

## Complex Jobs, Inventory, Costing and Profitability in Realtrac 10

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### Introduction

Within this white paper, we will discuss inventory and costing, specifically within Complex Jobs, in the Realtrac ERP system. While there will be many unique scenarios amongst our customer base, this white paper will present a simplistic model to let the user consider the options, and adopt a plan that will work best in their business.

Our goal in this paper is to present a way to accurately track the costs associated with all the jobs within the complex job, to properly maintain the inventory for the parts and final assembly, and make sure we can produce the reports we need to run our business.

### Let's Build a Wagon!

In the example that follows, we will discuss a relatively simple Complex Job. Our final product is a toy wagon, with our root job being the assembly and finish of the wagon (**Job 14J1167**); this root job will have 2 child jobs, one of which will be the production of the wheels for the wagon (**Job 14J1165**), and the other the production of the body for the wagon (**14J1166**).

In the screen capture below, I've gone ahead and created the 3 independent jobs in Realtrac. I have created the complex job structure, and each of my jobs has a router and I've captured the costs associated with my material and subcontracts on my bill page. (I'm not going to bother scheduling this job for this discussion, hence the blank Start and Due dates.)

Job Group

List Jobs Job Entry Form

OPTIONS

All Jobs

Job Number	Job Description	Drawing	Part	Customer	Cust Code	Date Start	Date Due	On Time	Estimated Hrs	Actual Hrs	Remain Hrs
			wagon	Fuer							
14J1165	Make the wagon wheels	08081977	WAGON 001-01	Fuerstys World of Goods	FWOG			0	3.00	0.00	3.00
14J1166	Make the wagon wheel body	08081976	WAGON 001-02	Fuerstys World of Goods	FWOG			0	2.50	0.00	2.50
14J1167	Assemble the wagon from child jobs	08081975	WAGON 001	Fuerstys World of Goods	FWOG			0	6.50	0.00	6.50

3 Items Listed of 3

Include Open Jobs
  Include Closed Jobs
  Expedited Jobs Only
  Hide Recent List

Clear Search Boxes Reports



public

FIGURE 1. ACTIVE JOB LIST SHOWING MY COMPLEX JOB, 2 CHILD JOBS, AND OUR 1 ROOT ASSEMBLY JOB.

## The Child Jobs

In the next step, my shop is going to complete the work on my 2 child jobs.

Let's look at the router of the Wagon Wheel job, **14J1165**.

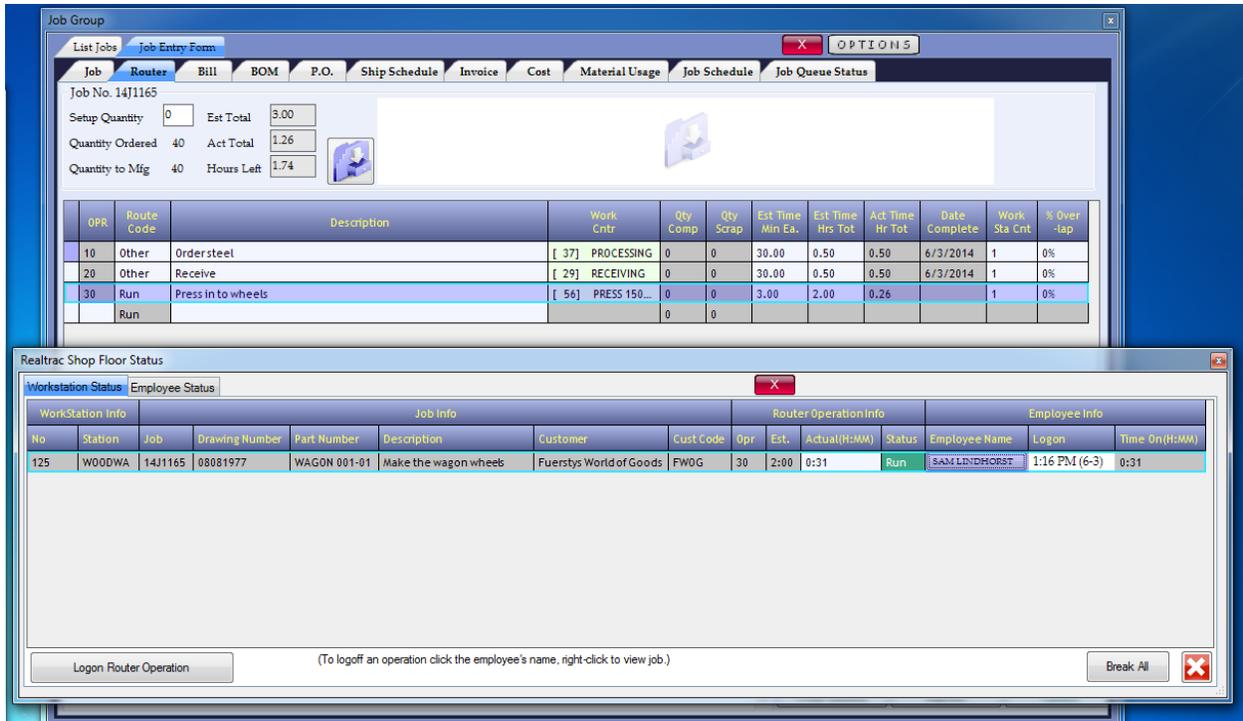


FIGURE 2. THE ROUTER FOR JOB 14J1165 (WAGON WHEELS) AND THE SHOP FLOOR STATUS SCREEN SHOWING AN EMPLOYEE CURRENTLY LOGGED IN TO OP 30

In Figure 2 above, we can note that OP 10 and OP 20 are closed. They were estimated to take 30 minutes each, and we in fact have registered 30 minutes of time against these jobs.

OP 30 is still open, and in fact, when we pull open the Shop Floor Status screen, we see that our employee Sam Lindhorst is in fact currently working on this operation.

This operation is important, since it is the operation that will transfer finished pieces to inventory. In the Realtrac 10 ERP system, there is always a special router line that, when a piece count is recorded, will trigger an automatic transfer of the good to inventory. If the router has one or more router lines with the Code of **Count**, then the last **Count** operation will trigger the movement of the finished pieces to inventory. Absent a **Count** operation (and our router here only has **Other** and **Run** operations), then the transfer to inventory is triggered off of the final router operation. In this case, that is OP 30.

Our employee has logged off of this operation, and registers a piece count of 20 units.

Logoff Router Operation - (Micro Terminal)

Active Jobs	Operation	Work Station	Employee
14J1164 OnTime Test	10 Order steel	320 TRAIN	ADAM WOLDANSKI
14J1167 Assemble the wagon from child j	20 Receive	113 V40III	ALEXANDER WOLFE
14J1166 Make the wagon wheel body	30 Press in to wheels	184 VERT	ANDREW SUTHERLAND
14J1165 Make the wagon wheels		15 VK45	ARTHUR BRYSON
14J1163 Making a part with an ampersan		40 VM40	BRAD CLARKE
14J1162 Image and Doc test		309 VMC150	BRADLEY SWAIN
14J1161 Bill Test II		9 VMC150	CHARLES SIMMS
14J1160 Door spindle		142 VS5	CHRIS TURNER
14J1159 Door spindle		171 W LAKE	DENNIS CACCIA
14J1158 Matt testing bill stuff		268 WALKER	DONALD MC HUGH
14J1157 ASSY FULL SPEED GEAR AN		68 WALKER	JIM DAWSON
14J1156 Test. I will open list soon		112 W-EDM	Matt Fuerst
14J1155 Matt test transfer to bill stuff RE		197 WELDUC	Nancy
14J1154 Matt test transfer to bill stuff RE		129 WELDUC	RAYMOND WOJT
14J1153 Building door keyf or Fuersty		70 WELLS	RICK WIKOWSKI
14J1152 If I flip to the listu=ing will I see i		267 WELLS	ROBERT WILSON
14J1151 If I flip to the listuing will I see it		33 WELLS6	SAM LINDHORST
14J1150 Schrodingers Cat		233 WELLS6	ShopFloor
14J1149 If I flip to the listu=ing will I see i		234 WELLS7	TIFCO ASSEMBLY
14J1148		132 WFLAME	Timothy Bradstreet
		125 WOODWA	

Pieces Completed: 20 Qty to Man(40) Done(0)
 Pieces Scrapped: 0
  Operation Completed

FIGURE 3. EMPLOYEE LOGS OFF OP 30.

In Figure 3 above, our employee is logging off Operation 30 for **14J1165**. They are registering 20 pieces complete, but are leaving the operation open (not checking the “Operation Completed” checkbox) since we have not completed our full run of 40 pieces.

When the employee clicks or scans the **Accept** button, the Realtrac ERP system is going to automatically transfer 20 completed units to inventory. If we go in to our inventory, and look for inventory from Job 14J1165, we will see 20 units now sitting in our Realtrac ERP inventory.

Inventory Group

Inventory Adjust Inventory Item Master Entry Jobs, Parts BOM's

Inventory

Low Qty (Avail + Avail On Order) On Order

IC	Item Name	Vendor	Unit	Qty On Hand	Qty Avail	Qty Alloc'd To Job	Qty On Order Not Alloc'd	Qty On Order Alloc'd To Job	PO Number	Lot	Loca
FCP	08081977			20.000	20.000	0.000	0.000	0.000		14J1165	
										From 14J1165	

Items Found: 1 Total Cost: \$60.00

Move To Job Allocate Clear Search Boxes

Move To SI Deallocate New Inventory Purchase Reports

FIGURE 4. 20 UNITS IN INVENTORY AFTER PART OF THE WORK FOR OP 30 HAS BEEN COMPLETED

Ok, I am now going to complete both of my child jobs: **14J1165**, producing 40 wheels and **14J1166** producing 10 bodies. After completing the work sessions my inventory will show the following:

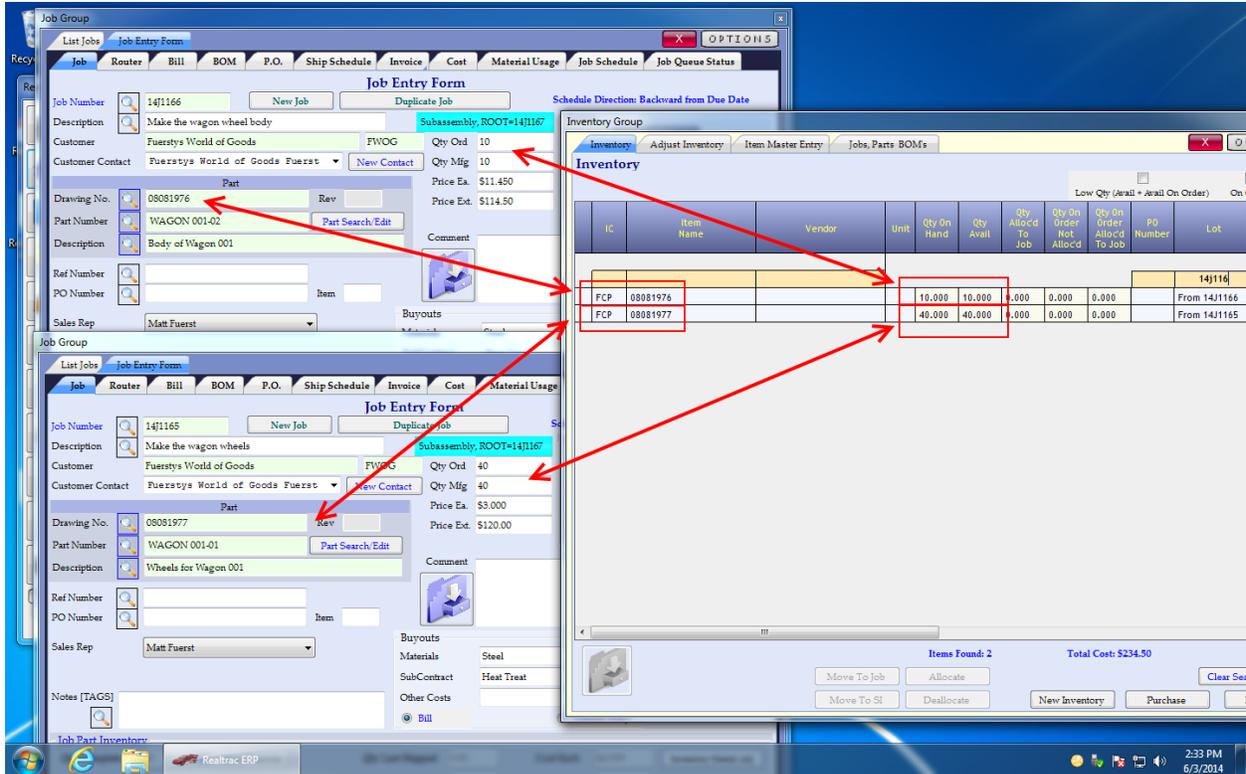


FIGURE 5. INVENTORY IN PLACE FOR OUR 2 CHILD JOBS

## The Root (Assembly) Job

At this point our inventory has all the goods that we need in order to start our root job (**14J1167**), the assembly and finish of the wagon. But before we kick off **14J1167**, let's review the current status of the costs for my complex job (aka "Job Tree" – note the Tree nomenclature on this report).

**Tree Profit Analysis**  
For Root Job No. 1167

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Report Date: 06/03/14

Job No.	Description	Qty Mfg	Qty Comp	Cost Each	Total Buyout Cost	Total Labor Cost	Total Overhead Cost	Total Cost	Total Price	Mfg Profit	Margin Percent	Location
14J1167	Assemble the wagon from child jobs	10	0	1.890	18.90	0.00	0.00	18.90	289.20	270.30	1430.16	PROCESSING(37)
14J1165	Make the wagon wheels	40	40	4.009	48.60	20.00	91.77	160.37	120.00	-40.37	-25.17	<not routed>
14J1166	Make the wagon wheel body	10	10	16.060	52.80	40.06	67.74	160.60	114.50	-46.10	-28.71	<not routed>
				<b>Averages Totals</b>	---	---	---	---	---	---	190.36	

FIGURE 6. JOB TREE PROFIT ANALYSIS REPORT FOR 14J1167 AND ASSOCIATED JOBS

Our root assembly job **14J1167**, has incurred \$18.90 in costs at this point in time. All \$18.90 are from the Buyout for the job (in this case, it's the paint required to finish the wagon once assembled). As we begin the process of assembling and finishing the wagon, we will also incur some labor and overhead costs. But once complete, we expect to make a profit on the job as a whole. We will return to this report during production (for a long run job) as well as after to make sure we're still on the trajectory of making a profit.

Before we begin our assembly, we need to get our finished wagon wheels and wagon bodies out of our inventory and in to our assembly job (**14J1167**).

Let's transfer our wheels (from job **14J1165**) in to the assembly job. I highlight the FCP in Inventory, and click the Move to Job button along the bottom of my interface. This will bring up the following interface:

Move Inventory to Job

Move 08081977 to Job

Value of Items to Move

Cost Each: \$3.960

Price Each: \$3.000

Other Price: \$0.000

Quantity to Move

40

Job No. 14J1167

Drawing Number 08081975, Rev:

Customer

Fuerstys World of Goods

Move Cancel

FIGURE 7. MOVE INVENTORY TO JOB INTERFACE

A critical decision to make at this point is what dollar value should be charged to the assembly job. In Figure 7 above, I chose the **Other Price**, which is currently set at \$0.00. I do this because I've already captured the costs for the wagon wheels in job 14J1165 (see the costs columns in Figure 6 above).

*Note: Realtrac has also intelligently captured and saved a Cost Each and Price Each value for this item as it transfers the goods from the job to inventory. The Cost Each is based on the true cost per unit of the item at the time it was transferred in to inventory. The Price Each value comes from "Price Ea" value set on the main Job screen for the job that originally produced the part. Since the child job 14J1165 actually ran at a deficit, we see in this specific case our costs were actually higher than the price for the part itself. All 3 values, Cost Each, Price Each and Other Price can be changed within the Realtrac Inventory module.*

By completing this action, I am removing the child goods from inventory, transferring them to the assembly job, and maintaining all the information about the costs associated with all the jobs in my complex assembly.

After moving the 10 wagon bodies and 40 wagon wheels to my assembly job, when we check the Material Usage tab for job, it is now clear to the end user that the child jobs have been completed, the material is ready for the assembly job to consume them.

IC	Item Name	Vendor	Qty Alloc To Job	Qty On Hand	Qty Processed By Job	Qty Outstan...	Unit	Lot	Rcvd Date
FCP	08081976		0.00	0.00	10.00	0.00		From 14J1166	6/3/2014
FCP	08081977		0.00	0.00	40.00	0.00		From 14J1165	6/3/2014

FIGURE 8. MATERIAL USAGE FOR OUR ASSEMBLY JOB 14J1167

As importantly, since we transferred the parts from inventory at \$0.00 costing, the Buyouts for my assembly job have not changed.

Job Entry Form

Job Number: 14J1167

Description: Assemble the wagon from child jobs

Customer: Fuerstys World of Goods

Part: WAGON 001

Complex Job (ROOT)

Qty Ord: 10, Qty Mfg: 10, Price Ea: \$28.920, Price Ext: \$289.20

Dates: Entered: 6/3/2014, Due: Select, Start: Calc, Finish: Calc, Close: Select

Buyouts:

Materials	Paint	\$18.90
SubContract		\$0.00
Other Costs		\$0.00

Bill (selected) Manual Entry

FIGURE 9. COSTING FOR OUR JOB HAS NOT CHANGED.

At this point our employee begin working on the assembly of the wagon, logging in and out of the various router operations for this job. Once again, as workers complete pieces on the “trigger” line (last **Count** operation, or last line of the router) for our assembly job, the finished wagons will be transferred to inventory.

## Finishing Assembly and Analysis

With all of our operations complete, we should have a clean inventory (only our 10 finished wagons) and our Tree Profit report should be nice and tidy. Let’s take a look and see if that’s the case.

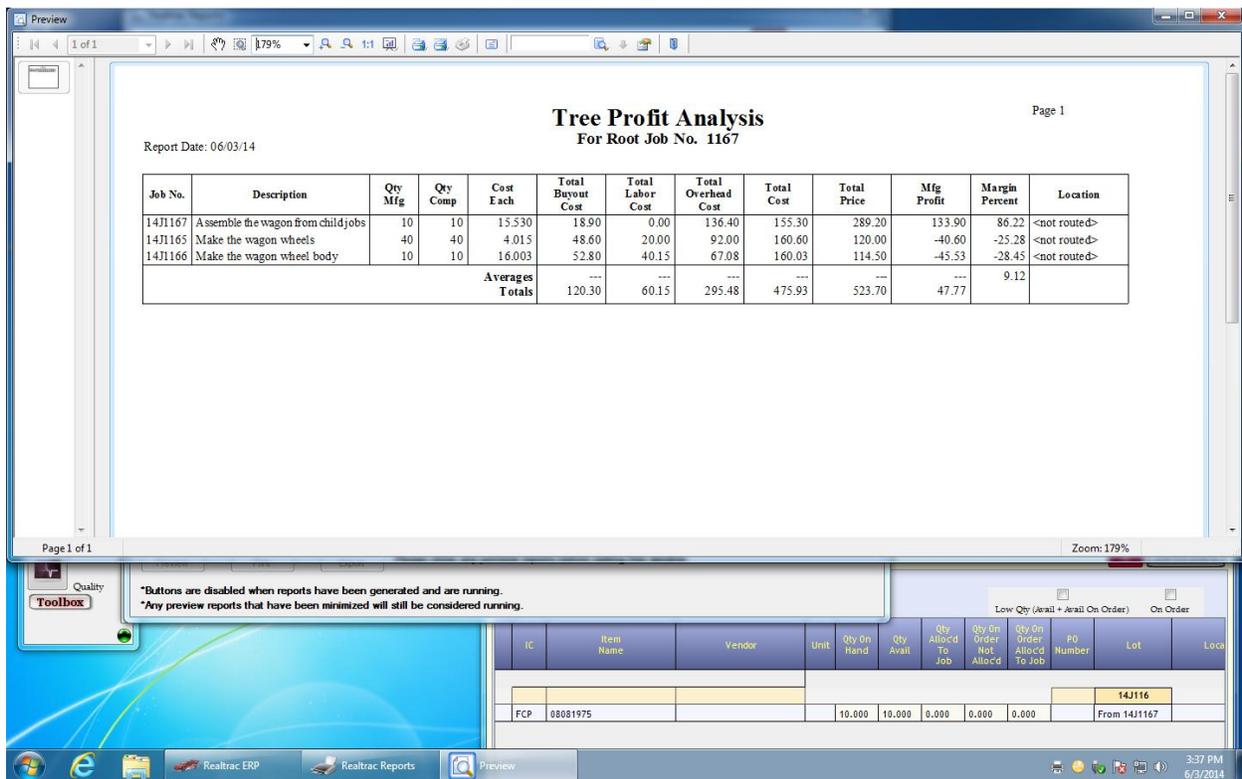


FIGURE 10. FINAL PROFIT REPORT, AND OUR INVENTORY STATUS

In the lower portion of Figure 10, we see the status of our inventory. We have no inventory from jobs 14J1165 and 14J1166. The final output from those jobs was consumed by our assembly job **14J1167**. We’ve yet to invoice and ship our final product, so all 10 units of our finished wagon are sitting in inventory.

In the upper portion of Figure 10, we see that we did thankfully make a profit on this job. Job **14J1167** was not charged for the costs associated with the production of **14J1165** and **14J1166**, since we had already captured those costs in their own jobs. But overall, the building of the wagons netted us a profit, and we can go home and enjoy the day!

Many of the variables in this scenario will change depending on your needs. You may not want to set any prices for the child jobs. You may build complex jobs with many more levels to them. It's possible to have complex jobs many levels deep, where another "child" job will consume the output, producing yet another part that is consumed by the final root job.

We hope this has provided a nice starting point as you consider using the Realtrac Complex Job module, or expanding its use in your facility. We encourage you to reach out to your Account Manager for additional ideas on using the Complex Job module, and ways Realtrac can help your business grow.