University	University of Applied Sciences			**Car #**	49	**Asm Cost**	$ 265,36
System	Engine and drivetrain					**Qty**	1
Assembly	Cooling Assembly			**FileLink1**			
P/N Base	A2003	**Full P/N**	FS-15-049-EN-A2003-AA	**FileLink2**		**Extended Cost**	$ 265,36
Suffix	AA			**FileLink3**			
Details	Radiator, Fan, Pipes, Housings and Pump						

ItemOrder	Part	Part Cost	Quantity	Sub Total
23001	Radiator	$ 34,31	1	$ 34,31
23002	Cooling jacket	$ 35,30	1	$ 35,30
23003	Expansion Tank	$ 22,82	1	$ 22,82
23004	Radiator Shroud	$ 32,00	1	$ 32,00
23005	Coolant Catch Can	$ 1,97	1	$ 1,97
			Sub Total	**$ 124,44**

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	Hose, Polyurethane	Coolant Hoses	$ 0,70	10	mm	10	MM					7,5	$ 5,25
2	Fluid, Coolant	Cooling	$ 0,00	3,5	l	25	mm			m		0,45	$ 0,32
3	Coolant Pump, External Electric (bought)	Coolant	$ 20,00		unit	6	mm			m		1,00	$ 20,00
4	Hose, Polyurethane	Catch can	$ 0,70	10	mm							1	$ 0,70
5	Adapter/L.P./Bulkhead Tee//Aluminum/Anodized	Adapter	$ 11,60	10	mm	10	mm					6	$ 69,60
6	Adapter/L.P./Bulkhead Union/90 deg./Aluminum/Anodized	Adapter	$ 6,47	10	mm	10	mm					4,00	$ 25,88
7	Adhesive	Hose attatchment	-									-	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
2	Tube cut	Coolant Hoses	$ 0,13	unit	15		1	$ 1,88
3	Assemble, 1 kg, Line-on-Line	Hose Clamps	$ 0,13	unit	14		1	$ 1,75
4	Assemble, 1 kg, Line-on-Line	Hose Clamps	$ 0,50	unit	14		1	$ 7,00
5	Screwdriver > 1 Turn	Coolant Pump	$ 0,06	unit	1		1	$ 0,06
6	Assemble, 1 kg, Loose	Coolant Pump	$ 0,50	unit	2		1	$ 1,00
7	Ratchet <= 6.35 mm	Radiator	$ 0,06	unit	1		1	$ 0,06
8	Assemble, 1 kg, Loose	Radiator	$ 0,50	unit	2		1	$ 1,00
9	Ratchet <= 6.35 mm	Catch can	$ 0,06	unit	1		1	$ 0,06
10	Assemble, 1 kg, Loose	Radiator	$ 0,02	cm	249		1	$ 4,98
11	Liquid Applicator Gun	Cooling	$ 0,09	unit	15		1	$ 1,41
							Sub Total	**$ 19,20**

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
2	Hose Clamp, Worm Drive	Coolant Hoses	$ 0,04		unit			2	$ 0,08
3	Tie Wrap	Coolant Pump	$ 0,03	6	mm			5	$ 0,20
4	Bolt, Grade 8.8 (SAE 5)	Coolant Pump	$ 0,01		unit	12	mm	2	$ 0,06
5	Washer, Grade 8.8 (SAE 5)	Coolant Pump	$ 0,03	6	mm			4	$ 0,04
6	Nut, Grade 8.8 (SAE 5)	Radiator	$ 0,03	6	mm			4	$ 0,12
7	Bolt, Grade 8.8 (SAE 5)	Radiator	$ 0,01		unit	12	mm	4	$ 0,11
8	Washer, Grade 8.8 (SAE 5)	Radiator	$ 0,02	6	mm			2	$ 0,02
9	Nut, Grade 8.8 (SAE 5)	Coolant hoses	$ 0,58	20	mm			2	$ 0,04
10	Hose Clamp, Worm Drive	Tank, Engine	$ 0,54	10	mm			6	$ 3,48
								2	$ 1,08
								Sub Total	**$ 5,24**

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionIncluded	Sub Total
								$ -
							Sub Total	$ -

University	University of Applied Sciences			**Car #**	49	**Part Cost**	$ 34,31
System	Engine and Drivetrain	**FileLink1**				**Qty**	1
Assembly	Cooling Assembly	**FileLink2**		**FileLink1**			
Part	Radiator	**FileLink3**		**FileLink2**		**Extended Cost**	$ 34,31
P/N Base	23001	**Full P/N**	FS-15-049-EN-23001-AA	**FileLink3**			
Suffix	AA						
Details	Cooling System Radiator						

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	Heat Exchanger, Air-to-Liquid	Radiator	$ 0,0035	1200,00	cm^3							2	$ 8,40
2	Aluminum, Normal	Radiator endcaps	$ 4,20	0,03	kg							2	$ 0,13
												Sub Total	**$ 8,53**

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
1	Machining Setup, Install and remove	Radiator endcaps	$ 1,30	unit	2			$ 2,60
2	Laser Cut	Radiator	$ 0,01	cm	95	Machining	1	$ 0,95
3	Sheet metal stamping	Radiator endcaps	$ 0,03	cm^2	55			$ 1,65
4	Tube cut	Radiator connector	$ 0,15	cm	7,5	Machining	1	$ 1,13
5	Tube end preperation for welding	Radiator connector	$ 0,75	end	2			$ 1,50
6	Weld - Round Tubing	Radiator connector	$ 0,38	cm	11			$ 4,18
7	Weld	Radiator endcaps	$ 0,15	cm	85			$ 12,75
8	Drilled holes < 25.4 mm dia.	Radiator	$ 0,35	hole	2	Machining	1	$ 0,70
							Sub Total	**$ 25,46**

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									$ -
								Sub Total	**$ -**

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
	Welds - Welding Fixture	Radiator endcaps	500	point	2	3000	1	$ 0,33
							Sub Total	**$ 0,33**

University	University of Applied Sciences			**Car #**	49	**Part Cost**	$ 35,30
System	Engine and Drivetrain	**FileLink1**				**Qty**	1
Assembly	Cooling Assembly	**FileLink2**		**FileLink1**			
Part	Cooling Jacket	**FileLink3**		**FileLink2**		**Extended Cost**	$ 35,30
P/N Base	23002	**Full P/N**	FS-15-049-EN-23003-AA	**FileLink3**			
Suffix	AA						
Details	Cooling Jacket						

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	Plastic, Nylon	Cooling Jacket	$ 3,300	1	kg							4	$ 3,30
												Sub Total	**$ 3,30**

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
1	Rapid Prototype - Plastic	Cooling Jacket	$ 32,00	kg	0,25		4	$ 32,00
							Sub Total	**$ 32,00**

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									$ -
								Sub Total	**$ -**

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
								$ -
							Sub Total	**$ -**

University	University of Applied Sciences	**University**	University of Applied Sciences		**Car #**	49	**Part Cost**	$ 22,82
System	Engine and Drivetrain	**System**	Engine and Drivetrain				**Qty**	1
Assembly	Cooling Assembly	**Assembly**	Cooling Assembly		**FileLink1**			
Part	Expansion Tank	**Part**	Cooling Jacket		**FileLink2**		**Extended Cost**	$ 22,82
P/N Base	23005	**P/N Base**	23003	FS-15-049-EN-23005-AA	**FileLink3**			
Suffix	AA	**Suffix**	AA					
Details	Expansion Tank	**Details**	Expansion Tank					

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	Aluminum, Normal	Expansion Tank	$ 4,20	0,158	kg								$ 0,66
2	Filler Cap	Expansion Tank	$ 3,00		unit							1	$ 3,00
												Sub Total	**$ 3,66**

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
1	Laser Cut	Expansion Tank	$ 0,01	cm	75,4	Aluminium	1	$ 0,75
2	Sheet metal stamping	Expansion Tank	$ 0,03	cm^2	300			$ 9,00
3	Weld	Expansion Tank	$ 0,15	cm	15			$ 2,25
4	Tube end preperation for welding	Radiator connector	$ 0,75	end	2			$ 1,50
5	Weld - Round Tubing	Expansion Tank	$ 0,38	cm	14			$ 5,32
							Sub Total	**$ 18,82**

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									$ -
								Sub Total	**$ -**

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
	Welds - Welding Fixture	Expansion Tank	$ 500	point	2	3000	1	$ 0,33
							Sub Total	**$ 0,33**

University	University of Applied Sciences			**Car #**	49	**Part Cost**	$ 35,30
System	Engine and Drivetrain	**FileLink1**				**Qty**	1
Assembly	Cooling Assembly	**FileLink2**		**FileLink1**			
Part	Radiator shroud	**FileLink3**		**FileLink2**		**Extended Cost**	$ 35,30
P/N Base	23005	**Full P/N**	FS-15-049-EN-23008-AA	**FileLink3**			
Suffix	AA						
Details							

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	Plastic, Nylon	Radiator shroud	$ 3,300	$ 1,00	kg							1	$ 3,30
												Sub Total	**$ 3,30**

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
1	Rapid Prototype - Plastic	Radiator shroud	$ 32,00	1	1,00			$ 32,00
							Sub Total	**$ 32,00**

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity
	Bolt, Grade 8.8 (SAE 5)	Radiator shroud	$ 0,03	4		10		4
								Sub Total

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total	Sub Total
							Sub Total	**$ -**	**$ -**

University	Tallinn University of Technology			**Car #**	49	**Part Cost**	$ 1,97
System	Engine and Drivetrain	**FileLink1**				**Qty**	1
Assembly	Oil System Assembly	**FileLink2**		**FileLink1**			
Part	Catch can	**FileLink3**		**FileLink2**		**Extended Cost**	$ 1,97
P/N Base	23004	**Full P/N**	FS-15-049-EN-A23006-AA	**FileLink3**			
Suffix	AA						
Details	Catch can						

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	Overflow Bottle, Student Built	Catch can	$ -									1	$ -
2	Paint	Catch can	$ 10,00	0,06	m^2								$ 0,60
												Sub Total	**$ 0,60**

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
1	Drilled holes < 25.4 mm dia.	Catch can	$ 0,35	hole	2	Drill, Tap	1,5	$ 1,05
2	Aerosol Apply	Catch can	$ 5,25	m^2	0,06		1	$ 0,32
							Sub Total	**$ 1,37**

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									$ -
								Sub Total	**$ -**

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
								$ -
							Sub Total	**$ -**