



LIVEO
RESEARCH

Your Partner for
**Sustainable
Solutions**



LIVEO SERVICE PROGRAM

CUT THE WASTE!

WHY LIVEO SERVICES LEAD THE WAY

Liveo has been a trusted partner of the pharmaceutical industry for more than sixty years. Its blister packaging solutions offer a wide choice of films and foils to satisfy all customer requests. Standard films as well as sustainable solutions are available for the most cost efficient and reliable way of safeguarding your drugs and your patients.

Choosing the best packaging solution for your drug

There is no one solution for all. Liveo helps you identify the key decision making points when it comes to choosing a packaging solution. Our product range covers standard blisters as well as more sustainable PET and mono material solutions.

Liveo ensures you are able to

- identify the best films for your specific drugs and its properties
- understand which solutions work best at which ambient temperature
- be sure about shelf life and drug safety

Sustainable processes

Sustainability is not limited to products alone. We at Liveo believe that your processes also need to embrace the concept of not wasting time, money and resources.

Liveo's unique service program combines science-based calculations and an unrivalled practical know-how that is unique in the industry.

The smart tools in our Liveo Service Program cover a range of key processes essential for streamlining and optimizing your decision processes.

Your partner for sustainable solutions



CUT THE WASTE!

Using Liveo's unique process know-how empowers you to save money and avoids

- ✗ overpackaging
- ✗ failed stability tests
- ✗ expensive trial and error
- ✗ overlong product development cycles
- ✗ false prediction of shelf life
- ✗ field failures

Taking sustainability to the next level

NOW



LIVEO SERVICE PROGRAM – EQUAL TO NONE

An unrivalled set of service modules offers you a range of support activities and assistance for key processes in defining the best packaging solutions.

We provide more than the best films - we deliver the best and fastest solutions based on science and more than half a century of engineering expertise.

OPTIMA
TOTAL
SOLUTION

LIVEO
SERVICE
PROGRAM

MODELING
TOOLS
FOR THERMO-
FORMING

EZ SWITCH
CHANGE OF
PACKAGING

FASTPACK
RAPID
RESPONSE

OPTIMA TOTAL SOLUTION

When?

- You want to launch a new drug
- After a drug stability study has failed

Why?

- To have full support during the entire choice of packaging process from Liveo
- To have a science-based solution proposed within 6-8 weeks
- To avoid overpackaging
- To identify weak spots
- To learn more about the drug to be packaged
- To shorten the speed to market

How?

- Determines the most cost-effective blister packaging
- Identifies the correct barrier required to protect the drug and to guarantee requested shelf life
- Degradation pattern of formulation is evaluated
- Three batches are studied under various environmental conditions
- Effects of environmental variables on product critical stability attributes are assessed
- Critical factors that determine failure mode and its threshold values are evaluated
- Product sensitivity is quantified against each environmental factor
- Design of the ideal blister cavity based on specific dose size and shape is created
- Cavity thinning & moisture permeation through FEA is simulated
- Real-life MVTR is predicted

Result:
**Science-based proposal for
the best blister film and foil
lidding combination**

FASTPACK

RAPID RESPONSE

When?

- You need a packaging proposal within 10-15 working days
- You know the chemical properties of the drug
- Before start of stability study

Why?

- Accuracy and time to market is critical
- The chemical properties do not need to be analyzed

How?

- FastPack service module is built upon data and definitive correlations between changes in certain physical characteristics attributable to moisture and/or light induced stability failures in solid dosage form
- Determines the most cost-effective blister packaging
- Selection is done based on the product sensitivity study towards the environmental variables, but without chemical analytical support
- Duration 10-15 working days

Result: Expedited packaging proposal within 10 to 15 working days if chemical properties of drug are known

Comparing Optima and Fastpack

| | Optima | FastPack |
|---------------------------------|---------------------|--------------|
| No. of solid products required | 2500/batch | 750/batch |
| No. of batches | Optimum 3 | 1 |
| Duration | 6 to 8 weeks | 3 to 4 weeks |
| Packaging selection for NDA/NCE | Yes | No |
| Packaging selection for ANDA | Yes | Yes |
| Product analysis | Physical + chemical | physical |
| Analytic support | Yes | No |

“Listen to our customers

40% less material consumption

Liveo Optima enabled us to switch from cold form foil packaging to thermoforming blister packaging. While material consumption decreased by 40% and our productivity increased, stability remained the same.

Pharmaceutical company, USA

We saved 30% in packaging costs

We took Liveo on board to switch our packaging and saw a cost reduction of 30% without compromising the stability and shelf life of the product. The Liveo guys really know their stuff.

Probiotic Producer, USA

Only one study to get it right

Liveo's "right the first time" approach helped us achieve optimal packaging with only one stability study.

Leading pharma company for veterinary medicine, USA

EZ SWITCH

CHANGE OF PACKAGING

When?

- You want a painless packaging and regulatory transition from existing solution
- You want to change to a different Liveo packaging product
- You want to change packaging after completion of a study

Why?

- Redesigning the packaging could eliminate overpackaging
- The shelf life needs to be prolonged
- Product requires different level of protection

How?

- Packaging costs are evaluated to visualize potential packaging cost saving with different packaging options
- Equivalency study report replaces stability study data to prove “equal or better” (as per interchange-ability protocol justifying for minor change)
- Regulatory and quality requirements are satisfied with full documentation essential for change control management
- Onsite support for machine validation and optimizing the machine parameters is provided

We comply with FDA regulations

The FDA allows pharmaceutical manufacturers to switch primary packaging materials provided that equivalency can be exhibited through scientific methods that meet FDA requirements on interchangeability of packaging materials.

Our EZSwitch service module is fully aligned with all regulatory requirements in the industry – so switching to new packaging is easy. Liveo takes away the administrative hassle and provides all documents needed.



Result:
**Equivalency study
to prove “equal or better”**

MODELING

TOOLS FOR THERMOFORMING

What?

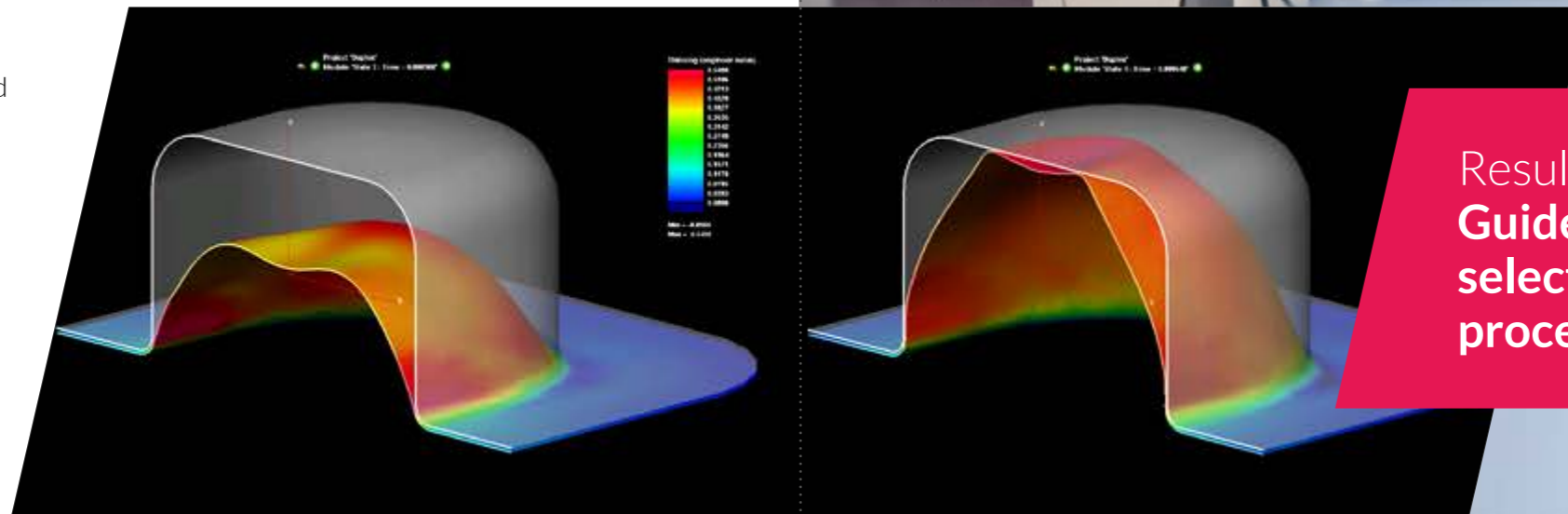
- This tool provides thermoforming simulation using software based on Finite Element Method (FEM)
- Aids pharmaceutical packaging engineers to understand the thinning effects of the film after blister formation
- Provides guidelines for accurate material selection, cavity size, and forming process parameter setting
- Creates solid and cost effective shapes for solid dose products

How?

- Predicts product and process feasibility during early product development
- Provides information on the barrier properties for the formed cavity
- Helps pharmaceutical manufacturers to quickly find a stability solution
- Eliminates risk by identifying formability issues up-front through the graphical display of the forming zone, splitting, wrinkling and thinning

Why?

- Allows package designers to explore the effects of tool geometry, film types, and process conditions before actually spending time and money on creating tools and before running actual experiments
- Reduces cost of product development



Result:
Guidelines for accurate material selection, cavity size, and forming process parameter setting



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Liveo is committed to sustainability.

Go to www.liveoresearch.com/en/cutthewaste
to learn more.

