



# **T-SCAN: AN ADVANCED SYSTEM FOR OCCLUSION ANALYSIS IN DENTISTRY**

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## **Abstract**

Digital technologies are increasingly being integrated into modern dental diagnostics, particularly in the assessment of occlusion. One of the most advanced tools in this field is the T-Scan system, which has largely replaced traditional articulating paper by providing precise and dynamic occlusal analysis.

## **Introduction**

The T-Scan system is a computerized sensor-based technology designed to identify and measure contact points between the upper and lower dental arches. It allows clinicians to evaluate bite force distribution, detect occlusal imbalances, and identify areas requiring correction. The system was developed by Tekscan in

1987 and is widely used across various dental disciplines, including prosthodontics, orthodontics, implantology, and restorative dentistry.

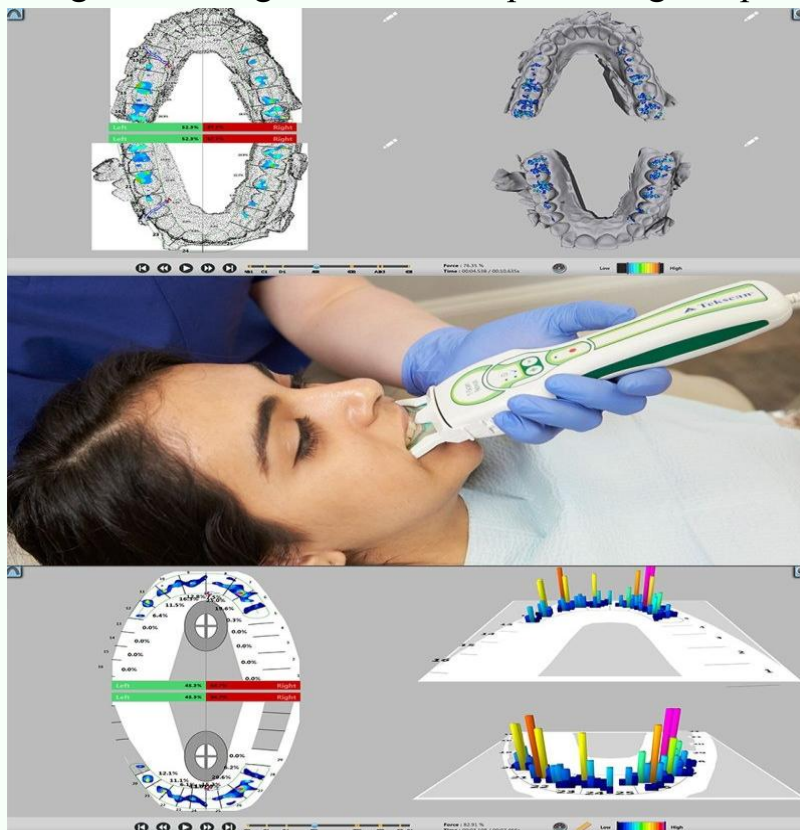
Occlusion plays a crucial role in maintaining periodontal health and the proper function of the entire stomatognathic system. It can be classified into static occlusion (when the jaws are closed) and dynamic occlusion (during jaw movement). Accurate assessment of occlusion helps prevent complications such as enamel wear, fractures, overload of dental structures, and temporomandibular joint disorders.

### PRINCIPLE OF OPERATION

During the procedure, the patient bites on a thin sensor plate that records occlusal contacts. The collected data is transmitted to a computer, where it is analyzed in real time. This enables the dentist to evaluate:

- Tooth contact patterns
- Force distribution and balance
- Displacement of the center of occlusal force

The recorded data can be stored digitally and used for comparative analysis, treatment planning, monitoring outcomes, and preventing complications.



## CLINICAL APPLICATIONS

The T-Scan system is widely used in different branches of dentistry:

- Prosthodontics: Ensures optimal load distribution and prevents damage to crowns, veneers, and prostheses.
- Orthodontics: Assists in diagnosing bite abnormalities and preventing dysfunction of the temporomandibular joint (TMJ).
- Surgery and Implantology: Helps evaluate occlusion before tooth extraction or implant placement.
- Therapeutic Dentistry: Identifies areas requiring adjustment in fillings to maintain balanced occlusion.
- Restorative Dentistry: Evaluates the accuracy of restorations in relation to opposing teeth.

## ADVANTAGES OF T-SCAN

- Prevents damage to dental restorations and implants
- Ensures balanced distribution of occlusal forces
- Improves diagnostic accuracy and treatment outcomes
- Reduces the risk of clinical errors
- Enhances patient comfort and safety

## CONCLUSION

T-Scan is not merely a technological innovation but a powerful diagnostic and therapeutic tool in modern dentistry. It enables clinicians to make accurate clinical decisions, improve treatment quality, and ensure long-term oral health. The use of digital occlusal analysis significantly increases the predictability and success of dental treatment.

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