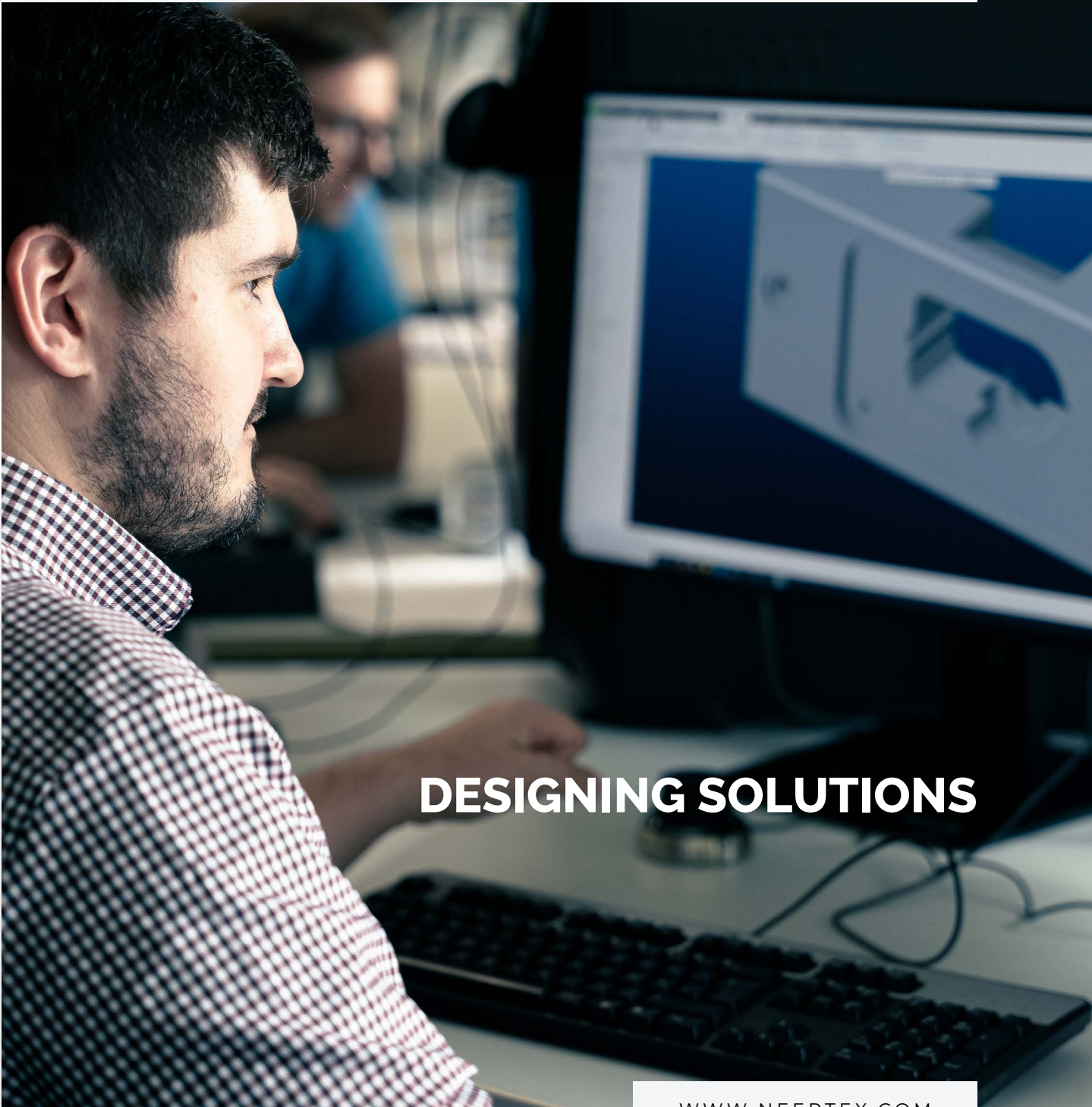


NEERTEX



DESIGNING SOLUTIONS

WWW.NEERTEX.COM



**your specialists for
innovative solutions in
mechanical engineering**

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we are NEERTEX

In today's highly competitive environment, it is essential to rely on partners who offer not only expertise but also innovation and precision. NEERTEX embodies these values, providing customized engineering solutions that empower your company to successfully tackle the challenges of the future. From concept to implementation, we are your trusted partner, dedicated to maximizing project efficiency and ensuring the quality of your products.

NEERTEX is an engineering firm specializing in mechanical engineering, dedicated to providing innovative and tailored solutions. With our committed team of experienced engineers and technicians, we offer a wide range of services, from consulting and planning to the implementation of your projects. Our philosophy is rooted in the use of cutting-edge technologies and methods to develop efficient, sustainable, and cost-effective solutions. We uphold the highest quality standards to ensure every project is completed successfully and exceeds our clients' expectations. At NEERTEX, your needs and requirements are

our top priority. We work closely with you to develop customized solutions perfectly aligned with your specific demands. Our goal is to help you execute your projects efficiently and successfully, giving you a clear competitive edge.

move your projects forward with our engineering services.

+70

completed

projects

+50

designed

machines

We support you not only in engineering but throughout the entire process – from manufacturing and sourcing components to assembling a complete machine or system. We coordinate control system builders, assembly teams, and contract manufacturers to ensure seamless integration and the successful completion of your project.

our services



NEERTEX offers comprehensive engineering services covering all project phases. We design precise mechanical components, develop customized special-purpose machines, and utilize advanced simulations to prevent errors. Additionally, we assist in ensuring compliance with regulatory requirements to guarantee the conformity of your machines. Through close collaboration, we deliver efficient, innovative, and sustainable solutions that drive your projects forward successfully.



special-purpose machines

NEERTEX is your reliable partner for custom special-purpose machines. We design, develop, and manufacture machines tailored perfectly to your specific requirements. Using cutting-edge technology and innovative approaches, we enhance the efficiency and productivity of your production processes while maintaining the highest quality standards.



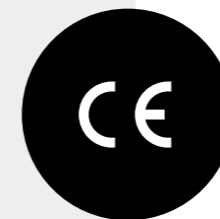
plant engineering

Specializing in raw material handling, NEERTEX designs customized systems for the efficient transport, safe storage, and precise dosing of materials such as grain, ore, coal, and chemicals. Our focus is on optimizing your raw material processes with tailored solutions that meet the highest standards of efficiency and quality.



FEM & CFD simulation

We offer comprehensive simulation services to maximize the performance and efficiency of your products. Our advanced simulation methods allow for the analysis and understanding of complex physical phenomena before they are implemented in reality. Using state-of-the-art software and deep expertise, we help you optimize your development processes and create innovative solutions.



Conformity Assessment Procedures

NEERTEX provides services in conformity assessment to ensure that your machine or system meets the relevant legal and regulatory requirements. Our experienced team supports you in achieving the safety and quality standards essential for market access.

**our team of experts for
innovative solutions**

the team

At Neertex, a highly qualified team of experts is ready to develop innovative and customized solutions in mechanical engineering. Our focus is on ensuring quality, safety, and efficiency in every project. Together, we combine our strengths to meet our clients' requirements and deliver outstanding results.



Suleman Amin
Design Engineer

Design Engineering &
Conformity Assessment



Malte Güttner
Development Engineer

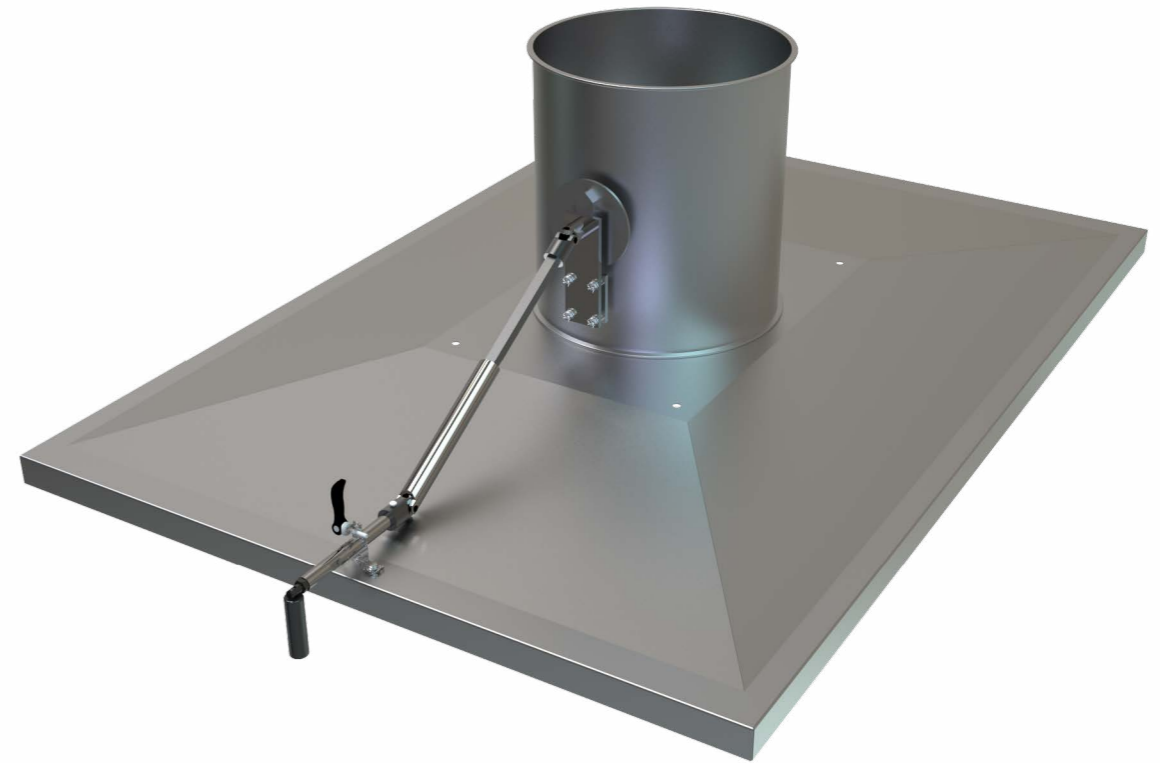
Concept Development,
Calculation, and Design
Engineering



Abdel El Ani
Design Engineer

Design Engineering
& Safety Concept
Specialist

project references



reference **suction hood**

We faced a challenge with one of our client's systems: the existing hood could not effectively capture the steam generated during screen changes. As a result, frequent false alarms occurred due to steam escaping from the sides. To address this issue, we developed a specialized hood that significantly improves steam capture and minimizes false alarms.

Our new design features a condensate drain and a ball valve, complemented by a precisely adjustable throttle valve with a universal joint shaft. These innovations ensure optimized control and increased efficiency.





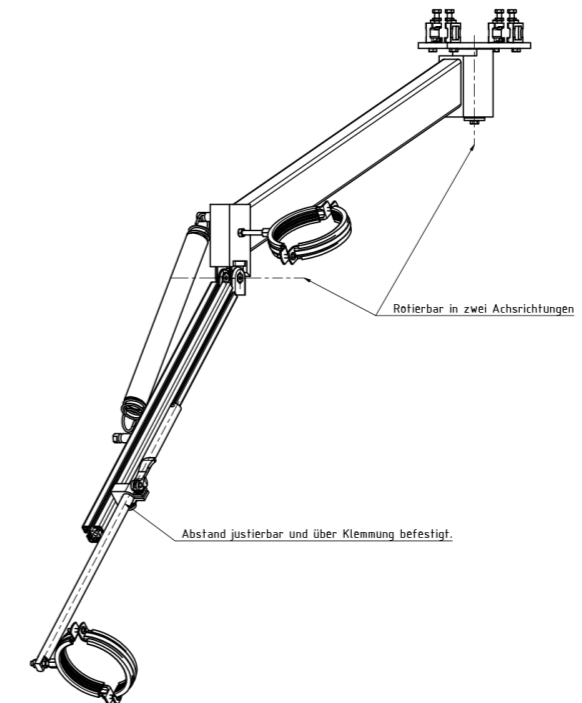
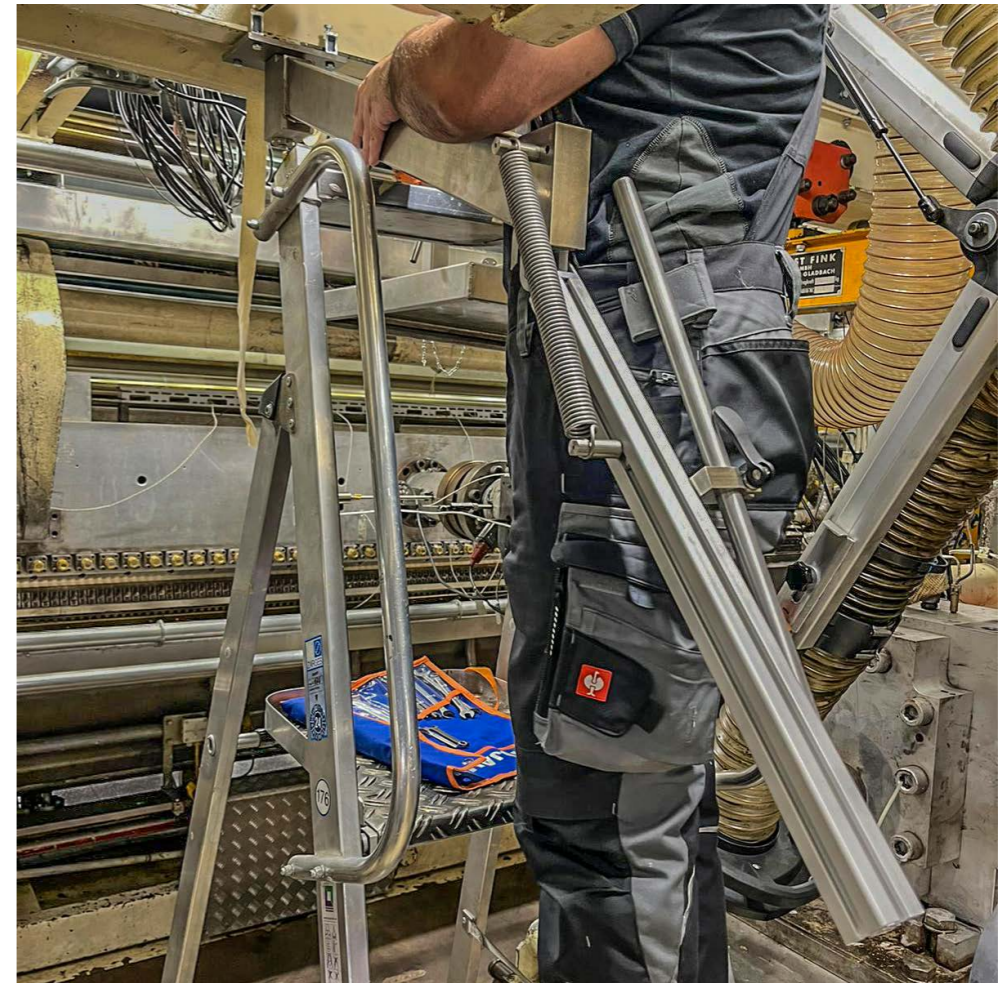
reference
suction arm

This extraction arm was specifically designed to meet the requirements of our client. In their production facility, various outlet openings in a system release steam containing plasticizer gases.

These gases must be effectively extracted to comply with safety and environmental standards. The extraction arm stands out for its flexibility; it can be adjusted along every axis and precisely positioned at any point within the space. This adaptability is made possible by an innovative joint system that ensures flexible positioning without slipping.

The design also takes into account the chemical resistance of the materials to plasticizers, ensuring long service life and functionality under aggressive conditions. Specially designed clamps are integrated into the arm to securely and tightly hold

the extraction hoses. The arm can be fixed in any desired position to achieve optimal extraction performance.



reference

calculation according to EN ISO 13855

For one of our clients, a safety-related calculation was performed in accordance with the EN ISO 13855 standard, which forms the basis for determining the minimum distance of protective devices such as light barriers or light curtains from hazardous machine areas. The goal of this calculation was to precisely determine the safety distance to ensure the legally compliant and safe operation of the machine.

The calculation was conducted based on the specific requirements of EN ISO 13855, which considers factors such as approach speed and the response time of protective devices. By incorporating the client's working environment and considering the machine geometry, the necessary minimum safety distance was accurately calculated and thoroughly documented.

The results provided the client with clear, standard-compliant guidelines for placing protective devices. This not only significantly enhanced operational safety but also established a solid foundation for the machine's CE compliance. Our services in this project included the professional calculation of the minimum safety distance in accordance with EN ISO 13855, consultation and support in implementing

safety requirements, and the preparation of technical documentation, which can be presented during audits or to certification bodies. This project highlights NEERTEX's expertise in safety planning and standards implementation, as well as our ability to deliver practical, client-focused solutions.

1 Berechnung

Technische Daten und Werte

Für die Berechnung werden die folgenden technischen Daten und Werte verwendet:

(2)

- Ansprechzeit der Maschine laut Messung (t_1): 450 ms (0,45 s)
- Ansprechzeit des GL-R143F Lichtvorhangs (t_2): 19,9 ms (0,0199 s)
- Annäherungsgeschwindigkeit (K): 2000 mm/s (für Fingerschutz)
- Zusatzabstand (C): 0 mm (bei Fingerschutzauflösung von 14 mm)

Berechnungsformel

Der Sicherheitsabstand S wird nach der Norm EN ISO 13855 berechnet:

$$S = K \times T + C \quad (3)$$

wobei die Gesamte Anhaltezeit T die Summe der Ansprechzeit des Lichtvorhangs und der Nachlaufzeit der Maschine darstellt:

(4)

$$T = t_1 + t_2 \quad (5)$$

Da der Lichtvorhang eine Auflösung von 14 mm hat und daher für Fingerschutz geeignet ist, wird $C = 0$ gesetzt.

3

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Schrittweise Berechnung des Sicherheitsabstands

Die Berechnung erfolgt in zwei Schritten, wobei zunächst die Geschwindigkeit von 2000 mm/s verwendet wird. Sollte der Sicherheitsabstand über 500 mm liegen, wird in einem zweiten Schritt die reduzierte Annäherungsgeschwindigkeit von 1600 mm/s gemäß EN ISO 13855 eingesetzt.

Berechnung der Anhaltezeit T

Die Gesamte Anhaltezeit T ergibt sich wie folgt:

$$T = t_1 + t_2 \quad (6)$$
$$= 0,45 \text{ s} + 0,0199 \text{ s} \quad (7)$$
$$= 0,4699 \text{ s} \quad (8)$$

Berechnung des Sicherheitsabstands S

Mit einer Annäherungsgeschwindigkeit K von 2000 mm/s ergibt sich der Sicherheitsabstand S wie folgt:

$$S = K \times T + C \quad (9)$$
$$= 2000 \text{ mm/s} \times 0,4699 \text{ s} + 0 \text{ mm} \quad (10)$$
$$= 939,8 \text{ mm} \quad (11)$$

Anwendung der reduzierten Annäherungsgeschwindigkeit

Da der Sicherheitsabstand größer als 500 mm ist, wird gemäß der Norm EN ISO 13855 eine reduzierte Annäherungsgeschwindigkeit K von 1600 mm/s verwendet:

$$S = 1600 \text{ mm/s} \times 0,4699 \text{ s} \quad (12)$$
$$= 751,84 \text{ mm} \quad (13)$$

Da der Wert unter 850 mm liegt, wird der berechnete, abgerundete Sicherheitsabstand von 751 mm eingesetzt.

Ergebnis

Der berechnete Mindestsicherheitsabstand für den Einsatz des GL-R143F Lichtvorhangs mit einer Auflösung von 14 mm beträgt somit:

$$S = 751 \text{ mm} \quad (14)$$

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reference

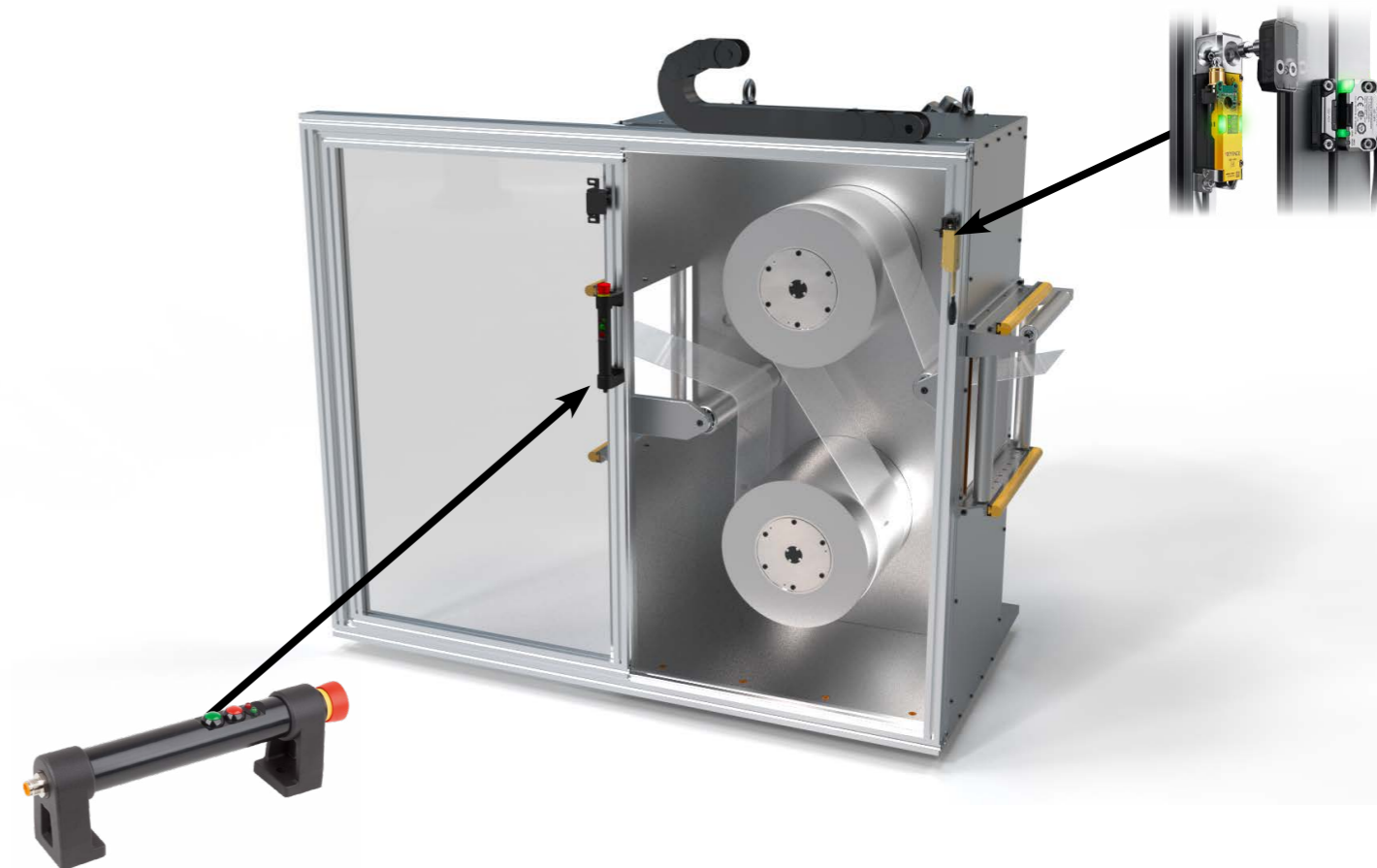
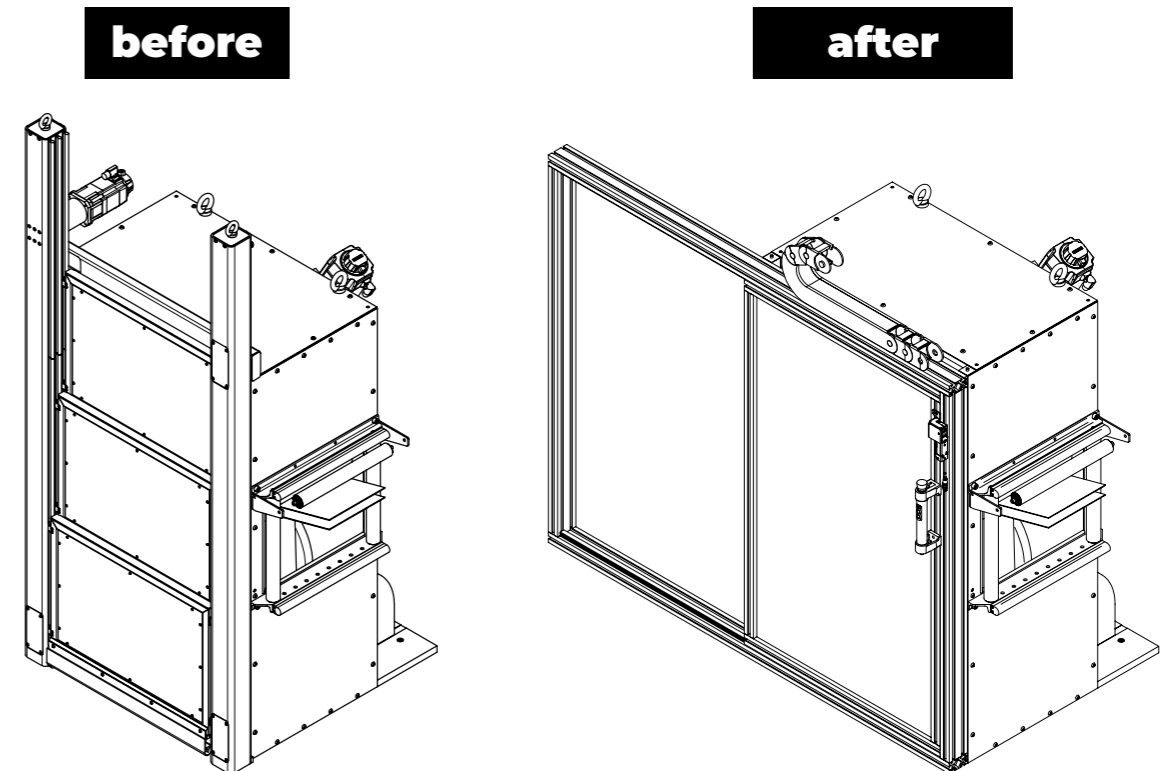
efficient and CE-compliant optimization of traction systems

At one of our client's facilities, pull systems are essential for maintaining stable tension in the film return and ensuring smooth operation. However, existing systems face challenges, particularly during film tears, leading to time losses and complex workflows that impact productivity. In the event of a film tear, a request switch is activated, causing the drives to switch to a safe speed and the three-part safety door to open slowly. The film must then be painstakingly re-threaded before the door can close and the line speed can resume. This process is time-consuming and cumbersome.

An assessment of using a light barrier in accordance with EN ISO 13855 revealed that the safety requirements could not be fully met due to the machine's overrun time of 400 ms. The calculated safety distance of 751 mm is practically unachievable, as the current minimum distance is already 800 mm, while a more efficient distance of 500 mm is not feasible due to technical constraints. This solution proved to be uneconomical and non-compliant with standards and was therefore dismissed.

NEERTEX has developed an efficient, CE-compliant solution: Instead of the three-part safety door, a modern sliding door is used, based on standardized purchased components, eliminating additional manufacturing steps. A safety switch

with interlocking prevents unauthorized opening during operation. The door handle integrates electrical switching functions, emergency stop push buttons, and a light signal to indicate the door's status. The new design optimizes the workflow: The sliding door opens and closes faster, reducing wait times, while the rollers automatically switch to threading speed. This simplifies the threading process and enhances safety. With this solution, NEERTEX improves the efficiency and safety of pull systems. Let us optimize your production processes together – with well-conceived and economical concepts!



reference

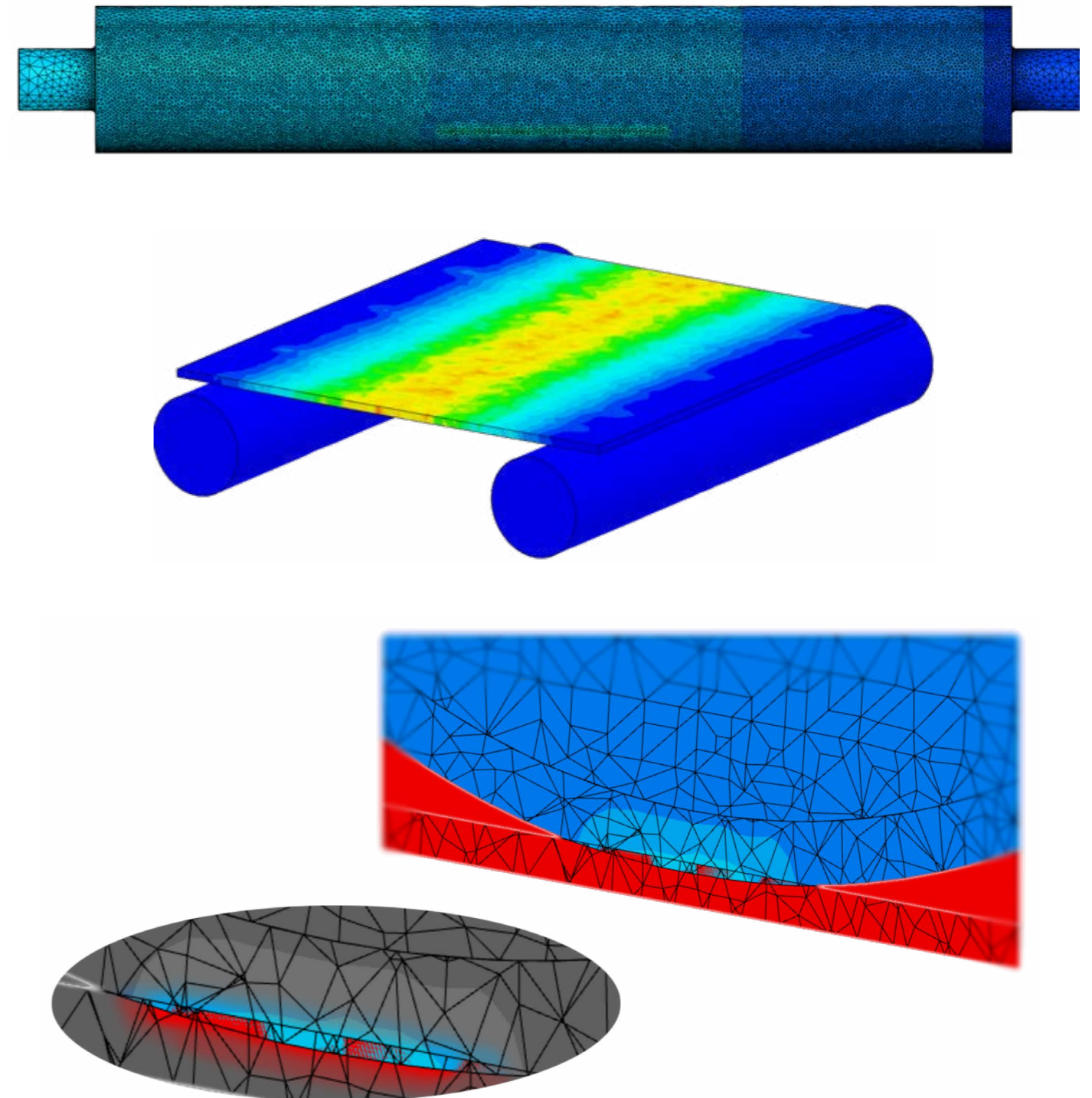
FEM simulation for the optimization of squeeze rolls

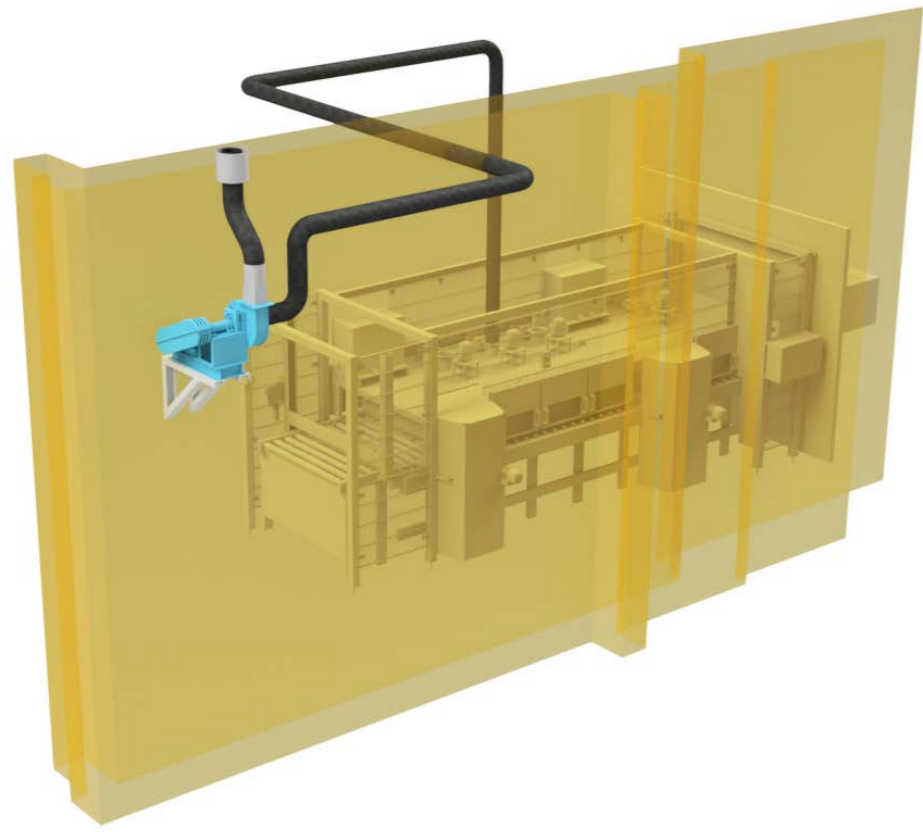
For a client, NEERTEX conducted a detailed FEM simulation (Finite Element Method) to analyze the mechanical stress and behavior of nip rollers during operation. The goal was to evaluate stress distribution and material strain under various operating conditions and identify potential optimizations. As part of the project, the nip rollers were simulated with different material properties.

A key focus was on the rubber coating of the rollers, whose elasticity and deformation behavior were assessed using two Shore hardness values (70-A and 95-A). For precise calculations, the Shore hardness was converted into the elastic modulus (E-modulus). Additional parameters included pressure forces of up to 4 kN and the interaction between the rubber coating and the processed materials, such as glass. Elastic and physical contacts were incorporated to replicate real-world conditions. The analysis revealed the indentation depth of the rubber coating as a function of material hardness and thickness, as well as the stress distribution and deformation of both the roller and the processed material.

Harder rubber coatings showed a reduced indentation depth and lower compressive stresses. Adjustments to the rubber thickness and Shore hardness led to improved process stability. Based on these results, NEERTEX presented the client

with two optimization proposals: Using a harder rubber coating to achieve more uniform force transmission. Alternatively, implementing a thinner rubber coating with increased hardness to utilize the roller geometry more efficiently. With this simulation, NEERTEX provided valuable insights and once again demonstrated its expertise in mechanical analysis and the optimization of complex machine components. Our services included performing precise FEM simulations, analyzing complex material interactions, and developing customized optimization proposals that deliver sustainable improvements for the client.





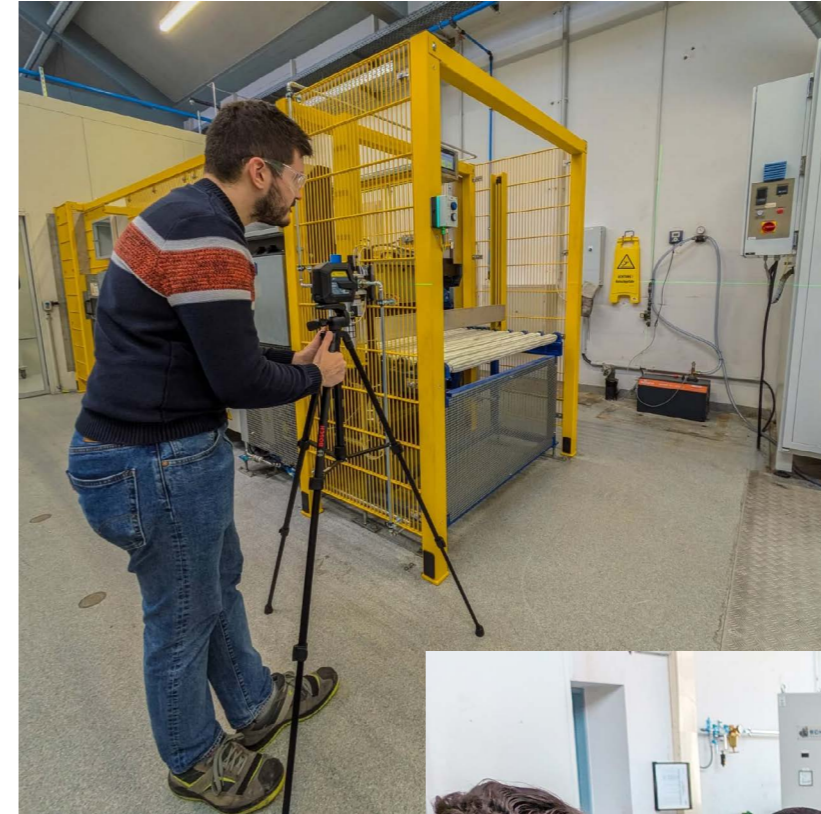
reference
efficient heat dissipation for a pre-composite system

During the development of a new product for our client, excessive heat generation in a pre-bonding system posed a significant challenge. The high temperature was impacting product quality and required a precise solution.

Our engineers conducted a detailed heat dissipation analysis and developed a well-thought-out concept: A specially designed pipeline transports the excess heat to an adjacent room, where a high-performance radial fan extracts the hot air and safely vents it through a chimney.

This project highlights our expertise in pipeline design, as well as in the calculation and integration of heat dissipation systems.

Thanks to our customized solution, the product quality was sustainably secured.



future plan



NEERTEX looks to the future with confidence and ambition. Our goal is to contribute to the growth and development of emerging markets where our expertise can make a significant impact.

We firmly believe that these objectives are achievable through NEERTEX's skills and knowledge. Our mission is to support and optimize key industries such as mechanical engineering, plant engineering, the chemical industry, and the food industry. With innovative solutions and cutting-edge technology, we aim to drive

Shaping the future: NEERTEX vision for sustainable growth

progress, enhance efficiency, and promote sustainable development in rapidly growing regions. At NEERTEX, we are committed to building a better future – project by project.

partner

NEERTEX is supported by independent agents who maintain strong connections with Chinese manufacturers. These experts possess extensive knowledge in sourcing a wide range of products and services from China, ensuring that we can meet diverse requirements efficiently and reliably.



Io Hou Tam

Sourcing Agent & Logistics

Io Hou Tam from HOUTAM CAPITAL Ltd. is an experienced expert in sourcing and establishing connections with manufacturers across various industries. His extensive supplier network in China and Europe enables him to efficiently procure a wide range of products and materials. For NEERTEX, Mr. Tam provides crucial support in connecting with Chinese manufacturers. Whether it's CNC-manufactured series parts, injection-molded components, or other essential parts for mechanical engineering, he ensures that our projects are supplied with high-quality and reliable resources.



Chi Shing Tsui

Product Designer & Sourcing Agent

Chi Shing Tsui is an industrial designer with a degree from Cambridge City University. He specializes in industrial design and product sourcing from Asia. Mr. Tsui plays a key role in communicating with OEM and ODM manufacturers in China, ensuring smooth collaboration and the successful completion of projects.

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