12

Parameter f = 825.404.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-14     2.9e-06   1.0000000      0.0018 1085  377  754  2.1e-10  6.2e-
11

Parameter f = 825.404.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.4e-13     3.1e-06   1.0000000       0.003 1088  378  756  5.3e-11    7e-
11

Parameter f = 825.404.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.4e-12     3.5e-06   1.0000000      0.0049 1091  379  758  1.6e-10  5.6e-
11

Parameter f = 825.404.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.2e-10     2.6e-06   1.0000000       0.008 1094  380  760  5.9e-11  6.1e-
11

Parameter f = 825.404.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.2e-09     3.3e-06   1.0000000       0.013 1097  381  762  9.5e-11  6.1e-
11

Parameter f = 825.404.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.9e-08       1e-05   1.0000000       0.022 1100  382  764  3.8e-10  6.6e-
11

Parameter f = 825.404.
Parameter Ctarget = 0.0001.
```

```
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.3e-07         1.2   1.0000000       0.036 1102  383  766  1.6e-10  5.6e-
11
   2     1.9e-14     3.4e-06   1.0000000     6.3e-07 1104  384  768  6.2e-10  1.1e-
11

Parameter f = 1000.
Parameter Ctarget = 1e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-17     2.8e-06   1.0000000     3.5e-05 1107  385  770  5.5e-10  2.3e-
15

Parameter f = 1000.
Parameter Ctarget = 1.63789e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.1e-18     3.1e-06   1.0000000     5.8e-05 1110  386  772    4e-10  1.4e-
14

Parameter f = 1000.
Parameter Ctarget = 2.6827e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.1e-17     2.6e-06   1.0000000     9.5e-05 1113  387  774  9.7e-11    7e-
15

Parameter f = 1000.
Parameter Ctarget = 4.39397e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.7e-17     3.9e-06   1.0000000     0.00016 1116  388  776  4.6e-10  4.6e-
14

Parameter f = 1000.
Parameter Ctarget = 7.19686e-07.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.5e-17     2.8e-06   1.0000000     0.00025 1119  389  778    4e-10  1.3e-
13

Parameter f = 1000.
Parameter Ctarget = 1.17877e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1       8e-17     3.6e-06   1.0000000     0.00042 1122  390  780  2.3e-10  1.6e-
13

Parameter f = 1000.
Parameter Ctarget = 1.9307e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.4e-16     3.4e-06   1.0000000     0.00068 1125  391  782    2e-10  3.2e-
13
```

```
Parameter f = 1000.
Parameter Ctarget = 3.16228e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.8e-15       3e-06   1.0000000      0.0011 1128  392  784  3.3e-10  2.3e-
12

Parameter f = 1000.
Parameter Ctarget = 5.17947e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.1e-14     3.8e-06   1.0000000      0.0018 1131  393  786  2.3e-10  5.8e-
11

Parameter f = 1000.
Parameter Ctarget = 8.48343e-06.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.9e-13     3.4e-06   1.0000000       0.003 1134  394  788  1.5e-10  6.1e-
11

Parameter f = 1000.
Parameter Ctarget = 1.3895e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.6e-12     2.9e-06   1.0000000      0.0049 1137  395  790  5.3e-11  6.1e-
11

Parameter f = 1000.
Parameter Ctarget = 2.27585e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     6.8e-11     3.5e-06   1.0000000       0.008 1140  396  792  1.1e-10  5.6e-
11

Parameter f = 1000.
Parameter Ctarget = 3.72759e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     1.2e-09     3.5e-06   1.0000000       0.013 1143  397  794  9.1e-11  5.9e-
11

Parameter f = 1000.
Parameter Ctarget = 6.1054e-05.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     2.2e-08     5.7e-06   1.0000000       0.022 1146  398  796  1.4e-10  6.1e-
11

Parameter f = 1000.
Parameter Ctarget = 0.0001.
Iter      SolEst      ResEst     Damping    Stepsize #Res #Jac #Sol   LinErr   LinRe
s
   1     3.6e-07        0.83   1.0000000       0.035 1148  399  798  1.9e-10  6.3e-
11
```

```
    2     5.2e-15     2.8e-06   1.0000000     3.6e-07 1150  400  800    3e-10  3.5e-
12
```

Parametric 1 (p1)

GENERAL

Description	Value
Defined by study step	Parametric Sweep
Sweep type	All combinations
Run continuation for	No parameter

PARAMETERS

Parameter name	Parameter value list	Parameter unit
f	10^(range(1, (3-1)/24, 3))*1[Hz]	1/s
Ctarget	10^(range(-7, (-4 - (-7))/14, -4))*1[mol/m^3]	mol/m^3

CONTINUATION

Description	Value
Predictor	Constant

Fully Coupled 1 (fc1)

GENERAL

Description	Value
Linear solver	Direct (cd) (merged)

METHOD AND TERMINATION

Description	Value
Minimum damping factor	1E-6
Maximum number of iterations	50

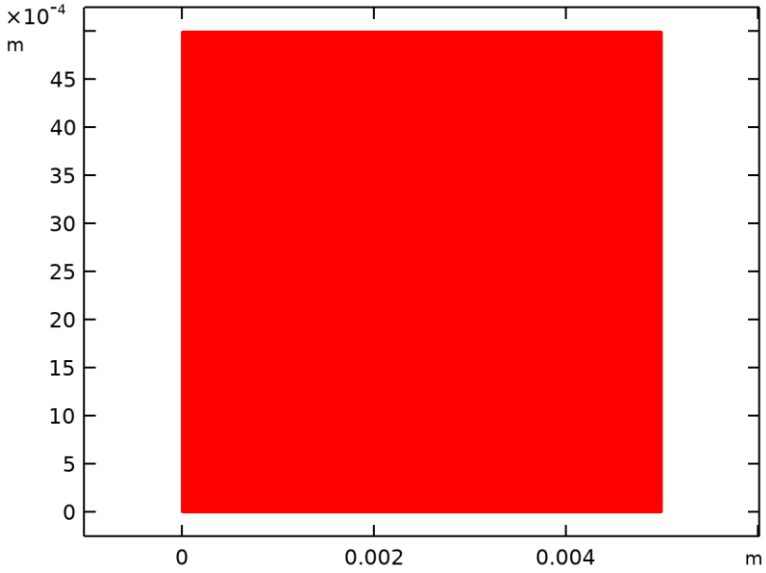
4 Results

4.1 DATASETS

4.1.1 Study 1/Solution 1

SOLUTION

Description	Value
Solution	Solution 1
Component	Component 1 (comp1)



Dataset: Study 1/Solution 1

4.1.2 Revolution 2D 1

DATA

Description	Value
Dataset	Study 1/Solution 1

AXIS DATA

Description	Value
Axis entry method	Two points
Points	{{0, 0}, {0, 1}}

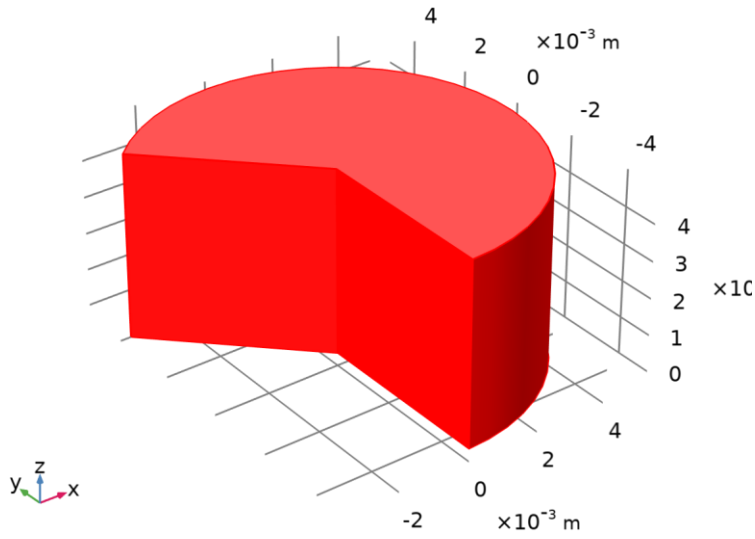
REVOLUTION LAYERS

Description	Value
Start angle	-90

Description	Value
Revolution angle	225

ADVANCED

Description	Value
Define variables	On
Space variables	{rev1x, rev1y, rev1z}



Dataset: Revolution 2D 1

4.2 DERIVED VALUES

4.2.1 Global Evaluation 1

DATA

Description	Value
Dataset	Study 1/Solution 1

EXPRESSIONS

Expression	Unit	Description
theta_open	1	State variable theta_open

4.2.2 Line Integration 1

OUTPUT

Evaluated in	Table 1

DATA

Description	Value
Dataset	Study 1/Solution 1

EXPRESSIONS

Expression	Unit	Description
cd.iloc_er1	A	Local current density
cd.nIl	A	Normal electrolyte current density
cd.Itot_es1	m^2*A	Total current

INTEGRATION SETTINGS

Description	Value
Integration order	4
Compute surface integral	On

4.3 TABLES

4.3.1 Table 1

Line Integration 1

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
10	1E-7	-4.9842E-10	4.9842E-10	-1.5658E-15
10	1.6379E-7	-1.3363E-9	1.3363E-9	-4.1981E-15
10	2.6827E-7	-3.581E-9	3.581E-9	-1.125E-14
10	4.394E-7	-9.5887E-9	9.5887E-9	-3.0124E-14
10	7.1969E-7	-2.5635E-8	2.5635E-8	-8.0534E-14
10	1.1788E-6	-6.8315E-8	6.8315E-8	-2.1462E-13
10	1.9307E-6	-1.8083E-7	1.8083E-7	-5.6811E-13
10	3.1623E-6	-4.7162E-7	4.7162E-7	-1.4816E-12
10	5.1795E-6	-1.1908E-6	1.1908E-6	-3.7409E-12
10	8.4834E-6	-2.8164E-6	2.8164E-6	-8.8481E-12
10	1.3895E-5	-5.9801E-6	5.9801E-6	-1.8787E-11
10	2.2758E-5	-1.1138E-5	1.1138E-5	-3.499E-11
10	3.7276E-5	-1.8464E-5	1.8464E-5	-5.8006E-11
10	6.1054E-5	-2.8014E-5	2.8013E-5	-8.801E-11
10	1E-4	-3.9552E-5	3.9552E-5	-1.2426E-10
12.115	1E-7	-4.1146E-10	4.1146E-10	-1.2926E-15
12.115	1.6379E-7	-1.1033E-9	1.1033E-9	-3.466E-15
12.115	2.6827E-7	-2.9571E-9	2.9571E-9	-9.2899E-15

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
12.115	4.394E-7	-7.9207E-9	7.9207E-9	-2.4884E-14
12.115	7.1969E-7	-2.119E-8	2.119E-8	-6.657E-14
12.115	1.1788E-6	-5.6551E-8	5.6551E-8	-1.7766E-13
12.115	1.9307E-6	-1.5015E-7	1.5015E-7	-4.7172E-13
12.115	3.1623E-6	-3.943E-7	3.943E-7	-1.2387E-12
12.115	5.1795E-6	-1.0105E-6	1.0105E-6	-3.1745E-12
12.115	8.4834E-6	-2.4604E-6	2.4604E-6	-7.7297E-12
12.115	1.3895E-5	-5.4611E-6	5.4611E-6	-1.7156E-11
12.115	2.2758E-5	-1.0666E-5	1.0666E-5	-3.3509E-11
12.115	3.7276E-5	-1.8346E-5	1.8346E-5	-5.7637E-11
12.115	6.1054E-5	-2.8547E-5	2.8545E-5	-8.9682E-11
12.115	1E-4	-4.1085E-5	4.1085E-5	-1.2907E-10
14.678	1E-7	-3.3966E-10	3.3966E-10	-1.0671E-15
14.678	1.6379E-7	-9.1082E-10	9.1082E-10	-2.8614E-15
14.678	2.6827E-7	-2.4416E-9	2.4416E-9	-7.6707E-15
14.678	4.394E-7	-6.5419E-9	6.5419E-9	-2.0552E-14
14.678	7.1969E-7	-1.751E-8	1.751E-8	-5.5011E-14
14.678	1.1788E-6	-4.678E-8	4.678E-8	-1.4696E-13
14.678	1.9307E-6	-1.2449E-7	1.2449E-7	-3.9111E-13
14.678	3.1623E-6	-3.2856E-7	3.2856E-7	-1.0322E-12
14.678	5.1795E-6	-8.5147E-7	8.5147E-7	-2.675E-12
14.678	8.4834E-6	-2.1214E-6	2.1214E-6	-6.6645E-12
14.678	1.3895E-5	-4.8963E-6	4.8963E-6	-1.5382E-11
14.678	2.2758E-5	-1.0037E-5	1.0037E-5	-3.1532E-11
14.678	3.7276E-5	-1.7999E-5	1.7998E-5	-5.6544E-11
14.678	6.1054E-5	-2.8823E-5	2.8822E-5	-9.0551E-11
14.678	1E-4	-4.2338E-5	4.2338E-5	-1.3301E-10
17.783	1E-7	-2.8039E-10	2.8039E-10	-8.8086E-16
17.783	1.6379E-7	-7.5192E-10	7.5192E-10	-2.3622E-15
17.783	2.6827E-7	-2.0159E-9	2.0159E-9	-6.3332E-15
17.783	4.394E-7	-5.4024E-9	5.4024E-9	-1.6972E-14
17.783	7.1969E-7	-1.4466E-8	1.4466E-8	-4.5447E-14
17.783	1.1788E-6	-3.8679E-8	3.8679E-8	-1.2151E-13
17.783	1.9307E-6	-1.0311E-7	1.0311E-7	-3.2392E-13
17.783	3.1623E-6	-2.7313E-7	2.7313E-7	-8.5806E-13

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
17.783	5.1795E-6	-7.1367E-7	7.1367E-7	-2.2421E-12
17.783	8.4834E-6	-1.8098E-6	1.8098E-6	-5.6856E-12
17.783	1.3895E-5	-4.3168E-6	4.3168E-6	-1.3562E-11
17.783	2.2758E-5	-9.2703E-6	9.2703E-6	-2.9123E-11
17.783	3.7276E-5	-1.7401E-5	1.7401E-5	-5.4667E-11
17.783	6.1054E-5	-2.8809E-5	2.8808E-5	-9.0507E-11
17.783	1E-4	-4.3277E-5	4.3277E-5	-1.3596E-10
21.544	1E-7	-2.3145E-10	2.3145E-10	-7.2712E-16
21.544	1.6379E-7	-6.2072E-10	6.2072E-10	-1.95E-15
21.544	2.6827E-7	-1.6643E-9	1.6643E-9	-5.2287E-15
21.544	4.394E-7	-4.461E-9	4.461E-9	-1.4014E-14
21.544	7.1969E-7	-1.1949E-8	1.1949E-8	-3.7539E-14
21.544	1.1788E-6	-3.1968E-8	3.1968E-8	-1.0043E-13
21.544	1.9307E-6	-8.5325E-8	8.5325E-8	-2.6806E-13
21.544	3.1623E-6	-2.2665E-7	2.2665E-7	-7.1203E-13
21.544	5.1795E-6	-5.9583E-7	5.9583E-7	-1.8718E-12
21.544	8.4834E-6	-1.5312E-6	1.5312E-6	-4.8105E-12
21.544	1.3895E-5	-3.7508E-6	3.7508E-6	-1.1784E-11
21.544	2.2758E-5	-8.4038E-6	8.4038E-6	-2.6401E-11
21.544	3.7276E-5	-1.6549E-5	1.6549E-5	-5.1989E-11
21.544	6.1054E-5	-2.8465E-5	2.8464E-5	-8.9426E-11
21.544	1E-4	-4.3863E-5	4.3863E-5	-1.378E-10
26.102	1E-7	-1.9105E-10	1.9105E-10	-6.0021E-16
26.102	1.6379E-7	-5.124E-10	5.124E-10	-1.6098E-15
26.102	2.6827E-7	-1.374E-9	1.374E-9	-4.3166E-15
26.102	4.394E-7	-3.6833E-9	3.6833E-9	-1.1571E-14
26.102	7.1969E-7	-9.8684E-9	9.8684E-9	-3.1002E-14
26.102	1.1788E-6	-2.6414E-8	2.6414E-8	-8.2982E-14
26.102	1.9307E-6	-7.0568E-8	7.0568E-8	-2.217E-13
26.102	3.1623E-6	-1.8783E-7	1.8783E-7	-5.9008E-13
26.102	5.1795E-6	-4.96E-7	4.96E-7	-1.5582E-12
26.102	8.4834E-6	-1.2874E-6	1.2874E-6	-4.0446E-12
26.102	1.3895E-5	-3.2201E-6	3.2201E-6	-1.0116E-11
26.102	2.2758E-5	-7.4847E-6	7.4847E-6	-2.3514E-11
26.102	3.7276E-5	-1.5459E-5	1.5459E-5	-4.8567E-11

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
26.102	6.1054E-5	-2.7756E-5	2.7755E-5	-8.7198E-11
26.102	1E-4	-4.4051E-5	4.4051E-5	-1.3839E-10
31.623	1E-7	-1.577E-10	1.577E-10	-4.9544E-16
31.623	1.6379E-7	-4.2298E-10	4.2298E-10	-1.3288E-15
31.623	2.6827E-7	-1.1343E-9	1.1343E-9	-3.5635E-15
31.623	4.394E-7	-3.041E-9	3.041E-9	-9.5535E-15
31.623	7.1969E-7	-8.1491E-9	8.1491E-9	-2.5601E-14
31.623	1.1788E-6	-2.182E-8	2.182E-8	-6.855E-14
31.623	1.9307E-6	-5.8338E-8	5.8338E-8	-1.8327E-13
31.623	3.1623E-6	-1.5551E-7	1.5551E-7	-4.8855E-13
31.623	5.1795E-6	-4.1201E-7	4.1201E-7	-1.2944E-12
31.623	8.4834E-6	-1.0774E-6	1.0774E-6	-3.3847E-12
31.623	1.3895E-5	-2.738E-6	2.738E-6	-8.6018E-12
31.623	2.2758E-5	-6.5614E-6	6.5614E-6	-2.0613E-11
31.623	3.7276E-5	-1.4177E-5	1.4176E-5	-4.4537E-11
31.623	6.1054E-5	-2.6659E-5	2.6658E-5	-8.3751E-11
31.623	1E-4	-4.3784E-5	4.3784E-5	-1.3755E-10
38.312	1E-7	-1.3018E-10	1.3018E-10	-4.0896E-16
38.312	1.6379E-7	-3.4915E-10	3.4915E-10	-1.0969E-15
38.312	2.6827E-7	-9.3636E-10	9.3636E-10	-2.9417E-15
38.312	4.394E-7	-2.5106E-9	2.5106E-9	-7.8872E-15
38.312	7.1969E-7	-6.7288E-9	6.7288E-9	-2.1139E-14
38.312	1.1788E-6	-1.8022E-8	1.8022E-8	-5.6618E-14
38.312	1.9307E-6	-4.821E-8	4.821E-8	-1.5146E-13
38.312	3.1623E-6	-1.2866E-7	1.2866E-7	-4.042E-13
38.312	5.1795E-6	-3.4172E-7	3.4172E-7	-1.0735E-12
38.312	8.4834E-6	-8.9845E-7	8.9845E-7	-2.8225E-12
38.312	1.3895E-5	-2.311E-6	2.311E-6	-7.2602E-12
38.312	2.2758E-5	-5.6749E-6	5.6749E-6	-1.7828E-11
38.312	3.7276E-5	-1.2766E-5	1.2766E-5	-4.0105E-11
38.312	6.1054E-5	-2.5179E-5	2.5179E-5	-7.9103E-11
38.312	1E-4	-4.3007E-5	4.3007E-5	-1.3511E-10
46.416	1E-7	-1.0745E-10	1.0745E-10	-3.3757E-16
46.416	1.6379E-7	-2.8821E-10	2.8821E-10	-9.0544E-16
46.416	2.6827E-7	-7.7295E-10	7.7295E-10	-2.4283E-15

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
46.416	4.394E-7	-2.0726E-9	2.0726E-9	-6.5113E-15
46.416	7.1969E-7	-5.5556E-9	5.5556E-9	-1.7453E-14
46.416	1.1788E-6	-1.4883E-8	1.4883E-8	-4.6757E-14
46.416	1.9307E-6	-3.9831E-8	3.9831E-8	-1.2513E-13
46.416	3.1623E-6	-1.0639E-7	1.0639E-7	-3.3423E-13
46.416	5.1795E-6	-2.8308E-7	2.8308E-7	-8.8933E-13
46.416	8.4834E-6	-7.473E-7	7.473E-7	-2.3477E-12
46.416	1.3895E-5	-1.9396E-6	1.9396E-6	-6.0935E-12
46.416	2.2758E-5	-4.8546E-6	4.8546E-6	-1.5251E-11
46.416	3.7276E-5	-1.1304E-5	1.1304E-5	-3.5512E-11
46.416	6.1054E-5	-2.336E-5	2.3359E-5	-7.3387E-11
46.416	1E-4	-4.1672E-5	4.1672E-5	-1.3092E-10
56.234	1E-7	-8.8694E-11	8.8694E-11	-2.7864E-16
56.234	1.6379E-7	-2.379E-10	2.379E-10	-7.4739E-16
56.234	2.6827E-7	-6.3805E-10	6.3805E-10	-2.0045E-15
56.234	4.394E-7	-1.711E-9	1.711E-9	-5.3752E-15
56.234	7.1969E-7	-4.5867E-9	4.5867E-9	-1.441E-14
56.234	1.1788E-6	-1.229E-8	1.229E-8	-3.861E-14
56.234	1.9307E-6	-3.2901E-8	3.2901E-8	-1.0336E-13
56.234	3.1623E-6	-8.7938E-8	8.7938E-8	-2.7627E-13
56.234	5.1795E-6	-2.3431E-7	2.3431E-7	-7.3611E-13
56.234	8.4834E-6	-6.2041E-7	6.2041E-7	-1.9491E-12
56.234	1.3895E-5	-1.6211E-6	1.6211E-6	-5.0928E-12
56.234	2.2758E-5	-4.117E-6	4.117E-6	-1.2934E-11
56.234	3.7276E-5	-9.862E-6	9.862E-6	-3.0982E-11
56.234	6.1054E-5	-2.1282E-5	2.1281E-5	-6.6858E-11
56.234	1E-4	-3.9763E-5	3.9763E-5	-1.2492E-10
68.129	1E-7	-7.321E-11	7.321E-11	-2.3E-16
68.129	1.6379E-7	-1.9637E-10	1.9637E-10	-6.1692E-16
68.129	2.6827E-7	-5.2669E-10	5.2669E-10	-1.6546E-15
68.129	4.394E-7	-1.4124E-9	1.4124E-9	-4.4372E-15
68.129	7.1969E-7	-3.7866E-9	3.7866E-9	-1.1896E-14
68.129	1.1788E-6	-1.0148E-8	1.0148E-8	-3.188E-14
68.129	1.9307E-6	-2.7173E-8	2.7173E-8	-8.5367E-14
68.129	3.1623E-6	-7.2665E-8	7.2665E-8	-2.2828E-13

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
68.129	5.1795E-6	-1.9382E-7	1.9382E-7	-6.089E-13
68.129	8.4834E-6	-5.1435E-7	5.1435E-7	-1.6159E-12
68.129	1.3895E-5	-1.3507E-6	1.3507E-6	-4.2432E-12
68.129	2.2758E-5	-3.4683E-6	3.4683E-6	-1.0896E-11
68.129	3.7276E-5	-8.4981E-6	8.4981E-6	-2.6698E-11
68.129	6.1054E-5	-1.9053E-5	1.9053E-5	-5.9858E-11
68.129	1E-4	-3.7307E-5	3.7307E-5	-1.172E-10
82.54	1E-7	-6.0429E-11	6.0429E-11	-1.8984E-16
82.54	1.6379E-7	-1.6209E-10	1.6209E-10	-5.0923E-16
82.54	2.6827E-7	-4.3475E-10	4.3475E-10	-1.3658E-15
82.54	4.394E-7	-1.1659E-9	1.1659E-9	-3.6628E-15
82.54	7.1969E-7	-3.126E-9	3.126E-9	-9.8206E-15
82.54	1.1788E-6	-8.3781E-9	8.3781E-9	-2.6321E-14
82.54	1.9307E-6	-2.244E-8	2.244E-8	-7.0496E-14
82.54	3.1623E-6	-6.0031E-8	6.0031E-8	-1.8859E-13
82.54	5.1795E-6	-1.6025E-7	1.6025E-7	-5.0343E-13
82.54	8.4834E-6	-4.2597E-7	4.2597E-7	-1.3382E-12
82.54	1.3895E-5	-1.1228E-6	1.1228E-6	-3.5273E-12
82.54	2.2758E-5	-2.9071E-6	2.9071E-6	-9.1329E-12
82.54	3.7276E-5	-7.2499E-6	7.2499E-6	-2.2776E-11
82.54	6.1054E-5	-1.679E-5	1.679E-5	-5.2748E-11
82.54	1E-4	-3.4391E-5	3.4391E-5	-1.0804E-10
100	1E-7	-4.9879E-11	4.9879E-11	-1.567E-16
100	1.6379E-7	-1.338E-10	1.338E-10	-4.2033E-16
100	2.6827E-7	-3.5886E-10	3.5886E-10	-1.1274E-15
100	4.394E-7	-9.6242E-10	9.6242E-10	-3.0235E-15
100	7.1969E-7	-2.5806E-9	2.5806E-9	-8.1071E-15
100	1.1788E-6	-6.9169E-9	6.9169E-9	-2.173E-14
100	1.9307E-6	-1.8529E-8	1.8529E-8	-5.821E-14
100	3.1623E-6	-4.9584E-8	4.9584E-8	-1.5577E-13
100	5.1795E-6	-1.3244E-7	1.3244E-7	-4.1607E-13
100	8.4834E-6	-3.5251E-7	3.5251E-7	-1.1074E-12
100	1.3895E-5	-9.3173E-7	9.3173E-7	-2.9271E-12
100	2.2758E-5	-2.4275E-6	2.4275E-6	-7.6263E-12
100	3.7276E-5	-6.1366E-6	6.1366E-6	-1.9279E-11

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
100	6.1054E-5	-1.4595E-5	1.4595E-5	-4.5851E-11
100	1E-4	-3.1153E-5	3.1153E-5	-9.787E-11
121.15	1E-7	-4.1171E-11	4.1171E-11	-1.2934E-16
121.15	1.6379E-7	-1.1044E-10	1.1044E-10	-3.4695E-16
121.15	2.6827E-7	-2.9622E-10	2.9622E-10	-9.306E-16
121.15	4.394E-7	-7.9444E-10	7.9444E-10	-2.4958E-15
121.15	7.1969E-7	-2.1302E-9	2.1302E-9	-6.6923E-15
121.15	1.1788E-6	-5.7102E-9	5.7102E-9	-1.7939E-14
121.15	1.9307E-6	-1.5299E-8	1.5299E-8	-4.8062E-14
121.15	3.1623E-6	-4.095E-8	4.095E-8	-1.2865E-13
121.15	5.1795E-6	-1.0943E-7	1.0943E-7	-3.4378E-13
121.15	8.4834E-6	-2.9155E-7	2.9155E-7	-9.1592E-13
121.15	1.3895E-5	-7.7222E-7	7.7222E-7	-2.426E-12
121.15	2.2758E-5	-2.0214E-6	2.0214E-6	-6.3503E-12
121.15	3.7276E-5	-5.1631E-6	5.1631E-6	-1.622E-11
121.15	6.1054E-5	-1.2543E-5	1.2543E-5	-3.9404E-11
121.15	1E-4	-2.7759E-5	2.7759E-5	-8.7209E-11
146.78	1E-7	-3.3983E-11	3.3983E-11	-1.0676E-16
146.78	1.6379E-7	-9.1158E-11	9.1158E-11	-2.8638E-16
146.78	2.6827E-7	-2.4451E-10	2.4451E-10	-7.6815E-16
146.78	4.394E-7	-6.5577E-10	6.5577E-10	-2.0602E-15
146.78	7.1969E-7	-1.7585E-9	1.7585E-9	-5.5243E-15
146.78	1.1788E-6	-4.714E-9	4.714E-9	-1.4809E-14
146.78	1.9307E-6	-1.2631E-8	1.2631E-8	-3.9681E-14
146.78	3.1623E-6	-3.3815E-8	3.3815E-8	-1.0623E-13
146.78	5.1795E-6	-9.0398E-8	9.0398E-8	-2.8399E-13
146.78	8.4834E-6	-2.4102E-7	2.4102E-7	-7.5719E-13
146.78	1.3895E-5	-6.3941E-7	6.3941E-7	-2.0088E-12
146.78	2.2758E-5	-1.6796E-6	1.6796E-6	-5.2768E-12
146.78	3.7276E-5	-4.3241E-6	4.3241E-6	-1.3585E-11
146.78	6.1054E-5	-1.0681E-5	1.0681E-5	-3.3557E-11
146.78	1E-4	-2.4374E-5	2.4374E-5	-7.6574E-11
177.83	1E-7	-2.805E-11	2.805E-11	-8.8122E-17
177.83	1.6379E-7	-7.5243E-11	7.5243E-11	-2.3638E-16
177.83	2.6827E-7	-2.0182E-10	2.0182E-10	-6.3405E-16

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
177.83	4.394E-7	-5.413E-10	5.413E-10	-1.7005E-15
177.83	7.1969E-7	-1.4515E-9	1.4515E-9	-4.5601E-15
177.83	1.1788E-6	-3.8914E-9	3.8914E-9	-1.2225E-14
177.83	1.9307E-6	-1.0428E-8	1.0428E-8	-3.2759E-14
177.83	3.1623E-6	-2.7921E-8	2.7921E-8	-8.7717E-14
177.83	5.1795E-6	-7.4663E-8	7.4663E-8	-2.3456E-13
177.83	8.4834E-6	-1.9919E-7	1.9919E-7	-6.2576E-13
177.83	1.3895E-5	-5.2907E-7	5.2907E-7	-1.6621E-12
177.83	2.2758E-5	-1.3935E-6	1.3935E-6	-4.3779E-12
177.83	3.7276E-5	-3.609E-6	3.609E-6	-1.1338E-11
177.83	6.1054E-5	-9.0314E-6	9.0314E-6	-2.8373E-11
177.83	1E-4	-2.1134E-5	2.1134E-5	-6.6395E-11
215.44	1E-7	-2.3153E-11	2.3153E-11	-7.2737E-17
215.44	1.6379E-7	-6.2107E-11	6.2107E-11	-1.9511E-16
215.44	2.6827E-7	-1.6659E-10	1.6659E-10	-5.2336E-16
215.44	4.394E-7	-4.468E-10	4.468E-10	-1.4037E-15
215.44	7.1969E-7	-1.1982E-9	1.1982E-9	-3.7642E-15
215.44	1.1788E-6	-3.2123E-9	3.2123E-9	-1.0092E-14
215.44	1.9307E-6	-8.6084E-9	8.6084E-9	-2.7044E-14
215.44	3.1623E-6	-2.3053E-8	2.3053E-8	-7.2423E-14
215.44	5.1795E-6	-6.166E-8	6.166E-8	-1.9371E-13
215.44	8.4834E-6	-1.6457E-7	1.6457E-7	-5.1701E-13
215.44	1.3895E-5	-4.3753E-7	4.3753E-7	-1.3746E-12
215.44	2.2758E-5	-1.1548E-6	1.1548E-6	-3.6279E-12
215.44	3.7276E-5	-3.0044E-6	3.0044E-6	-9.4385E-12
215.44	6.1054E-5	-7.5941E-6	7.5941E-6	-2.3857E-11
215.44	1E-4	-1.8135E-5	1.8135E-5	-5.6974E-11
261.02	1E-7	-1.9111E-11	1.9111E-11	-6.0038E-17
261.02	1.6379E-7	-5.1264E-11	5.1264E-11	-1.6105E-16
261.02	2.6827E-7	-1.3751E-10	1.3751E-10	-4.3199E-16
261.02	4.394E-7	-3.688E-10	3.688E-10	-1.1586E-15
261.02	7.1969E-7	-9.8903E-10	9.8903E-10	-3.1071E-15
261.02	1.1788E-6	-2.6516E-9	2.6516E-9	-8.3304E-15
261.02	1.9307E-6	-7.1064E-9	7.1064E-9	-2.2325E-14
261.02	3.1623E-6	-1.9033E-8	1.9033E-8	-5.9792E-14

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
261.02	5.1795E-6	-5.0916E-8	5.0916E-8	-1.5996E-13
261.02	8.4834E-6	-1.3594E-7	1.3594E-7	-4.2707E-13
261.02	1.3895E-5	-3.6169E-7	3.6169E-7	-1.1363E-12
261.02	2.2758E-5	-9.561E-7	9.561E-7	-3.0037E-12
261.02	3.7276E-5	-2.4962E-6	2.4962E-6	-7.8419E-12
261.02	6.1054E-5	-6.3585E-6	6.3585E-6	-1.9976E-11
261.02	1E-4	-1.5432E-5	1.5432E-5	-4.8482E-11
316.23	1E-7	-1.5774E-11	1.5774E-11	-4.9556E-17
316.23	1.6379E-7	-4.2314E-11	4.2314E-11	-1.3293E-16
316.23	2.6827E-7	-1.135E-10	1.135E-10	-3.5657E-16
316.23	4.394E-7	-3.0442E-10	3.0442E-10	-9.5636E-16
316.23	7.1969E-7	-8.1638E-10	8.1638E-10	-2.5647E-15
316.23	1.1788E-6	-2.1888E-9	2.1888E-9	-6.8764E-15
316.23	1.9307E-6	-5.8663E-9	5.8663E-9	-1.843E-14
316.23	3.1623E-6	-1.5713E-8	1.5713E-8	-4.9362E-14
316.23	5.1795E-6	-4.204E-8	4.204E-8	-1.3207E-13
316.23	8.4834E-6	-1.1228E-7	1.1228E-7	-3.5273E-13
316.23	1.3895E-5	-2.989E-7	2.989E-7	-9.3901E-13
316.23	2.2758E-5	-7.9108E-7	7.9108E-7	-2.4852E-12
316.23	3.7276E-5	-2.0709E-6	2.0709E-6	-6.5058E-12
316.23	6.1054E-5	-5.3069E-6	5.3069E-6	-1.6672E-11
316.23	1E-4	-1.3046E-5	1.3046E-5	-4.0984E-11
383.12	1E-7	-1.302E-11	1.302E-11	-4.0904E-17
383.12	1.6379E-7	-3.4926E-11	3.4926E-11	-1.0972E-16
383.12	2.6827E-7	-9.3684E-11	9.3684E-11	-2.9432E-16
383.12	4.394E-7	-2.5127E-10	2.5127E-10	-7.894E-16
383.12	7.1969E-7	-6.7386E-10	6.7386E-10	-2.117E-15
383.12	1.1788E-6	-1.8068E-9	1.8068E-9	-5.6761E-15
383.12	1.9307E-6	-4.8425E-9	4.8425E-9	-1.5213E-14
383.12	3.1623E-6	-1.2971E-8	1.2971E-8	-4.075E-14
383.12	5.1795E-6	-3.471E-8	3.471E-8	-1.0904E-13
383.12	8.4834E-6	-9.272E-8	9.272E-8	-2.9129E-13
383.12	1.3895E-5	-2.4694E-7	2.4694E-7	-7.758E-13
383.12	2.2758E-5	-6.542E-7	6.542E-7	-2.0552E-12
383.12	3.7276E-5	-1.7161E-6	1.7161E-6	-5.3914E-12

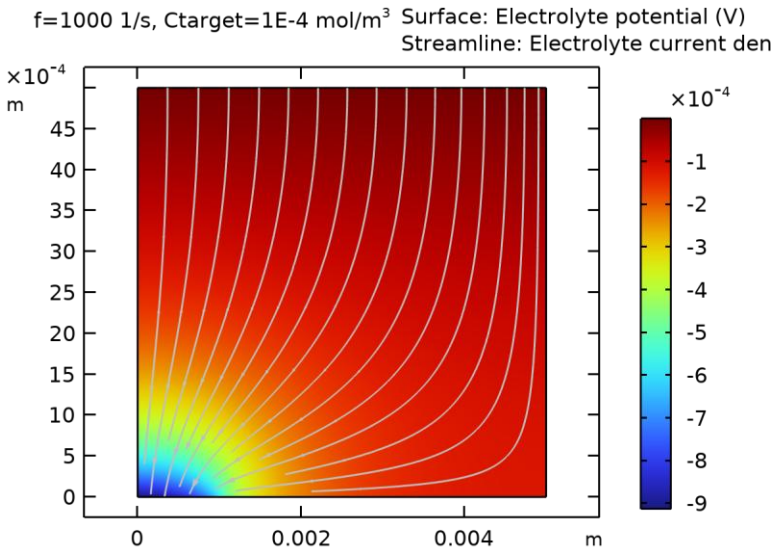
f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
383.12	6.1054E-5	-4.4183E-6	4.4183E-6	-1.388E-11
383.12	1E-4	-1.0971E-5	1.0971E-5	-3.4467E-11
464.16	1E-7	-1.0747E-11	1.0747E-11	-3.3762E-17
464.16	1.6379E-7	-2.8828E-11	2.8828E-11	-9.0567E-17
464.16	2.6827E-7	-7.7328E-11	7.7328E-11	-2.4293E-16
464.16	4.394E-7	-2.0741E-10	2.0741E-10	-6.5159E-16
464.16	7.1969E-7	-5.5623E-10	5.5623E-10	-1.7474E-15
464.16	1.1788E-6	-1.4914E-9	1.4914E-9	-4.6853E-15
464.16	1.9307E-6	-3.9973E-9	3.9973E-9	-1.2558E-14
464.16	3.1623E-6	-1.0708E-8	1.0708E-8	-3.364E-14
464.16	5.1795E-6	-2.8656E-8	2.8656E-8	-9.0025E-14
464.16	8.4834E-6	-7.6562E-8	7.6562E-8	-2.4053E-13
464.16	1.3895E-5	-2.0398E-7	2.0398E-7	-6.4084E-13
464.16	2.2758E-5	-5.4079E-7	5.4079E-7	-1.6989E-12
464.16	3.7276E-5	-1.4209E-6	1.4209E-6	-4.464E-12
464.16	6.1054E-5	-3.6716E-6	3.6716E-6	-1.1535E-11
464.16	1E-4	-9.1898E-6	9.1898E-6	-2.8871E-11
562.34	1E-7	-8.8705E-12	8.8705E-12	-2.7868E-17
562.34	1.6379E-7	-2.3795E-11	2.3795E-11	-7.4755E-17
562.34	2.6827E-7	-6.3828E-11	6.3828E-11	-2.0052E-16
562.34	4.394E-7	-1.712E-10	1.712E-10	-5.3783E-16
562.34	7.1969E-7	-4.5912E-10	4.5912E-10	-1.4424E-15
562.34	1.1788E-6	-1.231E-9	1.231E-9	-3.8674E-15
562.34	1.9307E-6	-3.2996E-9	3.2996E-9	-1.0366E-14
562.34	3.1623E-6	-8.8393E-9	8.8393E-9	-2.7769E-14
562.34	5.1795E-6	-2.3657E-8	2.3657E-8	-7.4321E-14
562.34	8.4834E-6	-6.3216E-8	6.3216E-8	-1.986E-13
562.34	1.3895E-5	-1.6847E-7	1.6847E-7	-5.2927E-13
562.34	2.2758E-5	-4.4691E-7	4.4691E-7	-1.404E-12
562.34	3.7276E-5	-1.1758E-6	1.1758E-6	-3.6937E-12
562.34	6.1054E-5	-3.0467E-6	3.0467E-6	-9.5715E-12
562.34	1E-4	-7.6738E-6	7.6738E-6	-2.4108E-11
681.29	1E-7	-7.3218E-12	7.3218E-12	-2.3002E-17
681.29	1.6379E-7	-1.9641E-11	1.9641E-11	-6.1703E-17
681.29	2.6827E-7	-5.2684E-11	5.2684E-11	-1.6551E-16

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
681.29	4.394E-7	-1.4131E-10	1.4131E-10	-4.4393E-16
681.29	7.1969E-7	-3.7897E-10	3.7897E-10	-1.1906E-15
681.29	1.1788E-6	-1.0161E-9	1.0161E-9	-3.1923E-15
681.29	1.9307E-6	-2.7237E-9	2.7237E-9	-8.5566E-15
681.29	3.1623E-6	-7.2966E-9	7.2966E-9	-2.2923E-14
681.29	5.1795E-6	-1.953E-8	1.953E-8	-6.1354E-14
681.29	8.4834E-6	-5.2192E-8	5.2192E-8	-1.6397E-13
681.29	1.3895E-5	-1.3913E-7	1.3913E-7	-4.3708E-13
681.29	2.2758E-5	-3.6924E-7	3.6924E-7	-1.16E-12
681.29	3.7276E-5	-9.7239E-7	9.7239E-7	-3.0548E-12
681.29	6.1054E-5	-2.5254E-6	2.5254E-6	-7.9336E-12
681.29	1E-4	-6.3924E-6	6.3924E-6	-2.0082E-11
825.4	1E-7	-6.0434E-12	6.0434E-12	-1.8986E-17
825.4	1.6379E-7	-1.6212E-11	1.6212E-11	-5.093E-17
825.4	2.6827E-7	-4.3486E-11	4.3486E-11	-1.3661E-16
825.4	4.394E-7	-1.1664E-10	1.1664E-10	-3.6643E-16
825.4	7.1969E-7	-3.1281E-10	3.1281E-10	-9.8271E-16
825.4	1.1788E-6	-8.3874E-10	8.3874E-10	-2.635E-15
825.4	1.9307E-6	-2.2482E-9	2.2482E-9	-7.063E-15
825.4	3.1623E-6	-6.0231E-9	6.0231E-9	-1.8922E-14
825.4	5.1795E-6	-1.6122E-8	1.6122E-8	-5.0648E-14
825.4	8.4834E-6	-4.3089E-8	4.3089E-8	-1.3537E-13
825.4	1.3895E-5	-1.1488E-7	1.1488E-7	-3.6091E-13
825.4	2.2758E-5	-3.05E-7	3.05E-7	-9.582E-13
825.4	3.7276E-5	-8.0388E-7	8.0388E-7	-2.5255E-12
825.4	6.1054E-5	-2.0914E-6	2.0914E-6	-6.5704E-12
825.4	1E-4	-5.315E-6	5.315E-6	-1.6698E-11
1000	1E-7	-4.9883E-12	4.9883E-12	-1.5671E-17
1000	1.6379E-7	-1.3381E-11	1.3381E-11	-4.2038E-17
1000	2.6827E-7	-3.5893E-11	3.5893E-11	-1.1276E-16
1000	4.394E-7	-9.6274E-11	9.6274E-11	-3.0245E-16
1000	7.1969E-7	-2.5819E-10	2.5819E-10	-8.1114E-16
1000	1.1788E-6	-6.9231E-10	6.9231E-10	-2.175E-15
1000	1.9307E-6	-1.8557E-9	1.8557E-9	-5.83E-15
1000	3.1623E-6	-4.9717E-9	4.9717E-9	-1.5619E-14

f (1/s)	Ctarget (mol/m^3)	Local current density (A)	Normal electrolyte current density (A)	Total current (m^2*A)
1000	5.1795E-6	-1.3308E-8	1.3308E-8	-4.1809E-14
1000	8.4834E-6	-3.5572E-8	3.5572E-8	-1.1175E-13
1000	1.3895E-5	-9.4855E-8	9.4855E-8	-2.9799E-13
1000	2.2758E-5	-2.5191E-7	2.5191E-7	-7.914E-13
1000	3.7276E-5	-6.6436E-7	6.6436E-7	-2.0872E-12
1000	6.1054E-5	-1.7309E-6	1.7309E-6	-5.4378E-12
1000	1E-4	-4.4127E-6	4.4127E-6	-1.3863E-11

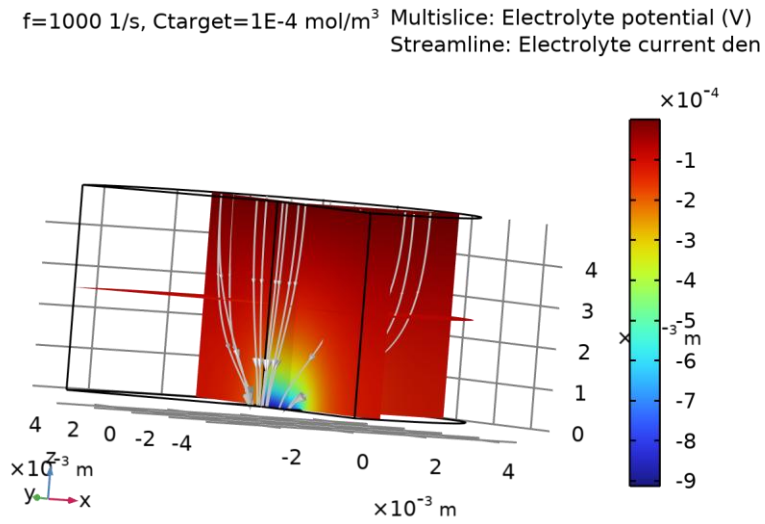
4.4 PLOT GROUPS

4.4.1 Electrolyte Potential (cd)



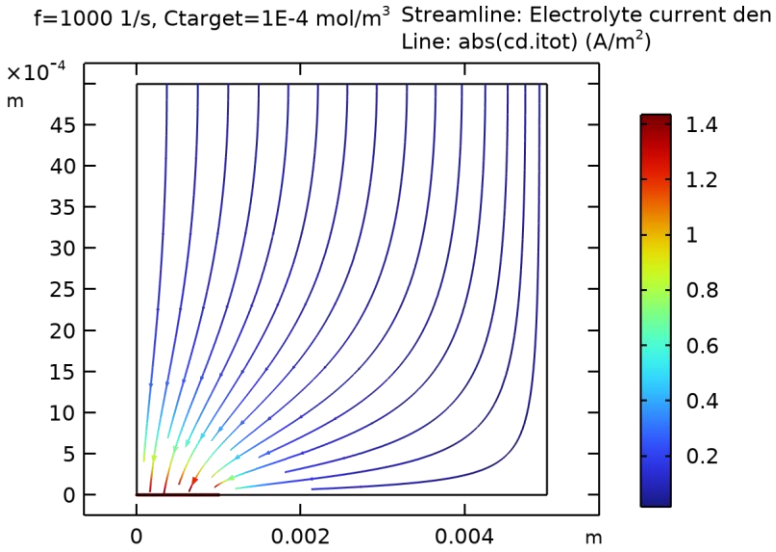
Surface: Electrolyte potential (V) Streamline: Electrolyte current density vector

4.4.2 Electrolyte Potential, 3D (cd)



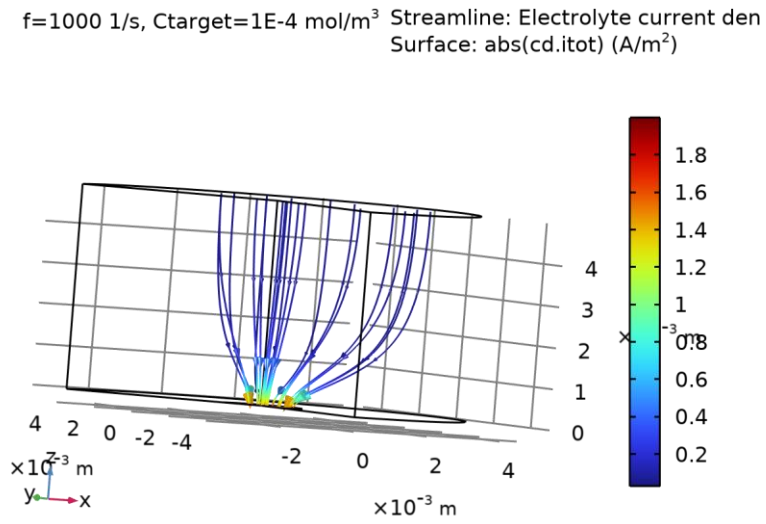
Multislice: Electrolyte potential (V) Streamline: Electrolyte current density vector

4.4.3 Electrolyte Current Density (cd)



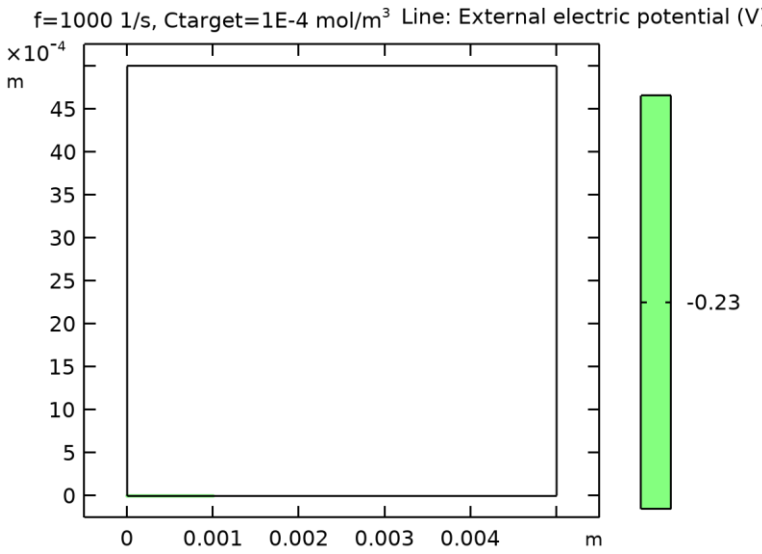
Streamline: Electrolyte current density vector Line: abs(cd.itot) (A/m^2)

4.4.4 Electrolyte Current Density, 3D (cd)



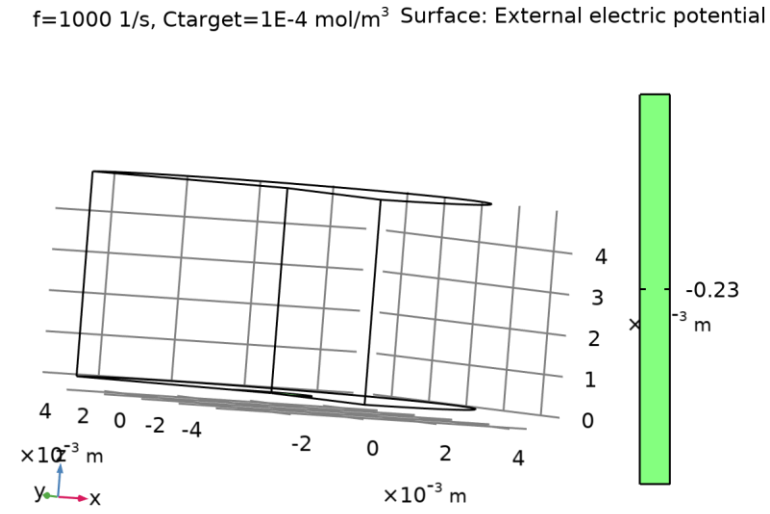
Streamline: Electrolyte current density vector Surface: abs(cd.itot) (A/m^2)

4.4.5 Electrode Potential with Respect to Ground (cd)



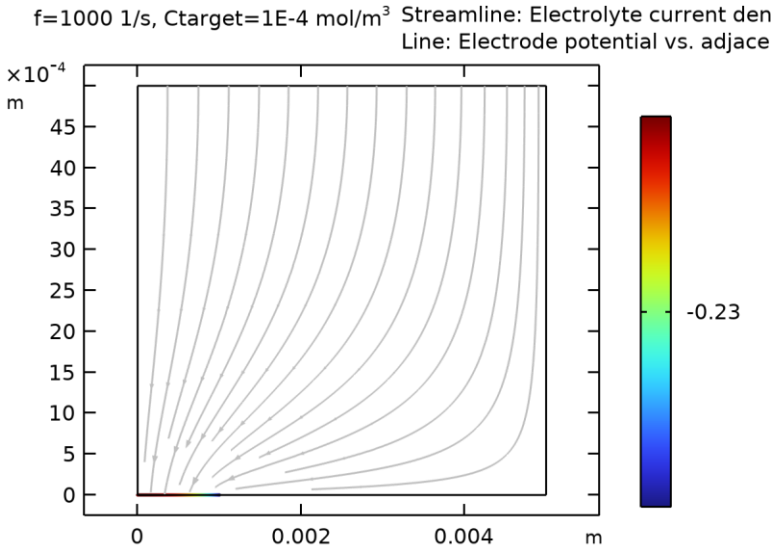
Line: External electric potential (V)

4.4.6 Electrode Potential with Respect to Ground, 3D (cd)



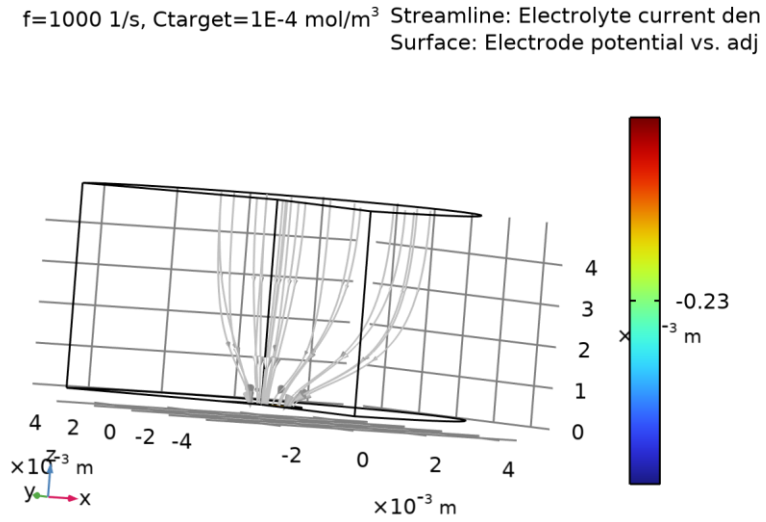
Surface: External electric potential (V)

4.4.7 Electrode Potential vs. Adjacent Reference (cd)



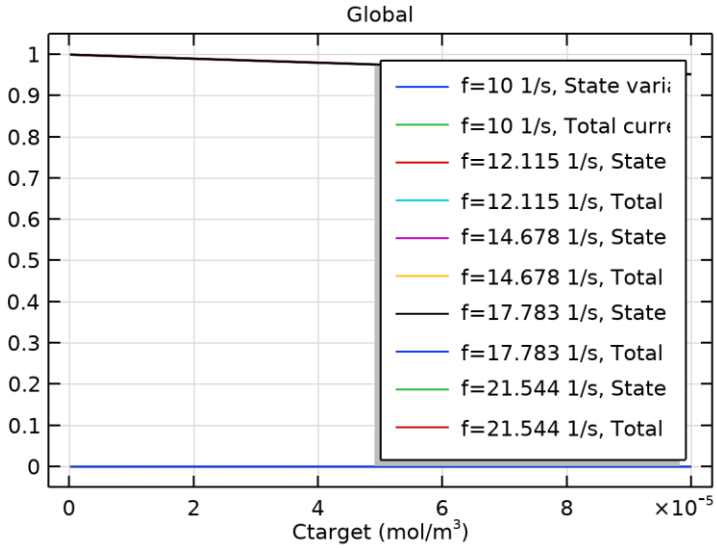
Streamline: Electrolyte current density vector Line: Electrode potential vs. adjacent reference (V)

4.4.8 Electrode Potential vs. Adjacent Reference, 3D (cd)



Streamline: Electrolyte current density vector Surface: Electrode potential vs. adjacent reference (V)

4.4.9 1D Plot Group 9



Global