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## CELL 5 COMPLETION

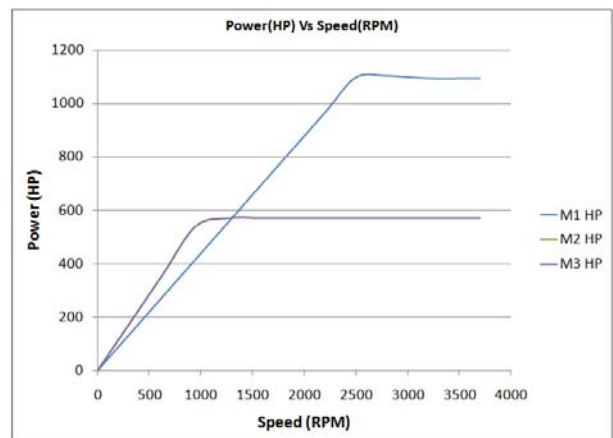
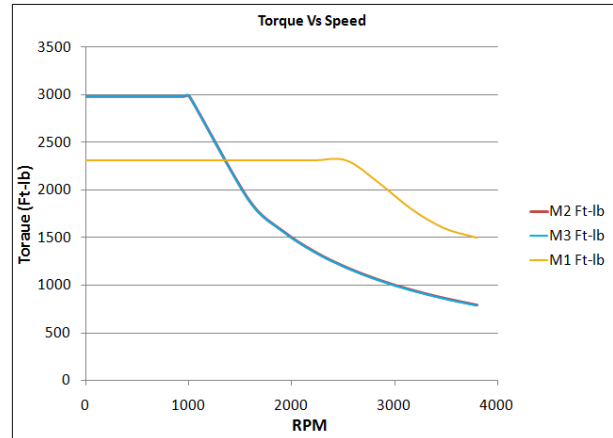
Revolutionary Engineering has completed the commissioning of cell 5 at its Livonia, MI facility. The new test cell incorporates three (3) 1,100 Amp UNICO Pulse Width Modulated Inverters to power two (2) 571 HP dynamometer and one (1) 1,100 HP dynamometer.



### Dynamometer Ratings:

	Mtr 1	Mtr 2	Mtr 3
Max RPM	3801	3799	3799
Torque (ft-lb)	2310	2995	2995
Power (HP)	1100	571	571

### Performance Curves for the Motors:



With the above dynamometers and RE's existing gearbox inventory, individual dynamometer torques can exceed 15,000 lb.ft.

The REPS PC acts as the user interface computer for the test cell. The REPS Real-time computer is a PXI 8110 Quad-core processor which runs all the data acquisition, control loops and acts as the single point orchestrator for all the subsystems such as the data acquisition system on the boom, data acquisition system on the drive panel and the three Unico drives.



This REPS Real-time computer connects to the subsystems via EtherCAT network.



By employing an EtherCAT-based system for all data acquisition and control, the system is highly deterministic. Additionally, EtherCAT greatly reduced the cost and amount of wiring needed for I/O. The EtherCAT subsystems are placed strategically close to the test cell leaving only an Ethernet cable running between each subsystem and the REPS console. This also helped us to minimize noise issues as a result of wiring and to reduce time spent troubleshooting wiring problems.

Please take a few minutes and stop by RE cell 5 to see our state of the art test cell. If you have any questions about our test lab capabilities, please email at [info@revoleng.com](mailto:info@revoleng.com).

## REPS VERSION 5.0 RELEASE

REPS Version 5.0 (REPS 5.0) has been officially released and deployed on RE's Test Cell 5. There are a lot of new features in this version of the software making it easier for the user to setup testing.

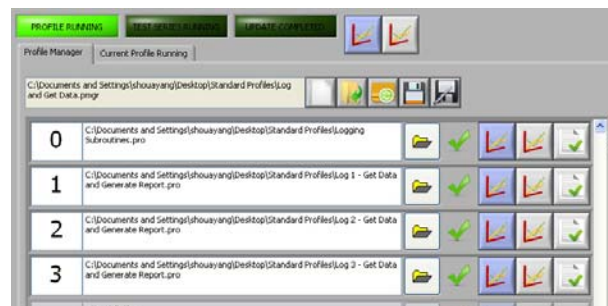
Some of the noteworthy features are

- EtherCAT compatible
- Profile Manager
- Profile List View

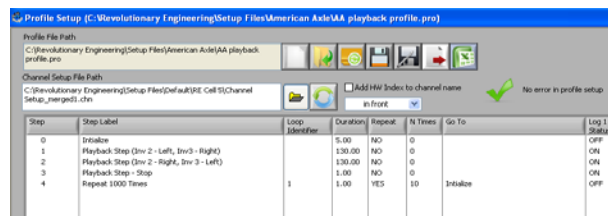
- Active Unit Conversion for channels
- Email and text messages
- Multiple calibrations per channel
- Importing Channels from Excel
- Channel setup comparison

In REPS 5.0, we have introduced EtherCAT to communicate with multiple slave devices at a deterministic rate of 1000 Hz.

Profile Manager is now available on REPS 5.0. The test engineer can now preload all the test profiles that are expected to be running. The operator can just pick the profile from the preloaded test profiles and execute the test.

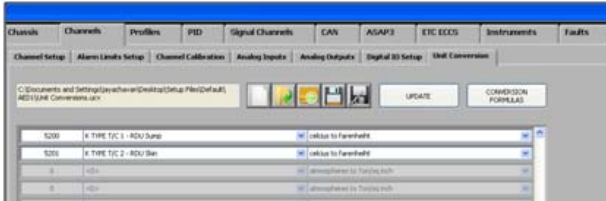


Profile List View makes it a lot easier for the test engineers to develop new test sequences. It allows them to copy, paste and insert multiple steps. It is also possible to call a sub-profile within a profile making it a lot more modular. There is some level of debugging built-in where the user is warned of any illegal operations inside the profile.





Active Unit Conversion for channels allows users to pick the source units and destination units. This utility automatically creates a new channel with the target units. So, no more using the formula channels to convert units.



In REPS 5.0, we can send email and text messages to test engineers when the test is halted because of a fault. The conditions to trigger the email/text messages can be setup in REPS.



We have added the capability to have multiple calibrations per channel. The user can activate any one calibration, depending on the sensor used. With the increasing use of smart sensors with EtherCAT and CAN capabilities, we foresee that the test engineer can seamlessly move the sensor from one test cell to another thereby maximizing the utilization of torque and pressure sensors.

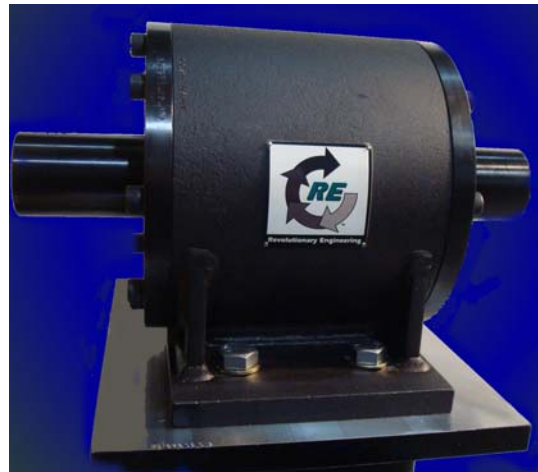
REPS 5.0 features some new utilities to our channel setup such as importing channels, comparing two different channel setups and adding

multiple channels simultaneously. All of these tools will make the commissioning and test setup a lot easier consequently saving time for the test engineer.

If you have any questions, please email us at [info@revoleng.com](mailto:info@revoleng.com). We will be able to setup a REPS version 5.0 demo if needed.

## BLACK HAWK SPINDLES

RE has also launched its line of custom spindles, Black Hawk Spindles. Black Hawk Spindles are engineered to meet the customers' specific torque and speed requirements.



The spindles angular contact bearing with preloads allow for both high speed and high torque operation. The Black Hawk is for use in dynamometer test cells that test gasoline and diesel engines, driveline components, and electric motors. The spindle isolates critical components from each other.

For more information on the Black Hawk Spindles contact your Revolutionary Engineering representative or e-mail us at [info@revoleng.com](mailto:info@revoleng.com).