First Documentation

Data dictionary from Krakow plant

File Name

The file name contains information on the strip ID and the on the stand as follow.

For example: 1939351_F2.txt

- 1939351 represent the strip ID
- F2 represent the stand

File format

Column name	Type	Min	Max	Information	Unit
LP	int			Measure id for the strip	
MatID	int			strip ID	
XTime	double			Time elapsed from the begining of the strip	ms
XLoc	double	0			NA
EnThick	double	1	70	Entry thickness	mm
ExThick	double	1	70	Exit tchickness	mm
EnTens	double	0	50	Entry tension	MPa
ExTens	double	0	50	Exit tension	MPa
RollForce	double	0	5000	Force apply on work roll	t/m
FSlip	double	0	20	Forward Slip	%
Daiameter	double	500	1500	The Work-roll diameter change after each campaign	mm
Rolled length for Work Rolls	double			Length rolled on the work rolls at the begining of the strip	m
YoungModulus	double	12000	25000	This parameter is a constant that could change according to the work-roll grade. The value will be set for the different type of roll (HiCr or HSS in the first stands, then ICDP for the last stands)	MPa
Backup roll dia.	double			Backup roll diameter	
Rolled length for Backup rolls	double			Length rolled on the backup rolls at the begining of the strip	
Mu	double	0.05	1	Friction coefficient	
Torque	double			Rolling torque per unit of strip width	Kg.m/m

AverageSigma	double			Sigma based on relological law for the strip material.	MPa
InputError	double			Input error. Do not use	
LubWFlUp	double			Water flowrate for the top work-roll	m3/h
LubWFlLo	double			Water flowrate for the bottom work-roll for the top work-roll	m3/h
LubOilFlUp	double			Oil flowrate measurement	%
LubOilFlLo	double			Oil flowrate measurement for the bottom work-roll	%
Work roll speed	double			Work roll speed	m/s

Column XTime

Each row represent captors measurements at a given time.

XTime data represent Ttime elapsed from the beginning of the strip in milliseconds.

Use this column to timestamp the data.

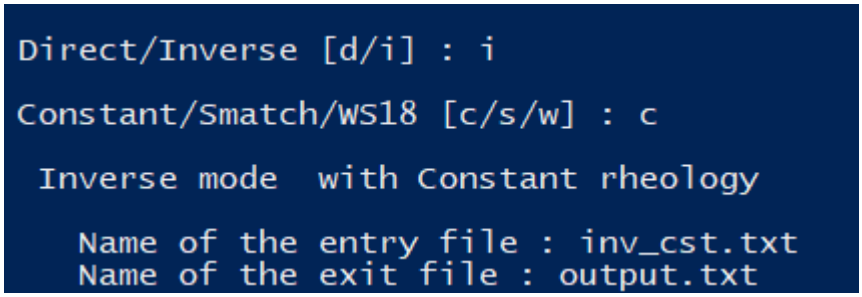
Orowan model

Test the model

To test the model, use “OrowanConsole_x64.exe”.

Call the executable with the following arguments:

- Direct/Inverse [d/i]
  set input to **“i”**
- Constant/Smatch/WS18 [c/s/w]
  set input to **“c”**
- Name of the entry file
  Set the input file for the model. The path must be a relative path from the executable.
  Example : “inv_csv.txt”
- Name of the exit file
  Set output file for the model. The path must be a relative path from the executable.
  The output file will be deleted if already exists.
  Example: “output.txt”



If no error occurs, check the output file to see the results.

Csv input file

The model must be call with a file containing all the data.

The file must be formatted as a csv file with the following format

Column Name	Type	Information
Cas	Int	Set to 1
He	Double	Entry thickness
Hs	Double	Exit tchickness
Te	Double	Entry tension

Ts	Double	Exit tension
Diam_WR	Double	The Work-roll diameter change after each campaign
WRyoung	Double	This parameter is a constant that could change according to the work-roll grade. The value will be set for the different type of roll
offset	Double	Sigma based on relological law for the strip material
mu_ini	Double	Friction coefficient
Force	Double	Force apply on work roll
G	Double	Forward Slip

- The double variables must be with the following format “123.456”
- The column separator is tabulation

Csv output file

After computation, the model writes a csv file on the disk.

The file is formatted with the following format.

Column Name	Type	Information
case	Int	
Errors	String	VOID means no error
OffsetYield	Double	
Friction	Double	Back-calculated friction coefficient
Rolling_Torque	Double	Rolling torque per unit of strip width
Sigma_Moy	Double	
Sigma_Ini	Double	
Sigma_Out	Double	
Sigma_Max	Double	
Force_Error(%)	Double	Force Error
Slip_Error(%)	Double	Slip Error
Has_Converged	String	YES means the algorithms as converged. NO, the algorithm asn’t converged

- The column separator is tabulation