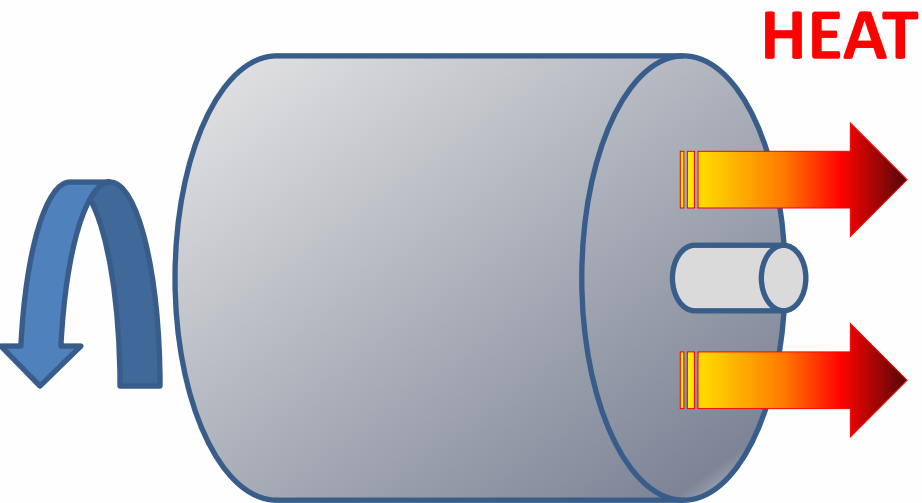


YANKEE HEAD SAVERS

ENERGY SAVING PLATFORM

YANKEE HEAD SAVERS / WHY?



Uncovered Yankee heads
cause:



- Considerable **loss of thermal energy**

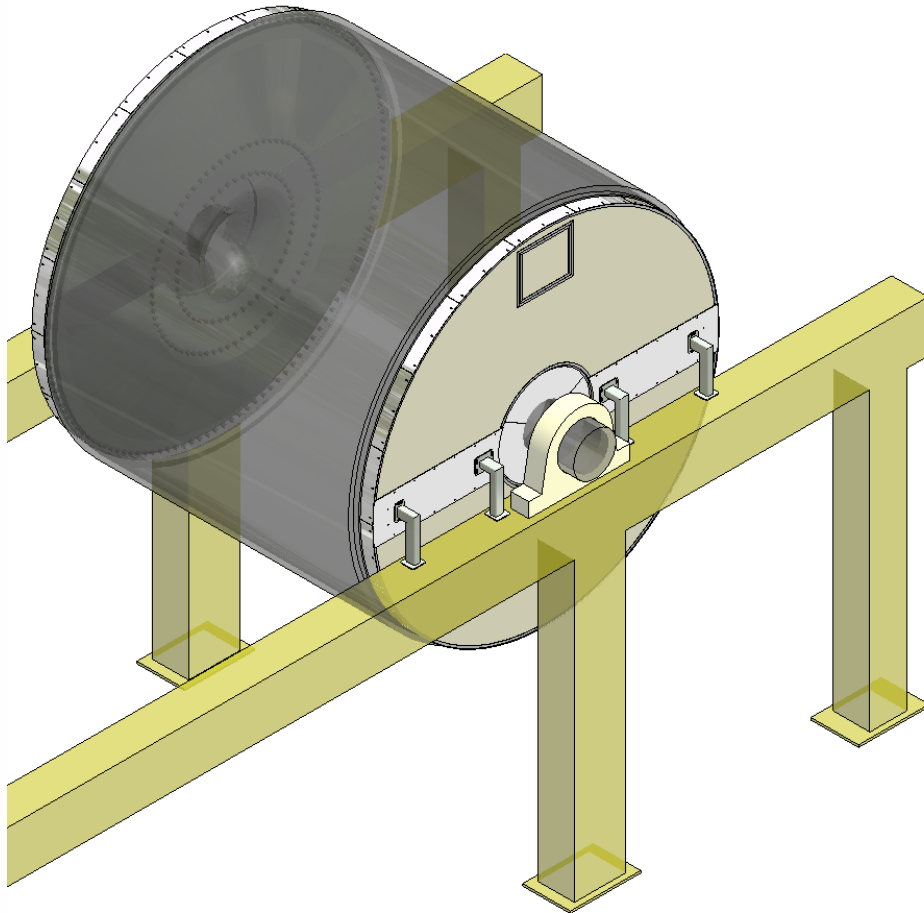


- High **Fire risk** for dust migration from dry part of the machine



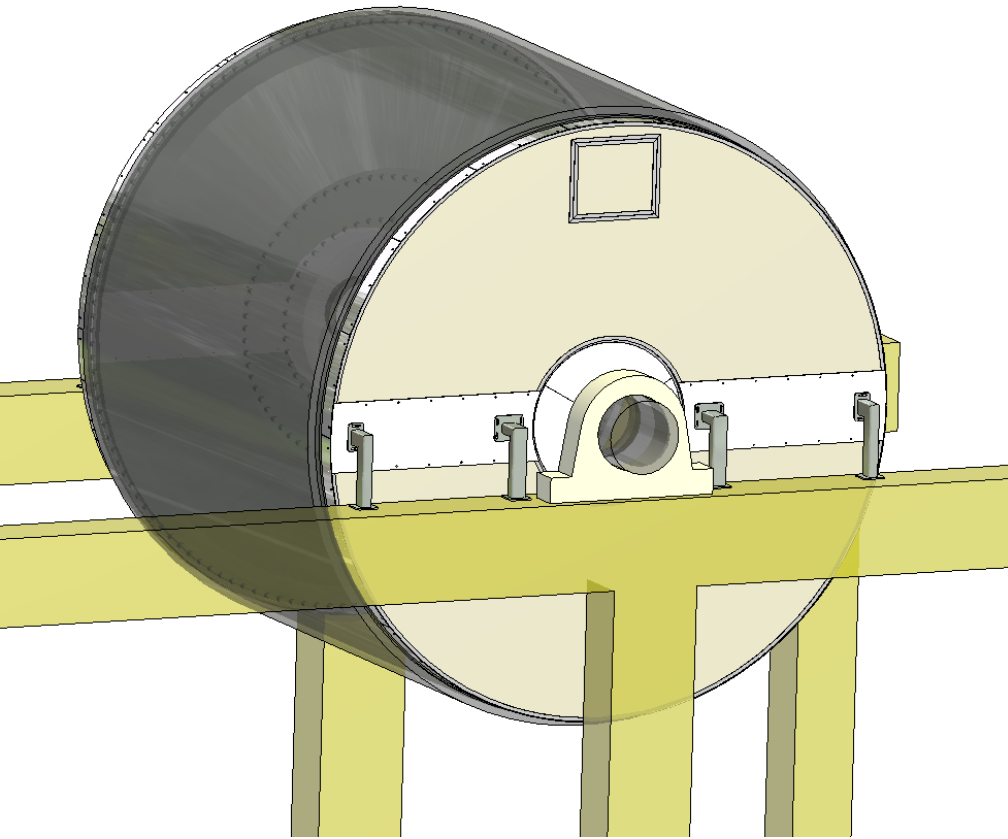
- **Safety risk for operators** from mechanical rotating parts and heat pollution in work areas

YANKEE HEAD SAVERS / BACKGROUND



- Main target of this product is to **decrease the energy/steam consumption** of a Tissue Machine and to **strongly improve working safety and health environment** for the operators
- Insulation applied to Yankee headers is **NOT** new to the market
- Innovation supplied by Novimpianti is the concept of a **static application that guarantees a reliable and safety solution**

YANKEE HEAD SAVERS TECHNOLOGY



Novimpianti system is composed by a **static element**, filled by high insulating capacity material, fastened to the Yankee dryer's static supporting structure and **completely covering the Yankee heads**.

This solution doesn't modify the Yankee dryer's balance because is not involving any rotating mass on it.

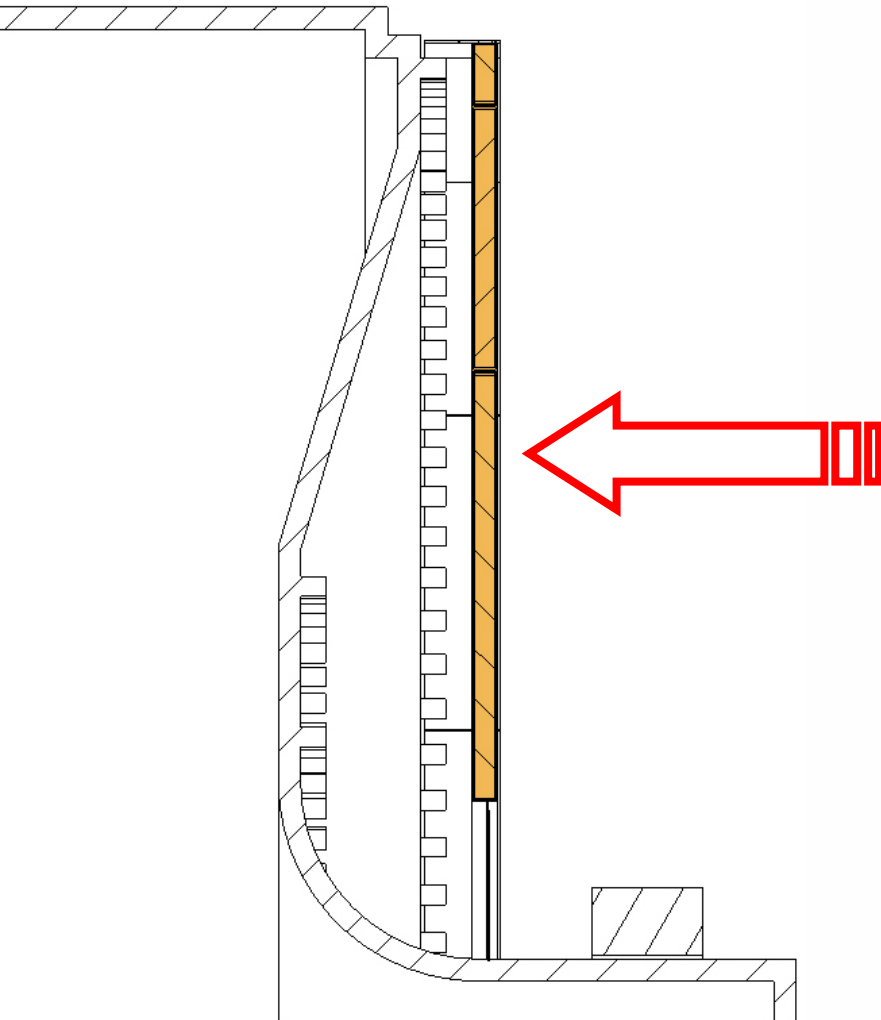
YANKEE HEAD SAVERS TECHNOLOGY

Standard Yankee Head Savers application is:

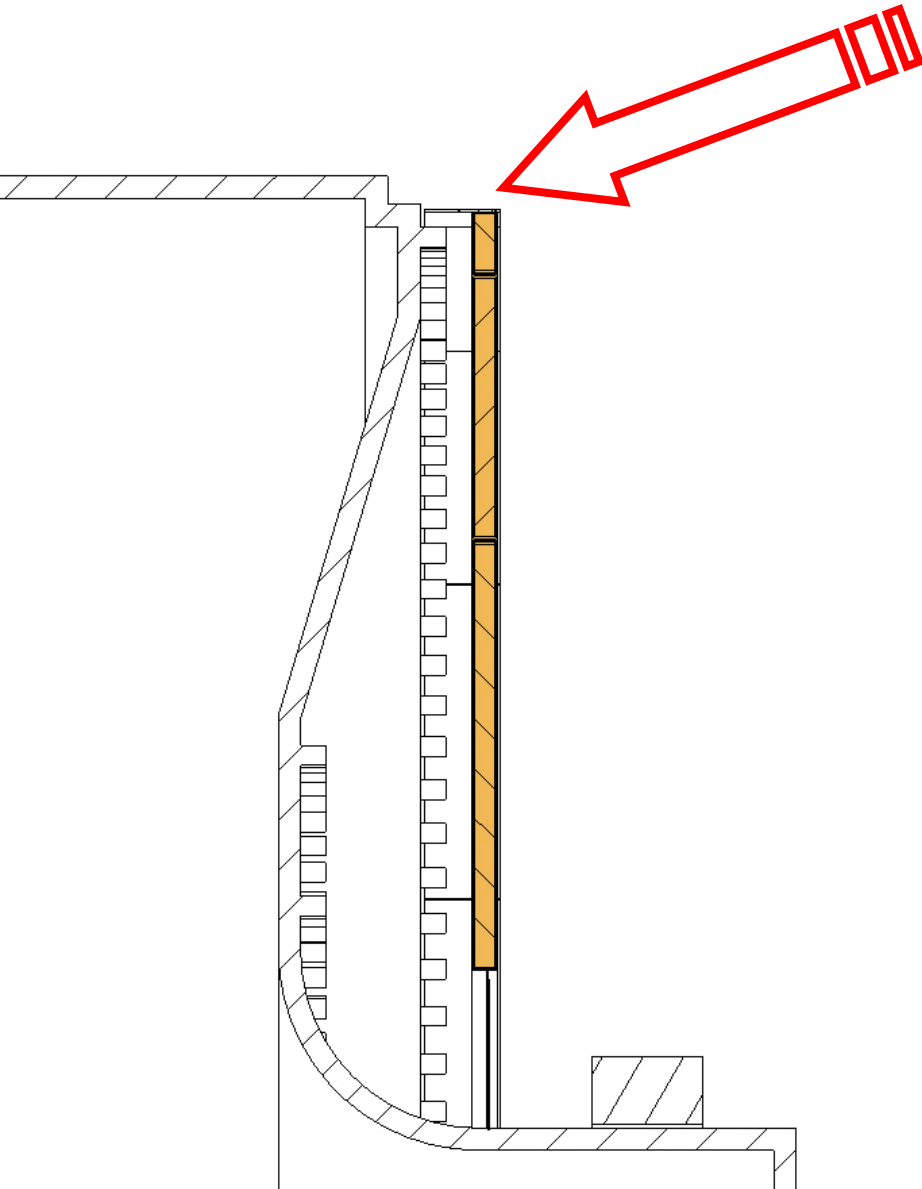
- divided in **two pieces** (one lower and one upper) for each head.
- equipped with **insulated panels** to cover the two Yankee heads composed by internal and external face galvanized steel made and a layer of rockwool between the two faces.

Optional:

- insulated panels external faces made of **Aisi304 stainless steel**



YANKEE HEAD SAVERS TECHNOLOGY



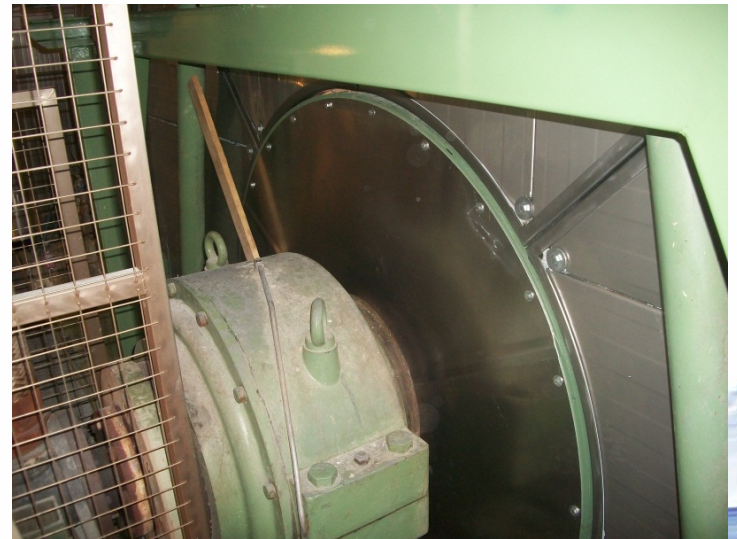
- With the application of non-rotating and high density insulation statically fastened to machine supporting beams and air sealed on Yankee edges we minimize air and heat losses and to prevent dust entering
- As for the Yankee hood, the sealing on the Yankee dryer is realized with aluminium in order to avoid damages in case of contacts.

YANKEE HEAD SAVERS INSTALLATION

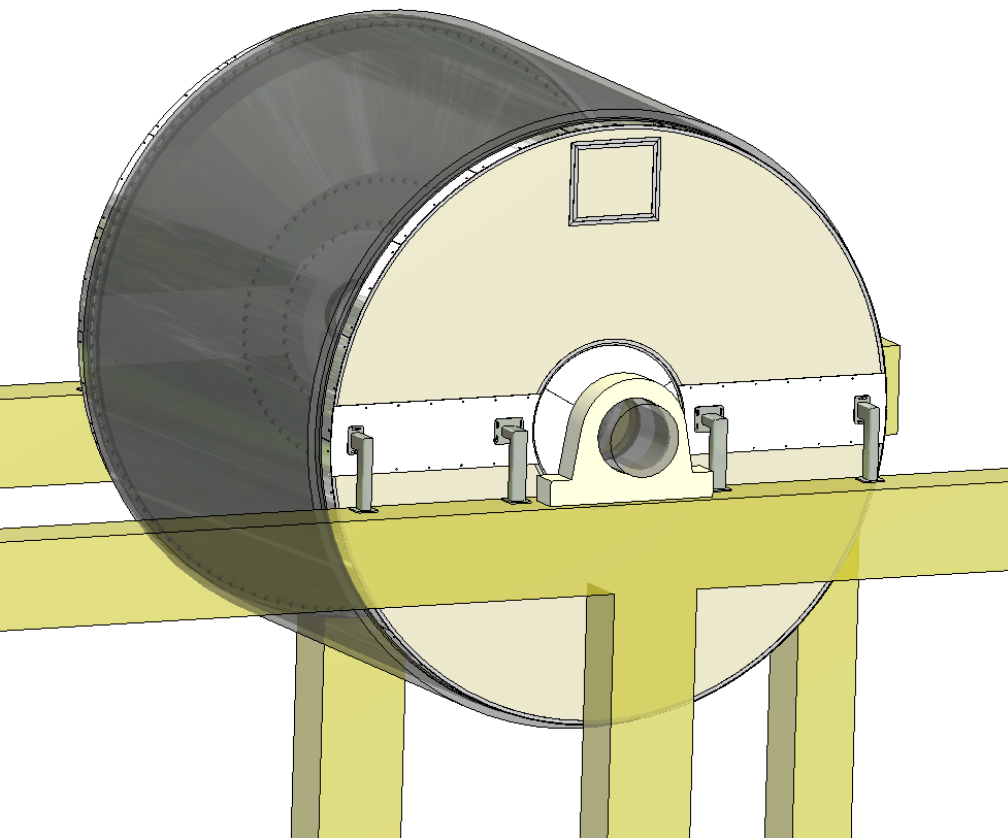
Accurate planning and time/actions management allows to reduce shut-down required for installation at his minimum.



Working with two different teams on both headers at the same time allows to cut-down machine shut-down time and complete installation **within 24 hours**.



YANKEE HEAD SAVERS MAINTENANCE

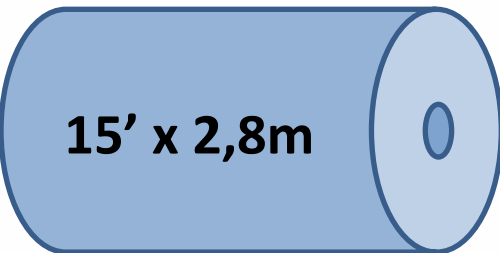


Non-rotating Yankee Head Savers are easy to maintain and remove for inspection, in fact they are:

- Customized on each Tissue Machine
- Equipped with manhole for access and inspection
- Easily removable by standard tools

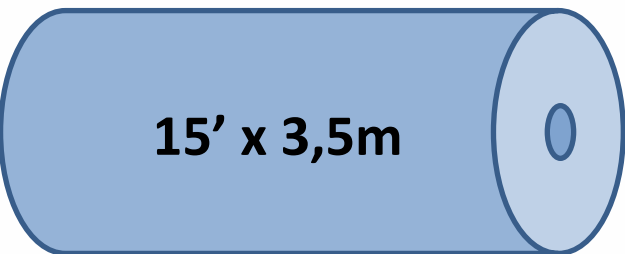
YANKEE HEAD SAVERS / BENEFITS

SAVE STEAM/ENERGY UP TO:



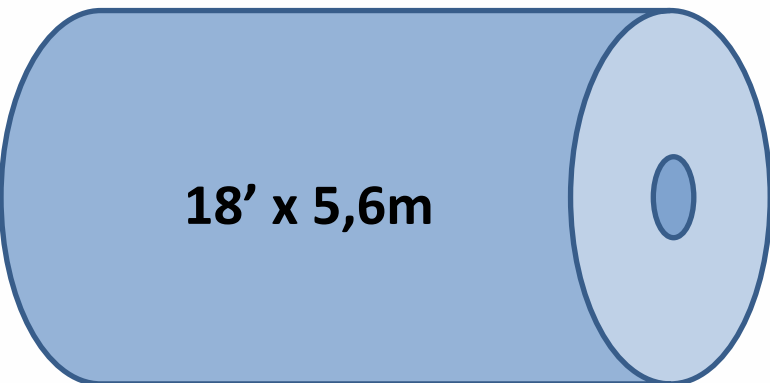
15' x 2,8m

10%



15' x 3,5m

8%



18' x 5,6m

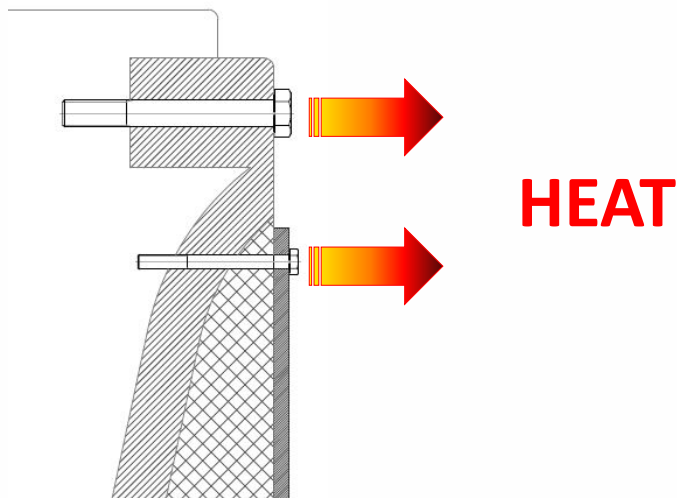
5%

- Higher is the ratio between Yankee diameter vs. Yankee width and higher is the Energy/Steam saving achievable
- In a typical Tissue Machine 100 tpd with 15' Yankee dryer and 2,8m paper with installation of Yankee Head Savers can save up to **10%** equal to **500 kg/h of steam**

NDT STATIC YANKEE HEAD SAVERS / **WHY?**

MORE ENERGY SAVING

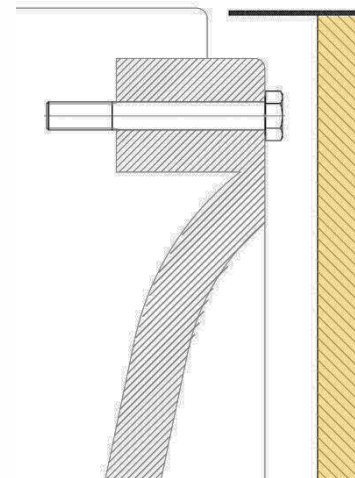
ROTATING



ROTATING YANKEE HEAD INSULATION HAS SEVERAL POINTS OF HEAT LOSS:

- does not cover the Yankee head fixing bolts
- bolts to fasten rotating head insulation are an additional hot spot

STATIC



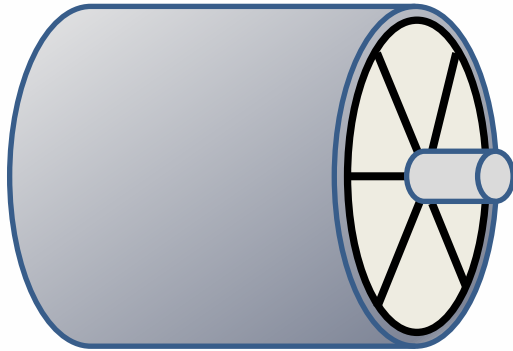
STATIC NOVIMPIANTI YHS COVER COMPLETELY THE YANKEE HEADS:

- cover the Yankee head fixing bolts
- 5 ÷ 8 % of more Yankee Heads covered surface
- do not have additional hot spot, they are fixed on external machine supporting structure
- allow more energy saving

NDT STATIC YANKEE HEAD SAVERS / **WHY?**

REDUCED INSTALLATION TIME

ROTATING

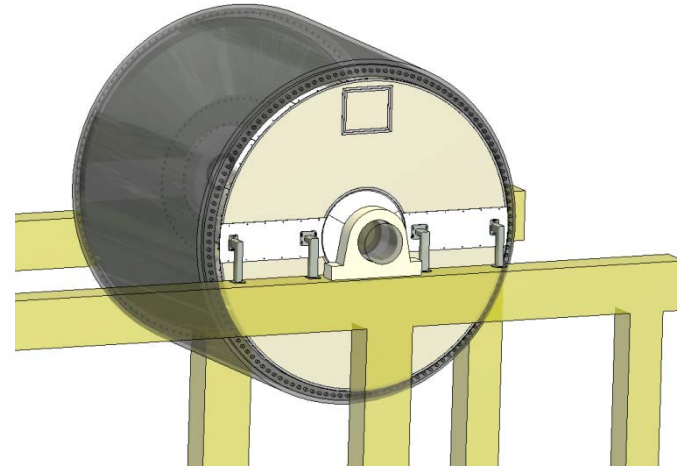


ROTATING INSULATION IS TYPICALLY
COMPOSED IN 6 PIECES
for each Yankee heads needing time for:

- Installation of each piece
- Drilling of the Yankee dryer

Resulting in longer installation shut-down

STATIC



STATIC NOVIMPIANTI YHS ARE REALIZED
IN TWO PIECES

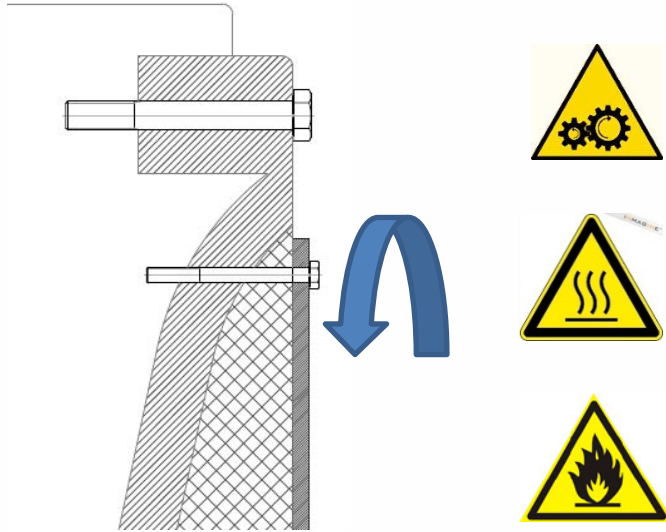
and allow a reduced erection allowing
to accomplish installation within 1 day
machine shut-down.

Moreover they are fastened on machine
supporting structure and without
drilling of the Yankee

NDT STATIC YANKEE HEAD SAVERS / **WHY?**

MORE SAFETY FOR OPERATORS

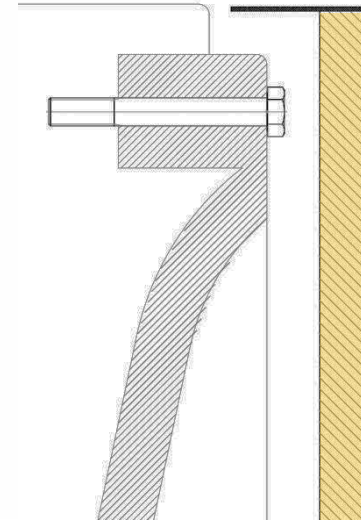
ROTATING



ROTATING YANKEE HEAD INSULATION:

- Exposed bolts may drag and hurt the operators
- Acts like a “large fan” pumping by its rotation a big amount of heat and dust toward the Pope reel increasing the Fire Risk

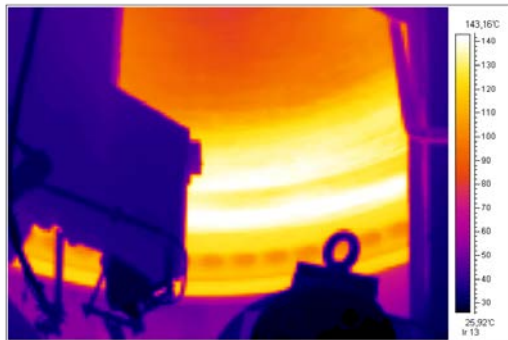
STATIC



STATIC NOVIMPIANTI YHS:

- Fully protect the operators from rotating and hot parts
- Eliminates the pumping effect and the risk of fires will be drastically reduced and the machine environment improved

CONFIDENTIAL PROJECT CASE HISTORY (2011)



Before installation on Yankee headers surface reached more than 130°C while operating at cylinder steam pressure of 4 barg (159°C). With the installation of YANKEE HEAD SAVERS local temperatures dropped below 80°C.

MACHINE DATA

YANKEE DIAMETER	mm	5000
YANKEE WIDTH	mm	3700
YANKEE OPERATING PRESSURE	bar g	4
YANKEE STEAM CONSUMPTION (BEFORE)	kg/h	3500
YANKEE STEAM CONSUMPTION (AFTER)	kg/h	3290
STEAM SAVINGS	%	6,0

PAYBACK ANALYSIS

DAILY STEAM SAVING	ton/day	5.0
STEAM PRICE	€/ton	25
DAILY SAVING	€/day	125
PAYBACK PERIOD	months	about 12

Measurements of condensate flow done before and after YANKEE HEAD SAVERS installation showed **a reduction on the steam consumption of 6%**

Considering the achieved steam consumption reduction and the local price of energy, the system will be **completely re-paid in 12 months from installation**

CONFIDENTIAL PROJECT CASE HISTORY (2011)



The system supplied fulfills the requirements and the targets in terms of:

- Steam saving of 6%
- Reduction of contact temperatures from 130°C to 80 °C
- Elimination of mechanical risks for operators
- Possibility of access for internal inspection and maintenance of the Yankee dryer
- Reduce air pumping from wet to dry side
- Erection was accomplished in only **1 day** using two teams, one for each header.

BENEFITS SUMMARY FOR YANKEE HEAD SAVERS



- Maximize Energy Saving (up to 10%) and short payback period



- Minimize the fire hazard and protect operators from heat and mechanical rotating parts



- Green Tech. > Reducing energy consumption reduces also CO₂ emissions



- Quick and Easy to install with reduced machine shut down



- User and Maintenance friendly