Infinitum

Fan Selection Tool (FST) External Integration with Third-Party Applications

Leveraging APIs and Excel for Enhanced Connectivity

1 Introduction

The Infinitum Fan Selection Tool (FST) is designed to support HVAC fan system design, streamline workflows, and generate submittal packages.

To support customer workflows, the FST can be integrated with third-party software applications using:

1. Application Programming Interfaces (APIs) for real-time system-to-system communication
2. Excel-based integrations for data exchange, analysis, and reporting

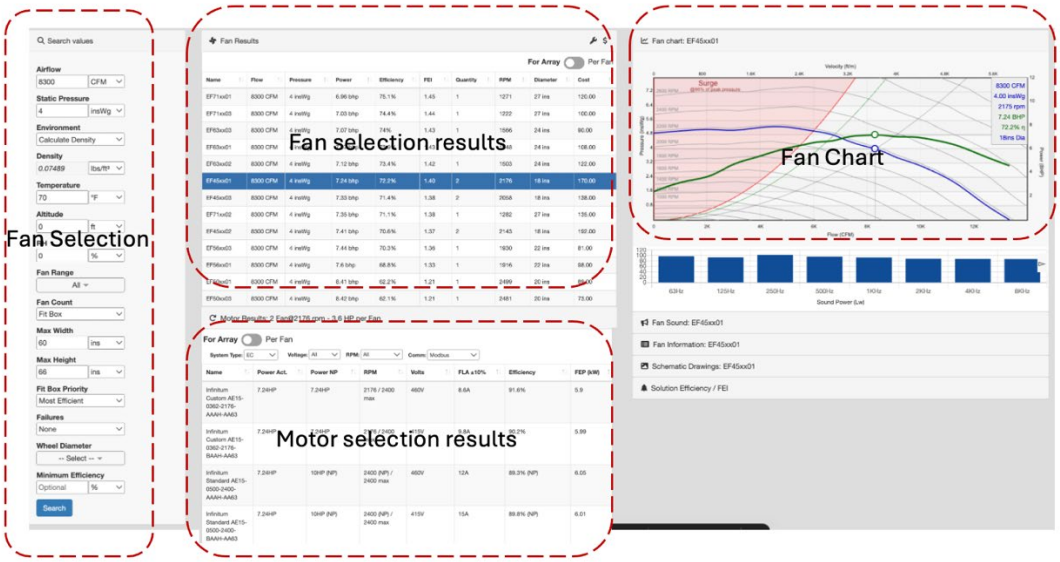
Access to detailed API documentation and advanced integration capabilities requires:

1. A valid Non-Disclosure Agreement (NDA)
2. A commercial agreement (evaluated on a case-by-case basis)

2 Getting Started with External Integration

Before implementing an integration, organizations should ensure the following prerequisites are in place:

1. **Define integration objectives**
   Determine the intended use case (e.g., data synchronization, reporting, automated fan selection, or workflow automation).
2. **Review documentation**
   - Infinitum FST integration capabilities
   - Target platform (e.g., BMS, design software, internal tools)
   - Request API documentation from Infinitum if needed
3. **Confirm access and credentials**
   Ensure you have the required:
   - API keys or authentication credentials
   - User permissions within the FST
4. **Validate in a test environment**
   Test the integration in the approach in a non-production sandbox environment before deploying to production systems.



3 Getting Started with API Integration

To begin integrating the Infinitum FST using APIs, follow these steps:

3.1 Access API Endpoints:

API endpoint URLs and authentication credentials are provided by Infinitum upon request.

To obtain access:

1. Contact Infinitum to request API documentation
2. Execute a valid NDA and commercial agreement (if required)
3. Receive API credentials (e.g., API keys or authentication token)

3.2 Available API endpoints (Limited Release)

The following endpoints are currently available on a limited basis.

1. Fan Selection Endpoint
    - Purpose: Retrieve a list of fan systems that match specified performance requirements.
    - Required Inputs:
        i. Airflow (CFM)
        ii. Static Pressure (w.g.)
    - Optional Inputs:
        i. Additional filtering or performance parameters (default values applied if not provided)
    - Response: Returns a list of matching fan systems in JSON format.

2. Motor Selection Endpoint

- Purpose: Retrieve Infinitum motor options based on defined duty point requirements.
- Inputs: Returns a list of matching Infinitum motor configurations in JSON format.
- Alternative Option: The Infinitum Motor Selection Tool (MST) API can also be used to retrieve motor selections.
    i. Full MSTP API documentation available at https://mst.goinfinitum.com/docs/api

3. Fan Chart Endpoint
    - Purpose: Generate a performance chart for a selected fan configuration.
    - Inputs: Operating parameters (e.g., airflow, pressure)
    - Response: Returns a base64 JPEG image of the fan performance chart string for a given fan.

3.3 Implement Basic Requests:

Once access is established, begin by validating connectivity using a simple API request.

Recommended approach:

1. Start with the Fan Selection endpoint using minimum required inputs (airflow and static pressure)
2. Confirm that:
    - The request is successfully authenticated
    - A valid JSON response is returned
3. Review the response structure and validate that results align with expected performance ranges

This step ensures that the integration is functioning correctly before expanding to more advanced use cases.

4 Getting Started with Excel Integration

Excel-based integration provides a simpler alternative to APIs for users who prefer working with structured datasets or do not require real-time system connectivity.

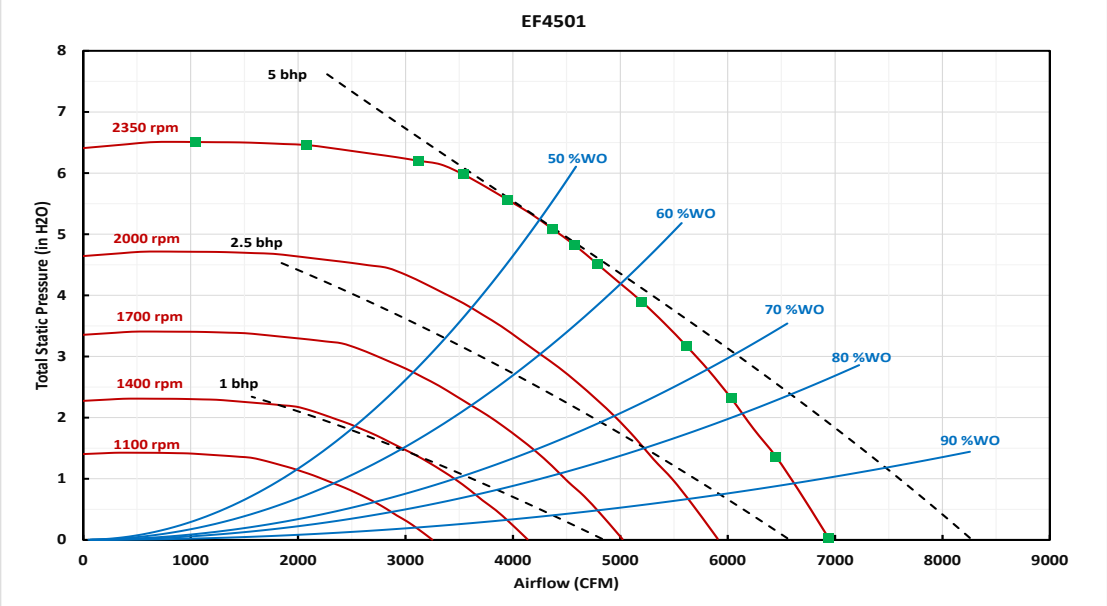
4.1 Access Fan Data Tables

Infinitum provides Excel-based fan data tables that include performance characteristics such as:

- Airflow
- Static pressure

The Excel tables enable offline analysis and modeling. They are less dynamic than APIs but easier to implement. Contact Infinitum to obtain the latest FST Fan data tables.

4.2 Sample Excel table and corresponding chart



rpm	2350	rpm	2000	rpm	1700	rpm	1400	rpm	1100
volume flow	pressure (static) psf [in	volume flow	pressure (static) psf [in	volume flow	pressure (static) psf [in	volume flow	pressure (static) psf [in	volume flow	pressure (sta
0	6.409747	0	4.642641	0	3.354308	0	2.274894	0	1.404399
208	6.441848	177.0213	4.665893	150.4681	3.371108	123.9149	2.286288	97.3617	1.411433
416	6.47395	354.0426	4.689145	300.9362	3.387907	247.8298	2.297681	194.7234	1.418466
624	6.506052	531.0638	4.712396	451.4043	3.404706	371.7447	2.309074	292.0851	1.4255
832	6.512036	708.0851	4.71673	601.8723	3.407838	495.6596	2.311198	389.4468	1.426811
1040	6.509089	885.1064	4.714596	752.3404	3.406296	619.5745	2.310152	486.8085	1.426165
1248	6.506142	1062.128	4.712462	902.8085	3.404754	743.4894	2.309106	584.1702	1.42552
1456	6.503196	1239.149	4.710327	1053.277	3.403212	867.4043	2.30806	681.5319	1.424874
1664	6.491916	1416.17	4.702158	1203.745	3.397309	991.3191	2.304057	778.8936	1.422403
1872	6.476226	1593.191	4.690793	1354.213	3.389098	1115.234	2.298489	876.2553	1.418965
2080	6.460535	1770.213	4.679428	1504.681	3.380887	1239.149	2.29292	973.617	1.415527
2288	6.415282	1947.234	4.64665	1655.149	3.357205	1363.064	2.276859	1070.979	1.405612
2496	6.364251	2124.255	4.609688	1805.617	3.3305	1486.979	2.258747	1168.34	1.394431
2704	6.313221	2301.277	4.572727	1956.085	3.303795	1610.894	2.240636	1265.702	1.38325
2912	6.26219	2478.298	4.535765	2106.553	3.27709	1734.809	2.222525	1363.064	1.372069
3120	6.202691	2655.319	4.492669	2257.021	3.245953	1858.723	2.201408	1460.426	1.359032
3328	6.142241	2832.34	4.448884	2407.489	3.214319	1982.638	2.179953	1557.787	1.345788
3536	5.98115	3009.362	4.332205	2557.957	3.130018	2106.553	2.12278	1655.149	1.310492
3744	5.779239	3186.383	4.185959	2708.426	3.024355	2230.468	2.05112	1752.511	1.266253
3952	5.562227	3363.404	4.028774	2858.894	2.91079	2354.383	1.974099	1849.872	1.218704
4160	5.343978	3540.426	3.870695	3009.362	2.796577	2478.298	1.89664	1947.234	1.170885
4368	5.0866	3717.447	3.684273	3159.83	2.661887	2602.213	1.805294	2044.596	1.114493
4576	4.82089	3894.468	3.491817	3310.298	2.522838	2726.128	1.71099	2141.957	1.056275
4784	4.515654	4071.489	3.270731	3460.766	2.363103	2850.043	1.602658	2239.319	0.989396
4992	4.206016	4248.511	3.046458	3611.234	2.201066	2973.957	1.492764	2336.681	0.921554
5200	3.89747	4425.532	2.822975	3761.702	2.0396	3097.872	1.383258	2434.043	0.85395
5408	3.549006	4602.553	2.570579	3912.17	1.857243	3221.787	1.259584	2531.404	0.7776
5616	3.171251	4779.574	2.296967	4062.638	1.659559	3345.702	1.125514	2628.766	0.694833
5824	2.769233	4956.596	2.005782	4213.106	1.449177	3469.617	0.982833	2726.128	0.606749
6032	2.316902	5133.617	1.678155	4363.574	1.212467	3593.532	0.822296	2823.489	0.507642
6240	1.817987	5310.638	1.316786	4514.043	0.951378	3717.447	0.645225	2920.851	0.398328
6448	1.36392	5487.66	0.9879	4664.511	0.713758	3841.362	0.484071	3018.213	0.29884
6656	0.822304	5664.681	0.595603	4814.979	0.430323	3965.277	0.291845	3115.574	0.18017
6864	0.241923	5841.702	0.175227	4965.447	0.126601	4089.191	0.085861	3212.936	0.053006
6940	0.025781	5906.383	0.018674	5020.426	0.013492	4134.468	0.00915	3248.511	0.005649
6941	0.022937	5907.234	0.016614	5021.149	0.012003	4135.064	0.008141	3248.979	0.005026

4.3 When to Use Excel vs API

Method	Best For	Advantages	Limitations
API	Real-time integration	Automated, scalable	Requires development
Excel	Manual / semi-automated workflows	Easy to use, flexible	Static data, no live updates

5 Best Practices for Integration

1. **Validate data formats and units**
   Ensure consistency in units (e.g., airflow, pressure) and data structures between Infinitum FST and external systems to avoid calculation or selection errors.
2. **Leverage official API documentation**
   Use the WEBFAN WebAPI Functional Specification for detailed endpoint definitions, input parameters, and response structures.
3. **Start with controlled test cases**
   Validate integration logic using known duty points and expected outputs before scaling to broader use.
4. **Implement error handling and validation**
   Ensure your system can handle incomplete inputs, unexpected responses, or failed requests gracefully.
5. **Monitor and maintain integrations**
   Regularly review integration performance and update scripts or workflows to align with changes in APIs, data tables, or system requirements.

6 Contact Information

For assistance with Infinitum FST integration, please contact:

- Email: support@goInfinitum.com
- Support Center: support.goInfinitum.com
- Website for documentation and resources: Infinitum Fan Systems