**Dual Column Switching and Regeneration System** (M-001)

This configuration allows for regeneration of one of the analytical columns while the other is performing chromatography. This configuration works well when the peaks of interest are early eluting since the time saved is in "back cutting" the LC run. This application is run directly from within **Analyst** using a **Standard LEAP Cycle** and uses a 6 port injection valve and a 10 port 2 position valve.

Key Benefits:

- Saving of regeneration time by performing back cuts
- Increases throughput with minimal cost
- Control is all within Analyst
- Only have Analyst sample queue
- Compliance is not affected

System Proposal
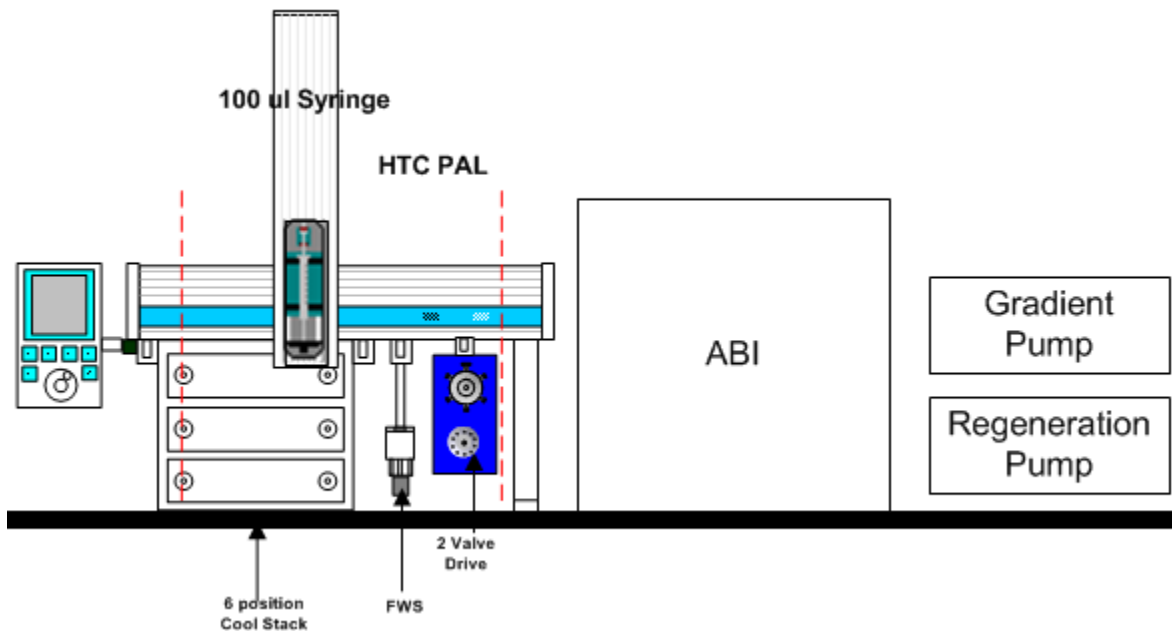
LEAP System consists of an HTC or HTS PAL with (1) 6 port valve and drive for injection, (1) 10 port valve and drive for column selection, (1) LEAP Standard Cycle to be used in Analyst, ICC-CE software, (1) Fast Wash Station, (1) cable, and installation & training.

The diagram is shown with Cooled Storage capability for up to 6 microtiter or 6 deepwell plates or 324 2 mL vials with optional tray holders.

A variety of other storage choices are available depending on requirements.

The standard LEAP cycle requires CTC Instrument Control Components and PAL Cycle Editor License (ICC-CE) to be run.

<u>**General Description of Process:**</u>

The configuration allows the regeneration of one of the analytical column while the other one is engaged - providing greater efficiency and higher throughput. This configuration works well when the peaks of interest are early eluting since the time saved is in "back cutting" the LC run.

There are 2 pumps needed, one for the gradient run and another for regeneration.
The PAL will get its ready signal from the MS and at injection will trigger the acquisition and the start of the gradient using the PAL switch outs.

This configuration requires a 6 port valve for sample loading and a 10 port valve for column switching. The 10 port column selection valve will "Toggle" between columns for each sample. Thus, there is one cycle which handles all samples.

With only a slight plumbing change on the selector valve for where the regeneration pump is hooked up will perform alternating Backflushing in the place of Regeneration.

Please see the Valving Diagram below.
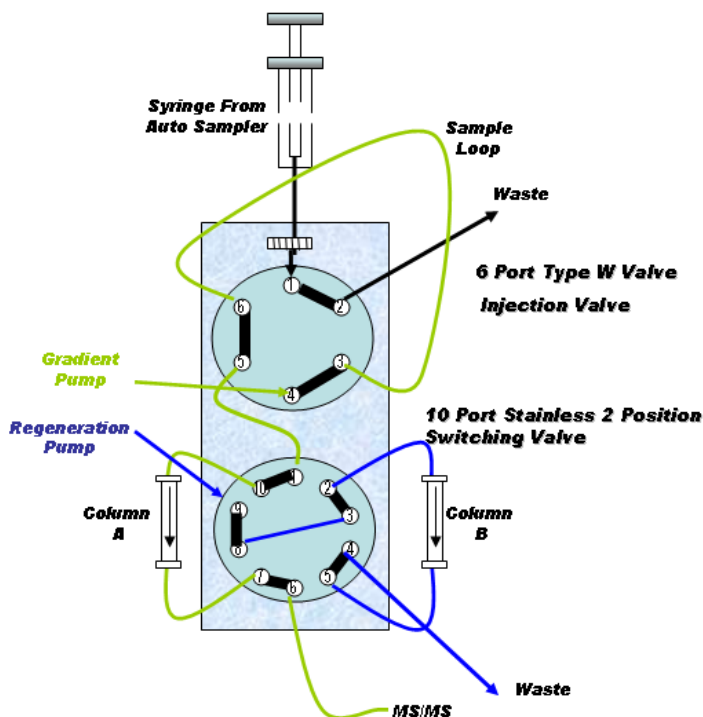
For other cost/time saving measures consider:
- LEAP offers multiple Valve Self Wash Stations to aid in cleaning the valve
- Dual Channel Serial Injection with Front Cut (M-002) using Analyst and ICC-CE
- Dual Channel Parallel Injection (M-003) using Cycle Composer Software and Analyst
- "Look Ahead", sample prep before injection (M-004) using LEAP Shell Software
- Dual Channel Parallel Injection (M-005) using LEAP Shell software
- LEAP Shell Software and application for custom injections and scheduling

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