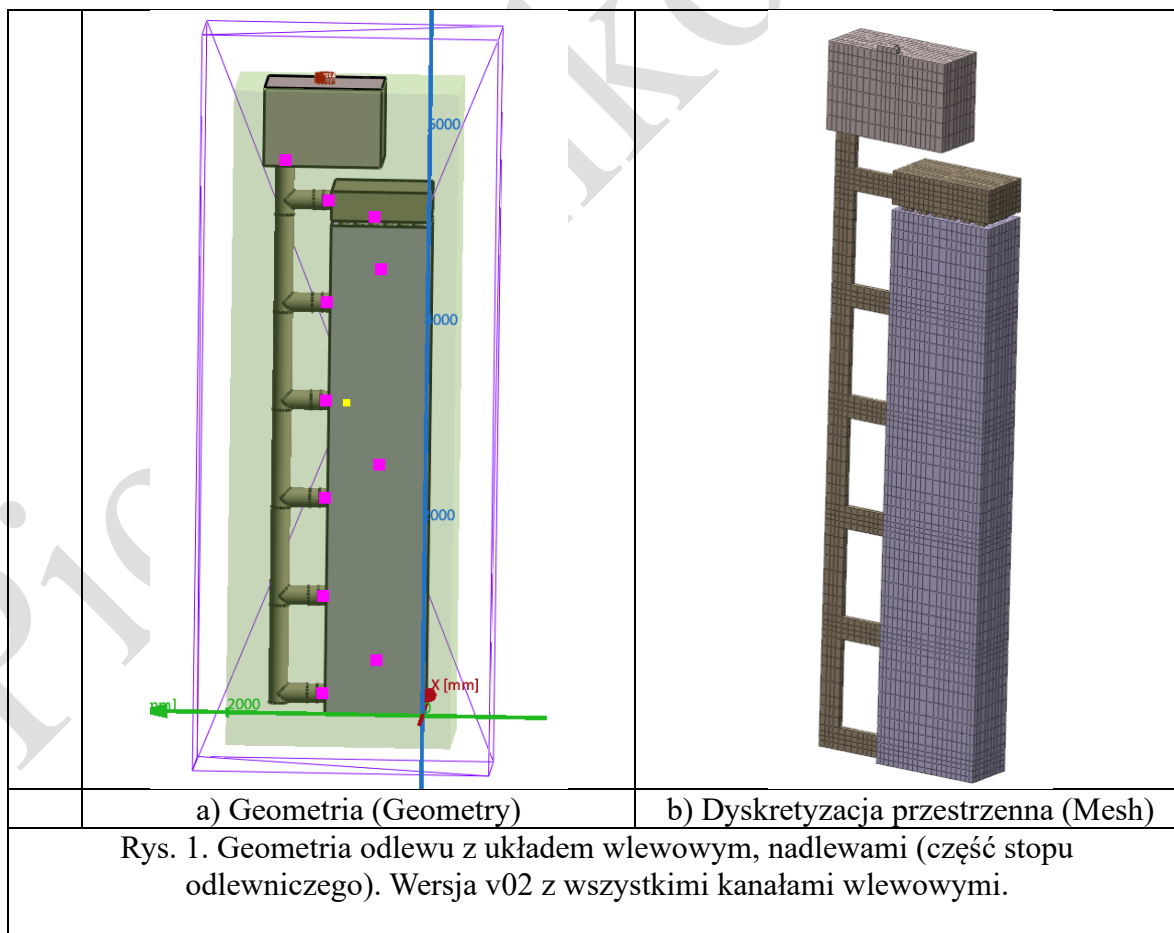
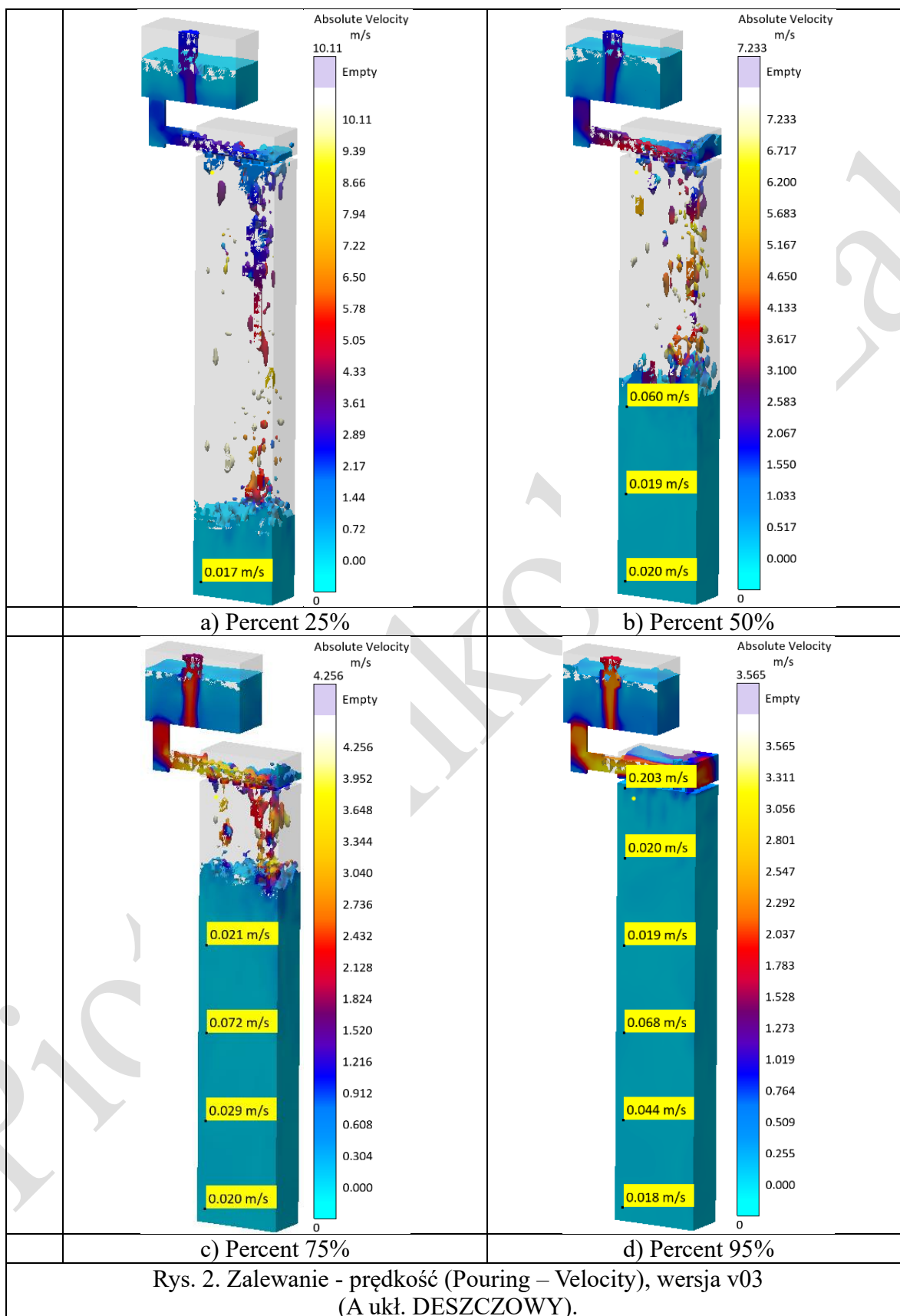


Przedmiot: Modelowanie procesów bezużytkowych		www.iFlowFePhase.info		
Temat: ĆW. Nr 1.....		Prowadzący: Piotr Mikołajczak		Ocena :
Imię i nazwisko:.....	Data wykonania:	Wydział:	Semestr :	Grupa :

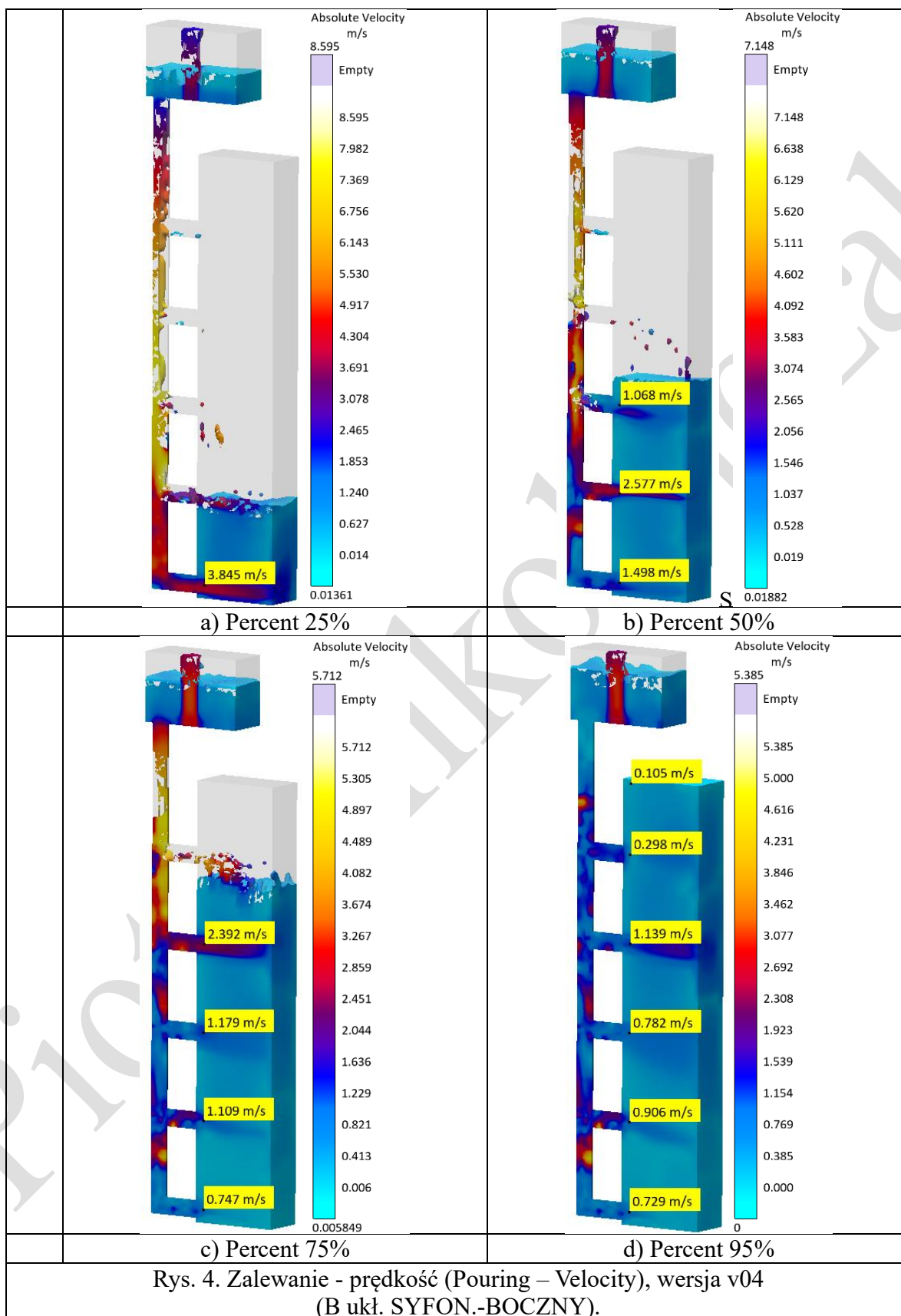
1. Dane do przeprowadzenia symulacji (zgodnie z wytycznymi na liście studentów oraz instrukcją)

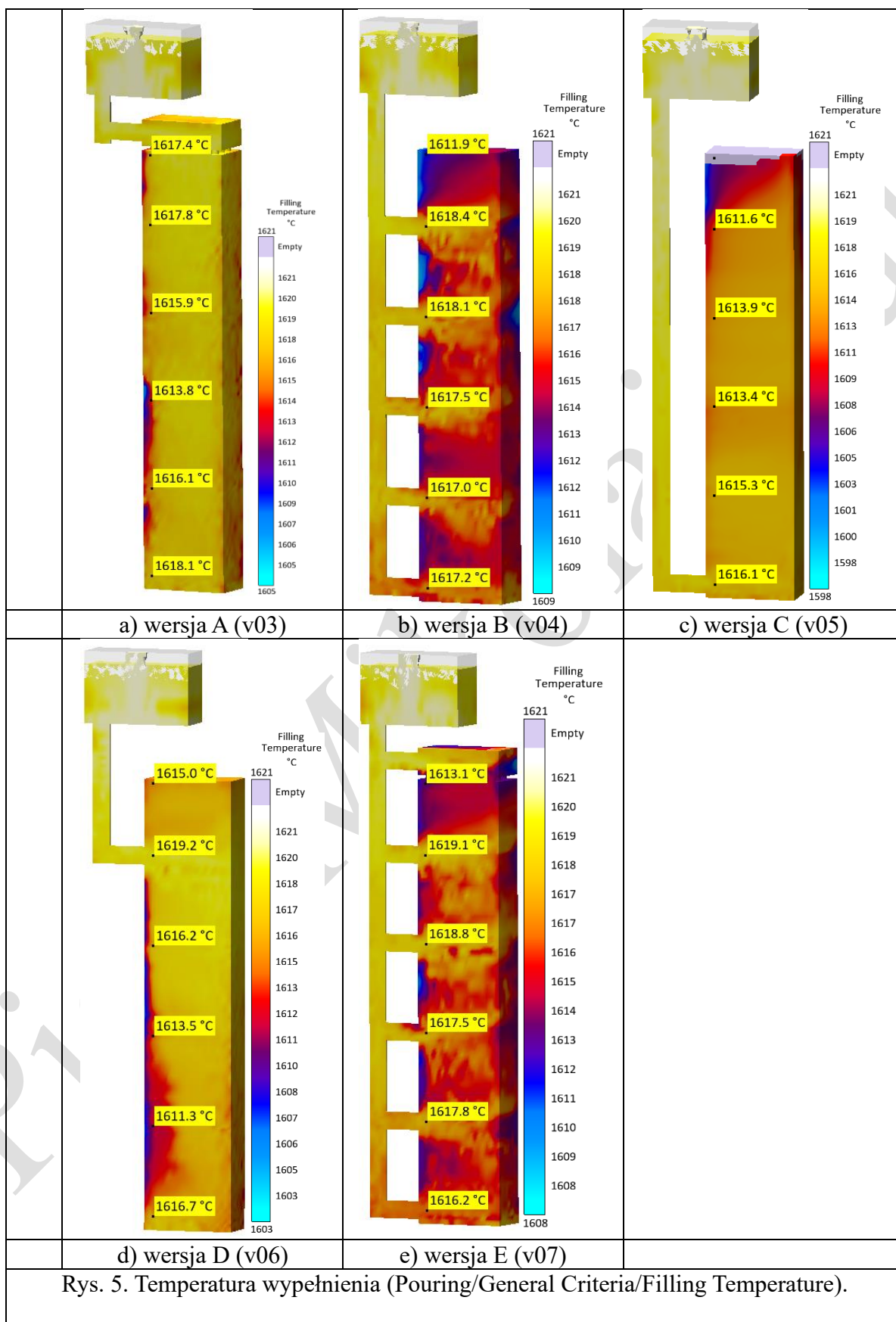


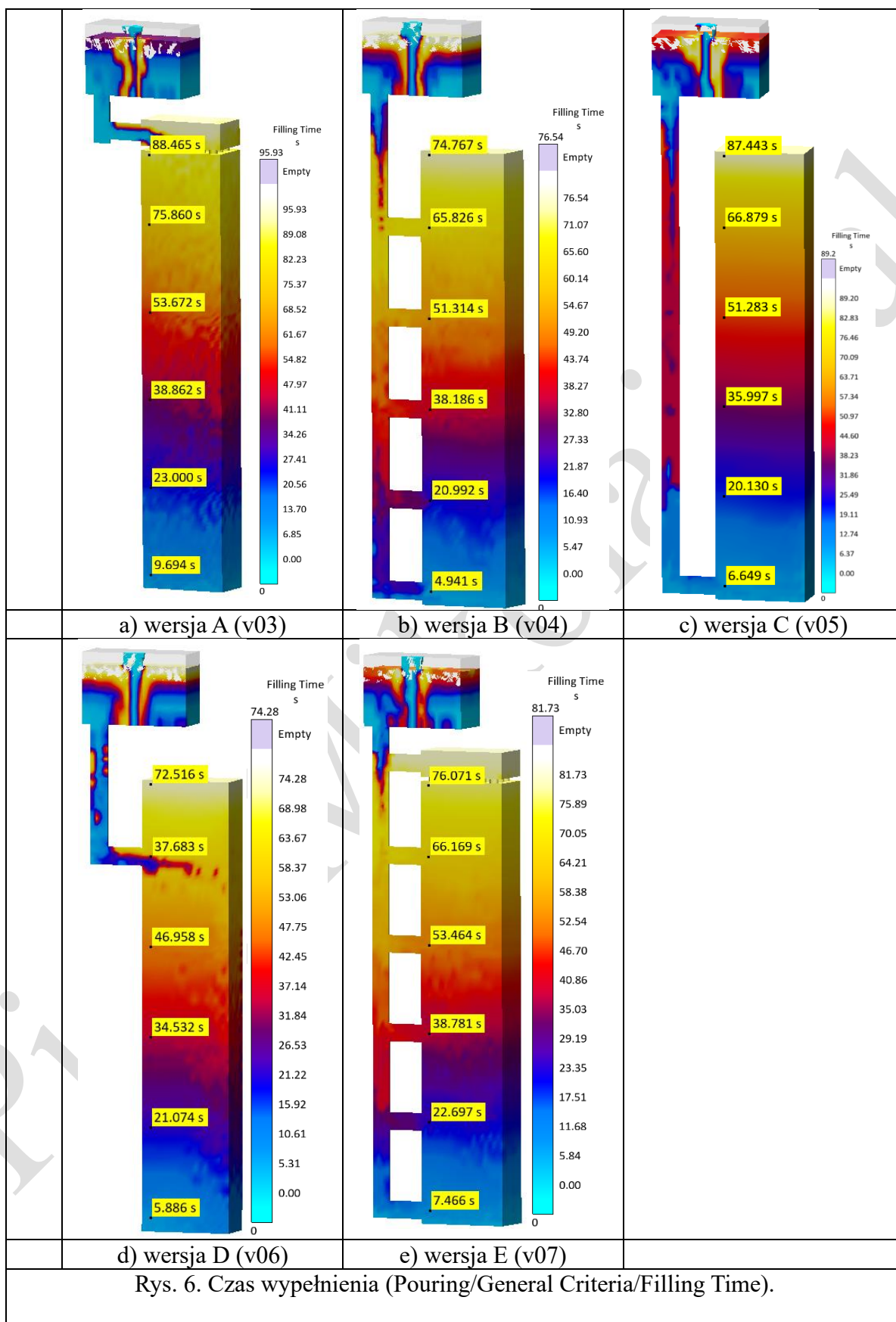
2. Wyniki symulacji

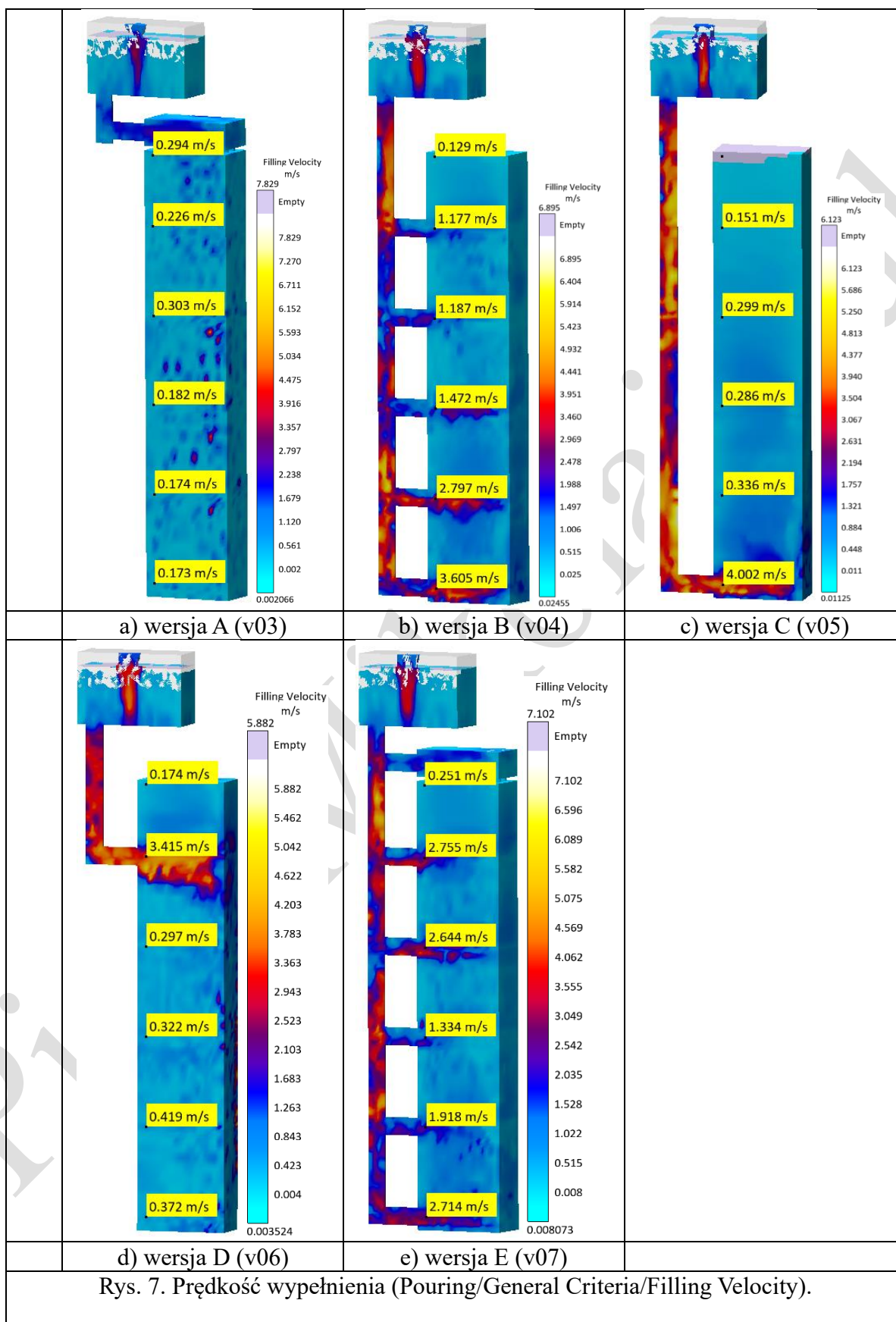


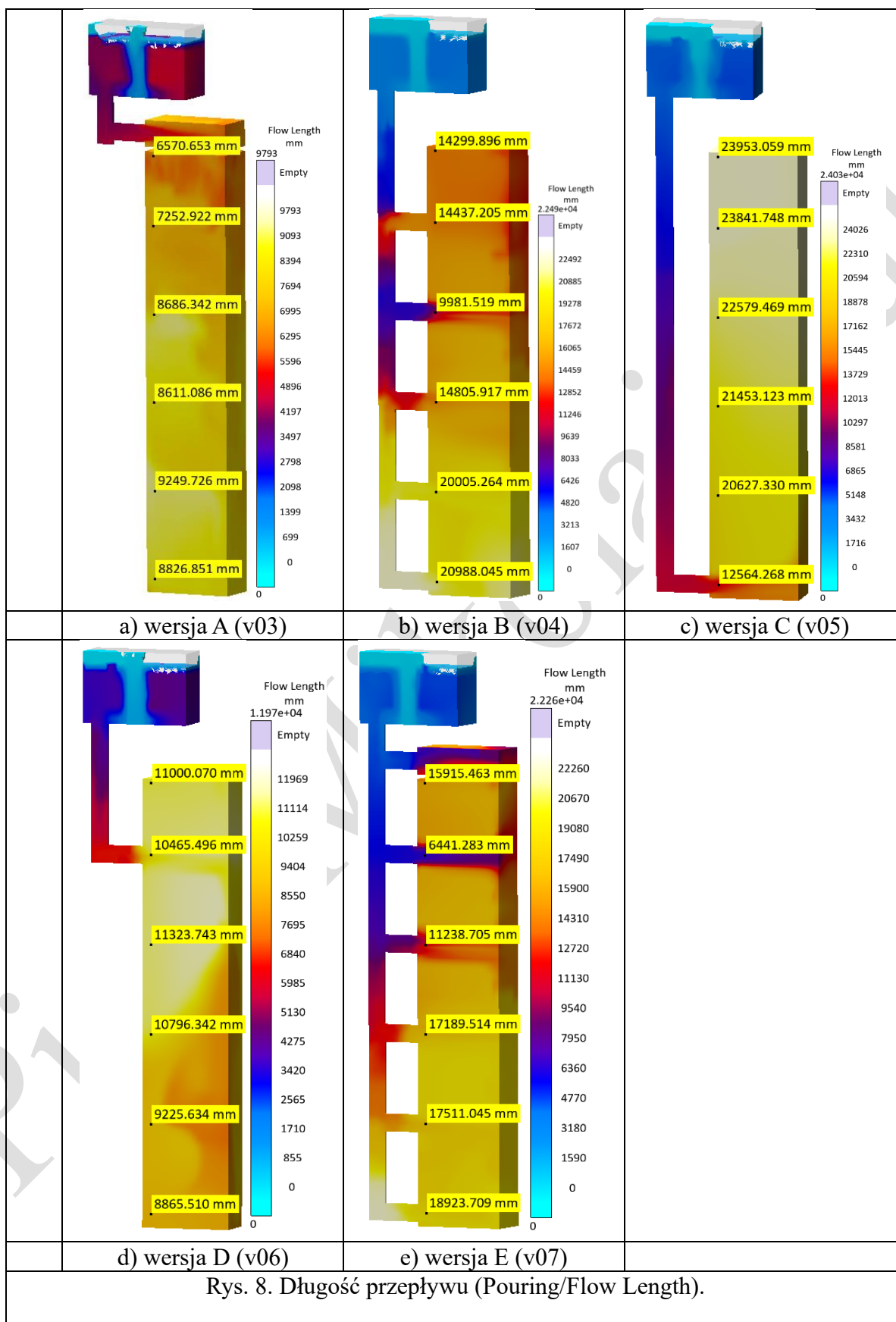


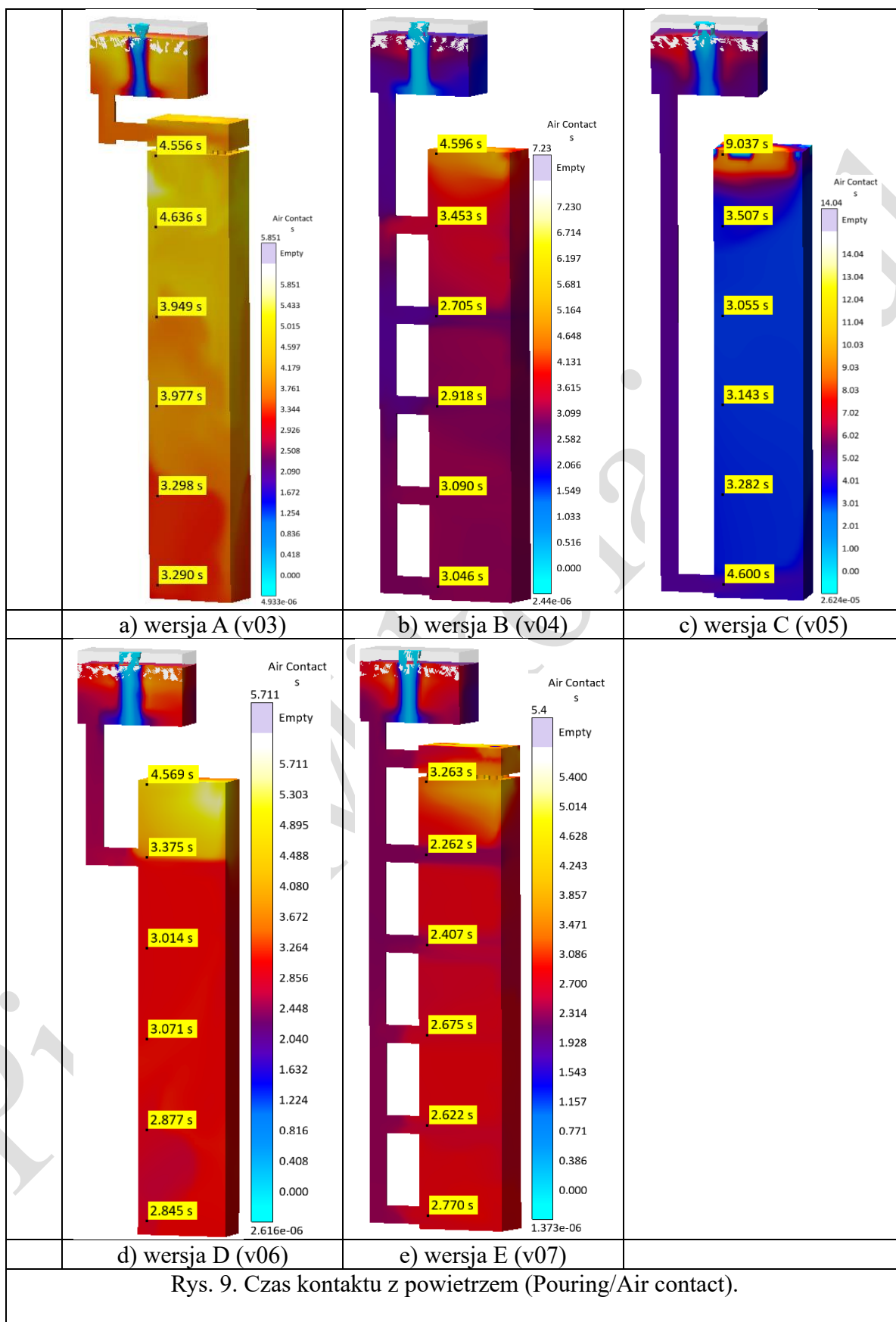




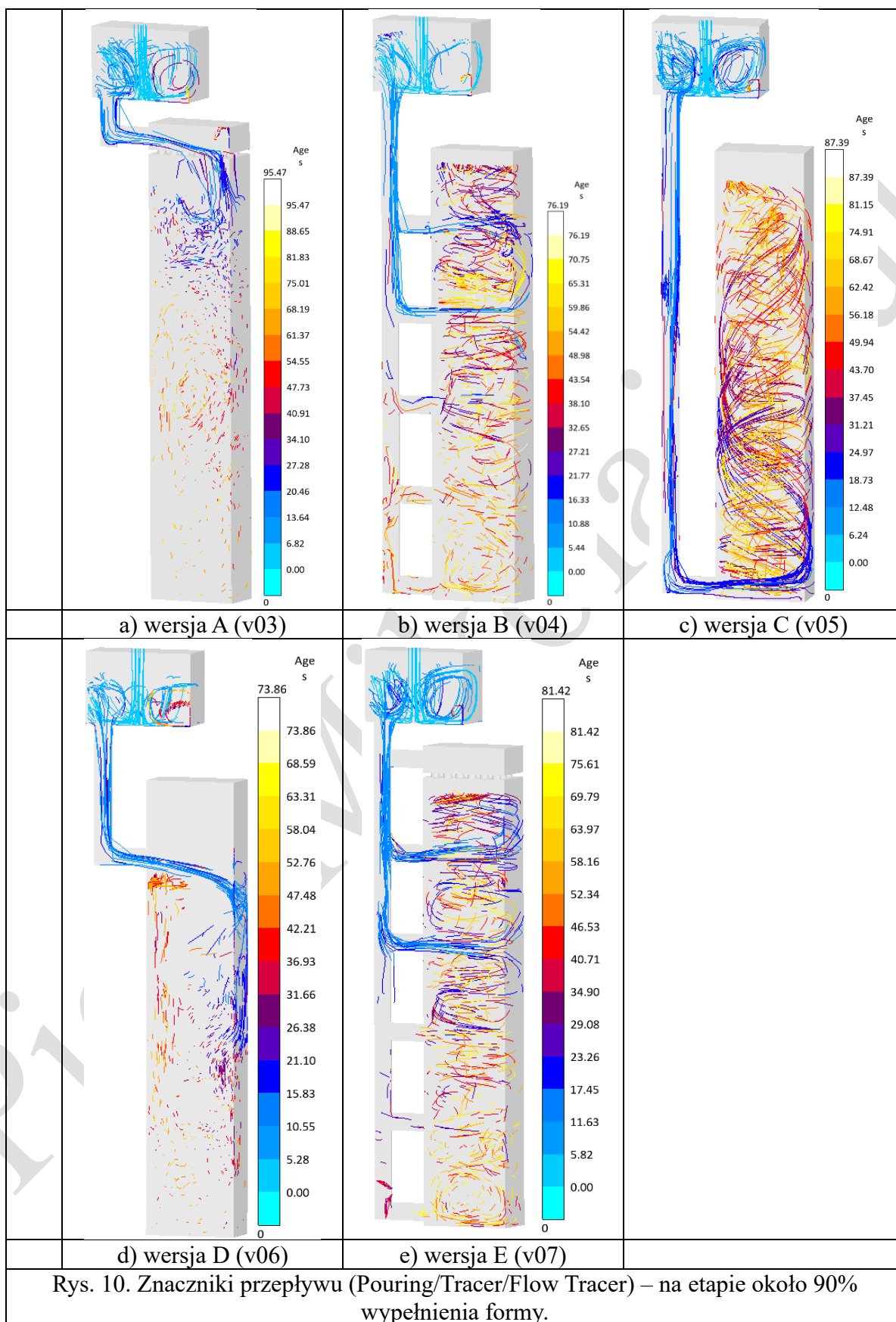








Rys. 9. Czas kontaktu z powietrzem (Pouring/Air contact).



Przeanalizuj inne rodzaje wyników symulacji (np. Pressure, Solidification Time, Porosity) i trzy z nich przedstaw podobnie do powyższych rysunków.

Wybierz najciekawsze wyniki. Liczba stron sprawozdania nie powinna przekraczać 30 (nie wliczając w to Protocol Listing przesyłanego jedynie w wersji elektronicznej sprawozdania na wskazany adres e-mailowy).

3. Wnioski

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4. Załącznik – PROTOCOL LISTING (Info/Protocol Listing ...) dla wersji v02 - jedynie w WERSJI ELEKTRONICZNEJ sprawozdania (przesyłanej na wskazany adres e-mailowy). (dla redukcji liczby stron, można zmniejszyć wielkość protokołu - pomniejszyć czcionkę i tabele do granic czytelność).

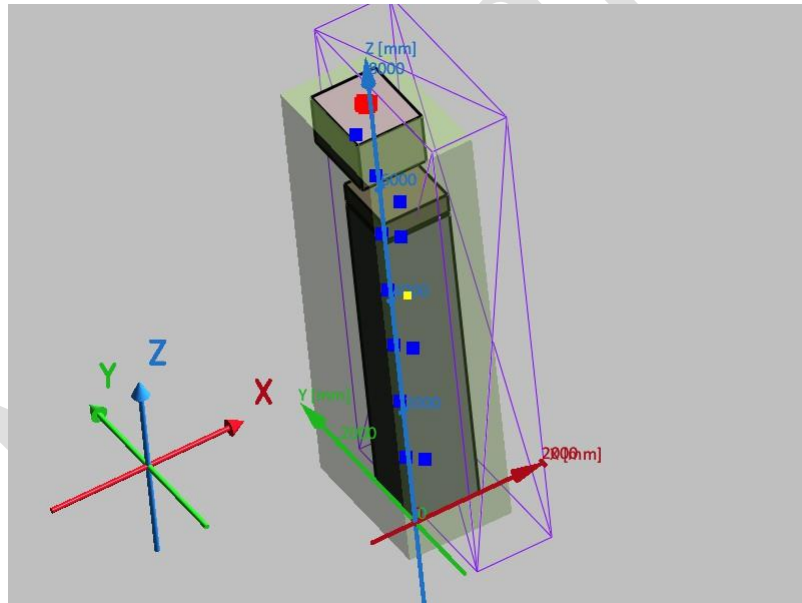
Protocol listing information

Created by	PiotrM
Created on	Oct 15, 2024, 1:02:29 PM
Path	D:\0000__Piotr_Mikolajczak\Student_PP\001_Belka_pion_FLOW_01\v07\UserData\Report

001_Belka_pion_FLOW_01\v07

Process mode	Sand Mold Casting
Material type	Steel
Description	E - CAŁOŚĆ
Created On	Oct 11, 2024, 9:44:31 AM
Created By	PiotrM
Parent Versions	v01 (PiotrM), v02 (PiotrM)
Mesh cells (cavity/all)	14259 / 49980
Project Version path	D:\0000__Piotr_Mikolajczak\Student_PP\001_Belka_pion_FLOW_01\v07
Memo	
Modifications	PiotrM Oct 11, 2024, 5:57:04 PM PiotrM Oct 11, 2024, 9:44:31 AM Version created with mode 'Required and Mesh Files'.

Version picture



Mesh Configuration

Number of Critical Cells	0
Mesh for Solver 5	yes
Generate Core	no
Mesh Mode	Number of Elements

Geometry Definitions

Boundary ID 1

ID Label	ID 1
Volume in Mesh	0.0 cm ³
Active in Geometry	no
Active in Mesh	yes
Assembly Name	

Cut Box ID 1

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Active in Geometry	yes
Active in Mesh	yes
Assembly Name	

Inlet ID 1

ID Label	ID 1
Region ID	0
Inlet Cross Section Area	14437.19 mm ²
Flow Direction	(0.0 0.0 -1000.0) mm
Active in Geometry	yes
Active in Mesh	yes
Assembly Name	
Volume in Mesh	1587.83 cm ³

Control Points

Thermocouple

	ID Label	Control Point Coordinates	Control Point Material	Active in Geometry	Active in Mesh
Thermocouple TC_01	TC_01	(500.0 500.0 2500.0) mm	Casting ID 1	yes	yes
Thermocouple TC_02	TC_02	(500.0 500.0 500.0) mm	Casting ID 1	yes	yes
Thermocouple TC_03	TC_03	(500.0 500.0 4500.0) mm	Casting ID 1	yes	yes
Thermocouple TC_04	TC_04	(500.0 1050.0 150.0) mm	Runner ID 1	yes	yes
Thermocouple TC_05	TC_05	(500.0 1050.0 1150.0) mm	Runner ID 1	yes	yes
Thermocouple TC_06	TC_06	(500.0 1050.0 2150.0) mm	Runner ID 1	yes	yes
Thermocouple TC_07	TC_07	(500.0 1050.0 3150.0) mm	Runner ID 1	yes	yes
Thermocouple TC_08	TC_08	(500.0 1050.0 4150.0) mm	Runner ID 1	yes	yes
Thermocouple TC_09	TC_09	(500.0 1050.0 5200.0) mm	Runner ID 1	yes	yes
Thermocouple TC_10	TC_10	(575.0 575.0 5025.0) mm	Runner ID 1	yes	yes
Thermocouple TC_11	TC_11	(500.0 1499.0 5600.0) mm	Pouring Basin ID 1	yes	yes

Fill Tracer

	ID Label	Control Point Coordinates	Control Point Material	Active in Geometry	Active in Mesh
Fill Tracer TR_inlet2_001_01		TR_inlet2_001_06	TR_inlet2_001_01 (TR_inlet2_001_02 (500.0	
Fill Tracer TR_inlet2_001_02			521.94	1078.06	6450.0) mm
Fill Tracer TR_inlet2_001_03			1100.0	TR_inlet2_001_03 (
Fill Tracer TR_inlet2_001_04				478.06 1100.0	6450.0) mm
Fill Tracer TR_inlet2_001_05				0	
Fill Tracer TR_inlet2_001_05				TR_inlet2_001_04 (500.0	
Fill Tracer TR_inlet2_001_05				121.94	6450.0) mm
Fill Tracer TR_inlet2_001_05				0	

TR_inlet2_001_05 (570.71 1100.0 6450.0) mm	Pouring Basin ID 1 Pouring Basin ID 1 nothing referenced	complete yes yes
TR_inlet2_001_06 (550.0 1050.0 6450.0) mm	Pouring Basin ID 1 Pouring Basin ID 1 Pouring Basin ID 1	yes yes yes no yes yes yes yes yes yes

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Fill Tracer TR_inlet2_001_07	TR_inlet2_001_07	(500.0 1029.29 6450.0) mm	Pouring Basin ID 1	yes	yes
Fill Tracer TR_inlet2_001_08	TR_inlet2_001_08	(450.0 1050.0 6450.0) mm	nothing referenced	yes	no
Fill Tracer TR_inlet2_001_09	TR_inlet2_001_09	(429.29 1100.0 6450.0) mm	nothing referenced	yes	no
Fill Tracer TR_inlet2_001_10	TR_inlet2_001_10	(450.0 1150.0 6450.0) mm	nothing referenced	yes	no
Fill Tracer TR_inlet2_001_11	TR_inlet2_001_11	(500.0 1170.71 6450.0) mm	Pouring Basin ID 1	yes	yes
Fill Tracer TR_inlet2_001_12	TR_inlet2_001_12	(550.0 1150.0 6450.0) mm	Pouring Basin ID 1	yes	yes

Material Definitions

Al (Aluminum)	0.0 %
C (Carbon)	0.25 %
Co (Cobalt)	0.0 %
Cr (Chromium)	0.0 %
Cu (Copper)	0.0 %
Mn (Manganese)	0.5 %
Mo (Molybdenum)	0.0 %
Ni (Nickel)	0.0 %
P (Phosphorus)	0.04 %
S (Sulfur)	0.04 %
Si (Silicon)	0.6 %
Ti (Titanium)	0.0 %
V (Vanadium)	0.0 %
W (Tungsten)	0.0 %

Cast Alloy

Casting

ID Label	Initial Temperature	Active in Geometry	Active in Mesh	Initial Temperature	Material Data	Volume in Mesh	Feeding Effectivity
Casting ID 1	1621.0 °C	yes	yes	1621.0 °C*	MAGMA/GS38	5000000.0 cm ³	40.0 %

Casting System

ID Label	Initial Temperature	Active in Geometry	Active in Mesh	Initial Temperature	Material Data	Volume in Mesh
Runner ID 1	1621.0 °C	yes	yes	1621.0 °C*	MAGMA/GS38	566601.13 cm ³
Pouring Basin ID 1	1621.0 °C	yes	yes	1621.0 °C*	MAGMA/GS38	961587.81 cm ³

Sand Mold

ID Label	Initial Temperature	Active in Geometry	Active in Mesh	Initial Temperature	Material Data	Volume in Mesh
Sand Mold ID 1	20.0 °C	yes	yes	20.0 °C	MAGMA/Furan	18129400.0 cm ³

* value is user changed

Heat Transfer Definitions

Cast Alloy - Sand Mold

Casting - Sand Mold

Neighborhood Surface

HTC Dataset Container Reference

HTC Type

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Casting Process

External Boundaries

- Cut Box Boundary
- Cut Box Boundary
- Cut Box Boundary
- Cut Box Boundary
- Cut Box Boundary
- Cut Box Boundary
- Standard Boundary
- Standard Boundary
- Standard Boundary

Preparation

Pouring

Pouring Control

Automatic Filling Control

Leveling Time

0.0 s

Pouring Stop Control

Automatic Stop Condition

Automatic Stop Condition

Automatic Stop Condition

Automatic Filling Control

Use same configuration for all inlets

no

Pouring Basin Level

(see Parameterlist)

Common Automatic Filling Control Configuration

Stop pouring at reference volume

Neighborhood

Pouring Basin Fill Level

Wait Time

Filling Condition

Parameterlist Inlet ID 1 / Pouring Basin ID 1

70.0

0.0

Distance from ladle to inlet 300.0 mm

Solidification & Cooling

Solidification & Cooling Control

User Defined Temperature (Casting)

User Defined Temperature (Casting)

as soon as max. temp. in Casting Materials falls below 1371.0 °C

Result Definitions

Casting Process

Pouring

Results Dependent on Process Progress

Air Contact, Flow Length, Fraction Liquid, Fraction Solid, Material Age, Pressure, Temperature, Velocity, Wall Contact

Materials

NoMatRefSets

Conditions

Percent Filled from 0.0 % to 100.0 % every 2.0 %

Process Event 0.0 s after Begin of Pouring

Process Event 0.0 s after End of Pouring

Time from 0.0 s to 10.0 s every 1.0 s

Criteria and Cumulative Results

General Criteria

Filling Temperature, Filling Time, Filling Velocity, Hot Spot, Liquidus to Solidus, Mold Erosion, Pore Free Zone, Sand Inclusion Area Fraction, Solidification Time, Soundness

Parameters

Niyama Criterion Criterion Temperature (°C): 1431.0

Tracer

Flow Tracer, Sand Inclusions

Hot Spot FSTime

Hot Spot FSTime

Solidification & Cooling

Results Dependent on Process Progress

Fraction Liquid, Fraction Solid, Gradient Time, Porosity, Temperature

Materials

NoMatRefSets

Conditions

Percent Solidified from 0.0 % to 100.0 % every 2.0 %

Process Event 0.0 s after Begin of Solidification & Cooling

Process Event 0.0 s after End of Solidification & Cooling

Criteria and Cumulative Results

General Criteria

Feedmod, Hot Spot, Liquidus to Solidus, Microporosity, Pore Free Zone, Pore Volume, Solidification Rate, Solidification Time, Soundness, Total Porosity

Parameters

Sand Burn On, Sand Penetration Critical Temperature (°C): 1491.0

Niyama Criterion Criterion Temperature (°C): 1431.0

Cooling Rate, Gradient Criterion Temperature (°C): 1523.0

FSTime

Parameters

FSTime Percent Fraction Solid: Click to add values

Hot Spot FSTime

Hot Spot FSTime

Curves

Parameters

Sand Temperature Distribution Sand Observation Temperatures (°C): 100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0

Result Preparation (during simulation)

General

Active

Criteria (Filling & Solidification) yes

Filling

Active

Filling Criteria (Material Trace), Filling Pressure, Filling Results X-Ray Mode Empty, Filling Temperature, Filling Velocity yes

Solidification

Active X-Ray Range (Show All Below)

Fraction Solid yes 90.0 %

Active X-Ray Range (Show All Above)

Fraction Liquid yes 10.0 %

Solidification Temperature	complete	yes	1421.0 °C
Stress		Active	
Stress		yes	

Simulation Settings

Calculation Flags

Calculate Filling	Active
Calculate Solidification & Cooling	yes
Prepare Results	yes

Filling Simulation

Surface Tension	Active
	yes

Solidification & Cooling Simulation

Consider Water Content	Active
	yes

Start Configurations

Simulation Configuration	Start Date	Number of Cores	User	Queue ID
	Oct 11, 2024, 5:57:25 PM	1	PiotrM	Q1@batch@localhost:6997

Optimization

Template	No Template selected
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Design Variable

Output Value Parameters

ID	Value	Type
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Start Sequence Settings

Start Sequence Constraints Objectives Design Statistics

Pareto Set Data Table

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