

## Studie: Kühlanlagen der Zukunft für den Retail-Bereich

TGW Logistics, Hauser und das Logistikum der FH Steyr forschen gemeinsam an den Kühlanlagen der Zukunft.



Hauser Kühlmöbel Remeta: © Hauser

- Dfc 'Y\_h'UbU`mg]Yfh'X]Y'6fUbW\YbUbZcfXYfi b[Yb'Ub
   ? Ø\`a ÒVY`ž'!fÀi a Y'gck]Y'!hfUbgdcfha ]hhY`
- : ]`]U`Ybž'8Uf\_ghcfYg'fZØf'XUg'?ca a ]gg]cb]YfYb'j cb Cb`]bY!6YghY``i b[YbŁ'gck]Y'hY]`!'Vnk" j c``Ui hca Uh]g]YfhY': i `Z]``a Ybh!?cbnYdhY']a': c\_i g
- NYbhfu`Y´< YfUi gZcfXYfi b[Yb. '8 Ugʻni j Yf`Àgg][Y</li>
   9]b\U`hYb

 $XYf^{?}\emptyset \ `YhhYž^{9}bYf[]YYZZ]n]Ybn^{i}bX^{:}YI]V]^hAh$ 

8 Yf'ÒghYffY]WX]gWXY'?Ø\`a ÒVY`!'i bX'<mark>?À`hYhYWX b]\_!</mark>
?ca d`YhhUbV]YhYf'<Ui gYfž'X]Y'; fcWYfm'6i g]bYgg'l b]h'j cb

#D'XYf'Ghi X]Y'k i fXYb'; fcWffm!FYhU]'YfžCb']bY!

@YVYbga ]hhY'\AbX'Yf'gck ]Y'Ca b]W\UbbY!GdYn]U']ghYb'VYZfU[h''

8 UVY]'fØW\_hY'XYf'; YgUa hdfcnYgg']b'XYb'A]hhY'di b\_h'j cb'XYf

DfcXi\_h]cb'XYf'@YVYbga ]hhY''ØVYf'XYfYb'@U[Yfi b['V]g'ni a

J Yf\_Ui Z'Ua 'Dc]bh!cZ!GU'Y''' \*X'bUW\XYa ž'cV'Yg'g]W\'i a 'Y]bYb

9]bnY'\AbX'Yfž'Y]bYb'fY]bYb'Cb']bY!D'UmYf'cXYf'Y]bYb

Ca b]W\UbbY'!5bV]YhYf'\UbXY'hž'i bhYfgW\Y]XYb'g]W\'X]Y

5bZcfXYfi b[Yb'Ub'?Ø\'Ub'U[Yb'XYi h']W\'\Z'Yf\_'Afh'A]W\UY'

GW\YX'VUi YfZ'J]WY'DfYg]XYbh'6i g]bYgg'8Yj Y'cda Ybh'; fcWYfm'VY]

H; K'@c[]gh]Wg''' 8]Y'6YZfU[i b['\Uh'[YnY][hZ'XUgg'XYf

5i hca Uh]g]Yfi b[g[fUX'U\_hi Y``'b]YXf][']ghZ'Y]b'; fc\*hY]''XYf

DfcnYggY'k]fX'bUW\'k]Y'j cf'a Ubi Y```UV[YXYW\_h''

### G\cdž'8Uf\_ghcfY'cXYf': i `Z]``a Ybh'7YbhYf

a @YVYbga ]hhY`!9]bnY`\UbXY``\_ca a Yb'? Ø\`a ÒVY``]b
i bhYfgW\]YX`]W\Yb'6YfY]W\Yb'ni a '9]bgUhn.']a '@UXYb'gY`Vgh'fVY]
6YX]Ybi b[g!'Vnk "'GY`VghVYX]Ybi b[gh\Y\_YbŁ'i bX'UVgY]hg'XYf
JYf\_Ui ZgZÀW\Yb']a 'FU\a Yb'XYf'@U[Yfi b['Vnk "'ZØf'XUg'?ca a ]gg]cb]YfYb'XYf'@]YZYfi b[Yb": Øf'XUg'Ni gUa a YbghY``Yb'j cb
Y: ccX!6YghY``i b[Yb'bi hnYb'Y]b][Y'I bhYfbY\a Yb'gc[YbUbbhY
8Uf\_ghcfYgž'X]Y'À\b`]W\'k]Y'Y]b'Gi dYfa Uf\_h'Ui Z[YVUi h'g]bX"
Ni [i bghYb'Y]bYf'cdh]a U`Yb'?ca a ]gg]cb]Yfi b['a ]h'\_i fnYb'K Y[Yb
g]bX'g]Y'VUi `]W\'cdh]a ]Yfh'i bX'gYhnYb'Ui Z'Y]bY'A ]gW\i b['Ui g
?Ø\`a ÒVY`b'gck]Y'[fÒ»YfYb'?Ø\`nY``Yb"

: i `Z]``a Ybh'7YbhYf']a '@YVYbga ]hhY`!6YfY]W\'j YfZØ[Yb']b'XYf FY[Y``ØVYf'j ]Yf'i bhYfgW\]YX`]W\Y'HYa dYfUhi fncbYbž'X]Y'Yk Y]`g VYgcbXYfY'5bZcfXYfi b[Yb'Ub'8Yg][b'i bX'HYW\b]\_'ghY``Yb. 'HfcW\_Ybgcfh]a Ybh
'?Ø\`VYfY]W\ '&!\*'..7'f\A c`\_YfY]dfcXi \_hYž'K i fghž'C VghL
'?Ø\`VYfY]W\ '\$!&'..7'f\7cbj Yb]Yb\W'ž': `Y]g\W\ž': ]g\W\\L
'H]YZ\_Ø\`VYfY]W\

6YgcbXYfY'<YfUi gZcfXYfi b[']gh'X]Y'dUggYbXY'8]a Ybg]cb]Yfi b[XYf'?Ø\`\U``Ybži a 'X]Y'5bZcfXYfi b[Yb'XYf'?i bXYb'cdh]a U``ni YfZØ``Ybž'j cb'a Ò[`]W\gh'b]YXf][Yb'9bYf[]Y\_cghYb'ni 'dfcZ]h]YfYb i bX'Y]bYb'\c\Yb'FYhi fb!cb!]bj Ygha Ybh'fFC±'ni 'Yfn]Y`Yb'' @Yhnh`]W\'a ØggYb'X]Y'6YXØfZb]ggY'i bX'5bZcfXYfi b[Yb'U``YfGhU\_Y\c`XYf']b'Y]b'UV[Ygh]a a hYg'?cbnYdh'a ØbXYbž'XUa]h'XUg 9]b\_Ui ZYb'XYf'Ni \_i bZh 'ZØf'X]Y'?cbgi a YbhYb'a Ò[`]W\gh'UhhfU\_h]j i bX'bUW\\U`h]['[YghU`hYh'k]fX'''8i fW\'X]Y'9I dYfh]gY'XYf Dfc Y\_hdUfhbYf'XYf'Ghi X]Y']gh'XUg'H\Ya U']b'XYb'VYghYb'<\àbXYbž gU[h'; Yf\UfX'<Yhna UbbgYXYfž'8]fYWhcf'DfcXi Whg'/'9b[]bYYf]b[VY]'<Ui gYf''

# $BUWX \setminus U^h][_Y]h\tilde{z}^9bYf[_]Yj_YfVfUi_WX^i_i_bX$ : `YI\_]V]`]hÀh

8]Y'Ghi X]Y'a UW\hY'Y]bYg'XYi h']W\.; f\(\) hY'< YfUi gZcfXYfi b['Y]bYf hYa dYfUhi f[YZØ\fhYb'Gi dd`m'7\U]b']gh'XUg'9]b\U`hYb'Y]bYf Xi fW\[\(\) h\[\) b\[YfYW\i b[\gzfY]Yb'?\@\\`\_YhhY'''J ca \\ UfYbY]b[\Ub['\@VYf'X]Y'@U[Yfi b['i bX'?ca a ]gg]cb]Yfi b['V]g'ni f @Ugh'A]'Y''8]Y'F\@W\_j YfZc`[VUf\_Y]h'a i gg'XUVY]''YXYfnY]h [Yk\(\) A\[f`Y]ghYh'gY]b'''\ 5i\(\) YfXYa 'f\@W\_Yb'Z\@f'j]Y'Y'I bhYfbY\a Yb Ui g'XYf'6fUbW\Y'Ui W\'ni bY\a YbX'k\Y]hYfY':\U\_hcfYb']b'XYb \\ c\_i g. 'BYVYb'XYf'\[9f[cbca]Y'Z\@f'X]Y'A]hUfVY]hYf'[Yk]bbYb'Ui W\\\ BUW\\U`h][\_Y]h\[\) '9bYf[]Yj\YfVfUi\W\'gck]Y':\`YI]V]']h\[\) h'ni bY\a YbX\\Ub'6YXYi\ hi\b[\] \[\] Z\VYhcbh'H;\K\!9I\dYfhY'A]\W\\UY`'G\W\YX\VUi\Yf''

 $8 \ Yf: \ cfgWX \ ib[gUbgUhn`Yfa \ \grave{O}[\ `]WX \ hY`Ygž`DYfgdY\_h]j \ Yb`ibX < UbX`ib[gZY`XYf']b`XYf'?Ø\`!Gi dd`m!7\U]b`]a `?cbhYl h i bhYfgWX]YX`]WX Yf`GhcfY! i bX: i `Z]``a Ybh!?cbnYdhY`Ui Zni nY][Yb i bX`5bZcfXYfib[Yb`Ub`?Ø\`]bZfUghfi\_hif#`\grave{O}gib[Yb`UVni`Y]hYb ž VYhcbh': <!5gg]ghYbndfcZYggcf'8f''A]WX UY``D`UgWX'''8ifWX`X]Y 9bhk]\@`ib[`XYf`XfY]`IgY`7UgYg`fCb`]bY!cb`mž'<mVf]X`ibX': ]`]U`YŁ_cbbhYb`GdYn]Z]_U`XYg`YkY]`][Yb'; YgWX \`AZhga cXY```g$ 

 $VYf \varnothing W_g ] W h] [ hi b X 9f_Y b b h ] ggY i "U" ni Gcfh] a Yb hg V f Y] h Y ž 8 Uh Y b Ui gh Ui g W gck ] Y ni a 9] b g Uh n' j c b H Y W b c c [ ] Y b i b X h Y W b ] g W Y a 9 e i ] da Y b h' [ Yk c b b Y b 'k Y f X Y b " k k k "h [ k ! [ f c i d " W c a$ 

### VYf X]Y H; K '@c[]gh]Wg'; fcid.

H; K '@c[]gh]Wg']gh'Y]b']bhYfbUh]cbU`'ZØ\fYbXYf'5bV]YhYf'j cb

♣hfU`c[]gh]\_!@Ògi b[Yb"'GY]h'a Y\f'U`g') \$'\\\ fYb'fYU`]g]Yfh'XYf

ÒghYffY]W\]gW\Y'GdYn]U`]gh'Ui hca Uh]g]YfhY'5b`U[Yb'ZØf'gY]bY

]bhYfbUh]cbU`Yb'?i bXYb.'j cb'5'k]Y'5X]XUg'V]g'N'k]Y'NU`UbXc"'5`g

GmghYa]bhY[fUhcf'ØVYfb]a a h'H; K 'XUVY]'D`Ubi b[\tilde{z}DfcXi \_h]cb

i bX'FYU`]g]Yfi b['j cb'\_ca d`Yl Yb'@c[]gh]\_nYbhfYb''j cb

A YW\Uhfcb]\_'ØVYf'FcVch]\_'V]g'\]b'ni 'GhYi Yfi b['i bX'GcZhk UfY"

H; K '@c[]gh]Wg'\Uh'B]YXYf`Uggi b[Yb']b'9i fcdU\tilde{z}'7\]bU'i bX'XYb

I G5'i bX'VYgW\AZh][h'k Y`hk Y]h'a Y\f'U`g'("(\$\tilde{x}\A]\hufvY]hYf.]bbYb"

♣a 'K ]fhgW\UZhg'U\f'\&\tilde{x}\&\#\&\tilde{x}\&\tilde{x}\Yfn]Y`hY'XUg'l bhYfbY\a Yb'Y]bYb

; YqUa hi a gUhn'j cb'- &('A]``]cbYb'9i fc"

### VYf'X]Y'<51 G9F; a V<

6 Y gi W Y b 'G ] Y 'i b g 'U i Z 'Z Y ] g W i b X W c "U h