The number of functional features included in a reliable energy consumption analysis system for energy-efficient appliances can vary depending on the specific requirements and scope of the system. However, here are some common functional features that could be included:

1. Real-time Energy Monitoring: The system should provide real-time monitoring of energy consumption from energy-efficient appliances, displaying the current usage and aggregated data.
2. Appliance-Level Consumption: The ability to disaggregate energy consumption data to provide insights into individual appliance usage, allowing users to identify energy-intensive appliances.
3. Historical Data Analysis: The system should store and analyze historical energy consumption data to identify patterns, trends, and anomalies in usage over time.
4. Energy Efficiency Metrics: Calculation and display of energy efficiency metrics for appliances, such as Energy Star ratings or other industry standards, to compare energy efficiency performance.
5. Comparative Analysis: The system can provide comparative analysis by benchmarking energy consumption against similar households, industry averages, or energy-efficient standards.
6. Energy Cost Calculation: Calculation of energy costs based on real-time consumption data and applicable utility tariffs, allowing users to understand the financial impact of their energy usage.
7. Energy Saving Recommendations: The system should provide personalized recommendations and tips on how to optimize energy consumption, reduce waste, and improve energy efficiency.
8. Performance Monitoring: Monitoring and alerting users to performance issues or malfunctions in energy-efficient appliances that may impact energy savings.
9. Visualization and Reporting: The system should offer visually appealing dashboards, charts, and reports to present energy consumption data and analysis in a user-friendly and understandable manner.
10. Integration with Renewable Energy: Integration with renewable energy sources, such as solar panels, to monitor energy generation, usage, and the environmental impact of renewable energy contributions.
11. Demand Response Support: Integration with demand response programs to enable users to participate in energy-saving initiatives and receive incentives for load reduction during peak demand periods.
12. User Management and Notifications: User management features to allow multiple users to access the system, set preferences, and receive notifications related to energy consumption, alerts, and recommendations.
13. API and Integration Capabilities: Providing APIs or integration options to connect with other smart home systems, energy management platforms, or utility company interfaces for seamless data exchange and enhanced functionality.
14. Mobile and Web Applications: Availability of mobile and web applications to provide convenient access to energy consumption data, analysis, and recommendations from anywhere.

It's important to note that the actual number and selection of features will depend on the specific requirements, target user base, and the scalability of the system.